

December 31, 2021

Ms. Kelly Lee Kinkaid PG; Licensed Professional Geologist
Pennsylvania Department of Environmental Protection
Bureau of Waste Management
909 Elmerton Avenue
Harrisburg, PA 17110-8200

REF: Creswell Landfill (BWM Permit #100008)
Groundwater Monitoring; 4th Quarter 2021

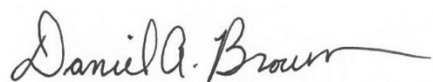
Dear Ms. Kinkaid:

Enclosed are the Form 19 reports for the sampling period completed at the above referenced facility. The laboratory results are being reviewed by ARM Group to evaluate the quality of the data and historic trends. This review will be submitted upon completion.

- This sampling event was for the "Quarterly" Form 19 parameters, all the thirteen (13) GWMP locations were sampled.
- Enclosed is a data export .csv file that should be in the format compatible with your LandLinks software.

Please do not hesitate in contacting me if you have any questions or concerns at dbrown@lcswma.org.

Respectfully Submitted,

A handwritten signature in black ink that reads "Daniel A. Brown". The signature is fluid and cursive, with a long horizontal stroke at the end.

Daniel A. Brown
Environmental Compliance Manager

cc: LCSWMA: Environmental
ARM Group: Ryan Brandon
PA DEP: Randy Weiss



Date Prepared/Revised
12/16/2021

DEP USE ONLY

Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP007W

X	Well	Spring	Stream	Other
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Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 24.53 "

Longitude: 76 ° 26 ' 33.28 "

Depth to Water Level: 7.29 ft

Measured from: Land Surface X TOC

Casing Stickup: 1.50 ft

Elevation of Water Level: 446.11 ft./MSL

Sampling Depth: 33 ft

Volume of Water Column:	42.90	gal
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Total Well Depth: 36.5 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: X Yes No

Well Volumes Purged: 2.5

Sample Field Filtered (must be 0.45 micron)?: Yes ☒ No ☐

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/18/2021

Sample Collection Time: 11:08

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes ☒ No ☐ If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3207155001 Final Lab Analysis CompletionDate: 10/29/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments:

I.D. No 100008

Monitoring Point No. CWMP007W

Sample Date 10/18/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	13	SM18-2321
CALCIUM, TOTAL	19	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	80.5	EPA 300.0
FLUORIDE	0.4	EPA 300.0
IRON, TOTAL (ug/l)	67 ND	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	10.1	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	6.1	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.2 ND	EPA 300.0
pH-FIELD (SU)	5.01	FIELD
pH-LAB (SU)	6.71	EPA 150.1
POTASSIUM, TOTAL	2.4	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	33.9	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	546	FIELD
SPEC. COND., LAB (umhos/cm)	350	EPA 120.1
SULFATE	26.9	EPA 300.0
ALKALINITY	13	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	322	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP007W

Sample Date 10/18/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



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SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP001W

☒ Well ☐ Spring ☐ Stream ☐ Other

☒ Upgradient/Upstream ☐ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 27.43 "

Longitude: 76 ° 26 ' 14.4 "

Depth to Water Level: 28.59 ft

Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 1.23 ft

Elevation of Water Level: 486.54 ft./MSL

Sampling Depth: 57 ft

Volume of Water Column: 55.38 gal

Total Well Depth: 66.3 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 2.0

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: ☐ gpm

Sample Date (mm/dd/yy): 10/18/2021

Sample Collection Time: 12:23

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ☐ Yes ☒ No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3207155002 Final Lab Analysis Completion Date: 10/29/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments:

I.D. No 100008

Monitoring Point No. CWMP001W

Sample Date 10/18/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	6	SM18-2321
CALCIUM, TOTAL	14.7	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	28	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	140	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	10.4	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	48	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	19.7	EPA 300.0
pH-FIELD (SU)	5.26	FIELD
pH-LAB (SU)	6.57	EPA 150.1
POTASSIUM, TOTAL	2.4	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	13.1	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	372	FIELD
SPEC. COND., LAB (umhos/cm)	251	EPA 120.1
SULFATE	2.7	EPA 300.0
ALKALINITY	6	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	284	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	12.3	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP001W

Sample Date 10/18/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



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QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

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Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP005W

☒ Well ☐ Spring ☐ Stream ☐ Other

☒ Upgradient/Upstream ☐ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 11.17 "

Longitude: 76 ° 26 ' 7.08 "

Depth to Water Level: 43.49 ft

Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: -0.37 ft

Elevation of Water Level: 469.94 ft./MSL

Sampling Depth: 130 ft

Volume of Water Column: 141.74 gal

Total Well Depth: 140 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 1.1

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: ☐ gpm

Sample Date (mm/dd/yy): 10/18/2021

Sample Collection Time: 13:58

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ☐ Yes ☒ No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3207155003 Final Lab Analysis CompletionDate: 10/29/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments:

I.D. No 100008

Monitoring Point No. CWMP005W

Sample Date 10/18/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	16	SM18-2321
CALCIUM, TOTAL	13.7	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	57.7	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	67 ND	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	7.3	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	51	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	8.2	EPA 300.0
pH-FIELD (SU)	5.08	FIELD
pH-LAB (SU)	6.87	EPA 150.1
POTASSIUM, TOTAL	2.4	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	29.2	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	434	FIELD
SPEC. COND., LAB (umhos/cm)	282	EPA 120.1
SULFATE	4.9	EPA 300.0
ALKALINITY	16	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	238	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.66	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP005W

Sample Date 10/18/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



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General Reference: Section 273.284

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SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP016W ☒ Well ☐ Spring ☐ Stream ☐ Other
☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 56 ' 55.57 " Longitude: 76 ° 26 ' 50.59 "

Depth to Water Level: 11.13 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 2.53 ft Elevation of Water Level: 300.84 ft./MSL

Sampling Depth: 71 ft Volume of Water Column: _____ gal

Total Well Depth: 78.03 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: 2.0

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/20/2021 Sample Collection Time: 14:00

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ☐ Yes ☒ No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3207608001 Final Lab Analysis Completion Date: 11/23/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP016W

Sample Date 10/20/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	12	SM18-2321
CALCIUM, TOTAL	5.9	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	8.9	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	220	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	1.5	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	8.4	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	2.8	EPA 300.0
pH-FIELD (SU)	5.2	FIELD
pH-LAB (SU)	7.05	EPA 150.1
POTASSIUM, TOTAL	0.57	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	3.6	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	95	FIELD
SPEC. COND., LAB (umhos/cm)	89	EPA 120.1
SULFATE	13.3	EPA 300.0
ALKALINITY	12	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	46	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	2.99	SM 2130B

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Sample Date 10/20/2021

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ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

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Monitoring Point Number: CWMP018S ☒ Well ☐ Spring ☐ Stream ☐ Other
☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor

Sampling Point: Latitude: 39 ° 56 ' 55.11 " Longitude: 76 ° 26 ' 51.66 "

Depth to Water Level: _____ ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: _____ ft Elevation of Water Level: #Error ft./MSL

Sampling Depth: 0 ft Volume of Water Column: #Error gal

Total Well Depth: _____ ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: _____

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/21/2021 Sample Collection Time: 10:00

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ☐ Yes ☒ No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3207947001 Final Lab Analysis Completion Date: 11/2/2031

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP018S

Sample Date 10/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	1.12	EPA 350.3
BICARBONATE	315	SM18-2321
CALCIUM, TOTAL	73.8	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	19	EPA 410.4
CHLORIDE	533	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	190	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	67.9	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	74	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	18.6	EPA 300.0
pH-FIELD (SU)	8.4	FIELD
pH-LAB (SU)	8.57	EPA 150.1
POTASSIUM, TOTAL	18.2	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	321	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	3723	FIELD
SPEC. COND., LAB (umhos/cm)	2710	EPA 120.1
SULFATE	45.7	EPA 300.0
ALKALINITY	369	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	1430	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	6	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	2.25	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP018S

Sample Date 10/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



Date Prepared/Revised
12/16/2021

DEP USE ONLY

Date Received

**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP017S

☒ Well ☐ Spring ☐ Stream ☐ Other

☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 20.41 "

Longitude: 76 ° 26 ' 45.1 "

Depth to Water Level: _____ ft

Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: _____ ft

Elevation of Water Level: #Error ft./MSL

Sampling Depth: 0 ft

Volume of Water Column: #Error gal

Total Well Depth: _____ ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No

Well Volumes Purged: _____

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/21/2021

Sample Collection Time: 10:25

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ☐ Yes ☒ No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3207947002 Final Lab Analysis CompletionDate: 11/2/2031

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments:

I.D. No 100008

Monitoring Point No. CWMP017S

Sample Date 10/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.25 ND	EPA 350.3
BICARBONATE	47	SM18-2321
CALCIUM, TOTAL	84.8	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	741	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	410	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	91.2	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	86	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	30.3	EPA 300.0
pH-FIELD (SU)	7.81	FIELD
pH-LAB (SU)	8.42	EPA 150.1
POTASSIUM, TOTAL	20.1	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	465	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	5288	FIELD
SPEC. COND., LAB (umhos/cm)	3690	EPA 120.1
SULFATE	59.2	EPA 300.0
ALKALINITY	48	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	1990	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	3.7	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.72	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP017S

Sample Date 10/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised
12/16/2021

DEP USE ONLY

Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP010W

X	Well	Spring	Stream	Other
---	------	--------	--------	-------

Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 2.38 "

Longitude: 76 ° 26 ' 57.92 "

Depth to Water Level: 8.74 ft

Measured from: Land Surface X TOC

Casing Stickup: 2.10 ft

Elevation of Water Level: 352.16 ft./MSL

Sampling Depth: 17 ft

Volume of Water Column: 7.09 gal

Total Well Depth: 19.6 ft

Sampling Method: X Pumped Bailed Grab

Well Purged: X Yes No

Well Volumes Purged: 1.7

Sample Field Filtered (must be 0.45 micron)?: Yes ☒ No ☐

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/21/2021

Sample Collection Time: 11:21

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes ☒ No ☐ If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3207947003 Final Lab Analysis CompletionDate: 11/2/2031

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments:

I.D. No 100008

Monitoring Point No. CWMP010W

Sample Date 10/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.639	EPA 350.3
BICARBONATE	216	SM18-2321
CALCIUM, TOTAL	43.4	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	335	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	90	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	41.2	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	78	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	8	EPA 300.0
pH-FIELD (SU)	6.58	FIELD
pH-LAB (SU)	8.25	EPA 150.1
POTASSIUM, TOTAL	9.9	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	177	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	2359	FIELD
SPEC. COND., LAB (umhos/cm)	1530	EPA 120.1
SULFATE	32.6	EPA 300.0
ALKALINITY	216	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	870	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	3.3	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	2.92	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP010W

Sample Date 10/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised
12/16/2021

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FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP009W

X	Well	Spring	Stream	Other
---	------	--------	--------	-------

Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 10.82 "

Longitude: 76 ° 26 ' 55.8 "

Depth to Water Level: 9.22 ft

Measured from: Land Surface X TOC

Casing Stickup: 2.70 ft

Elevation of Water Level: 394.98 ft./MSL

Sampling Depth: 16 ft

Volume of Water Column: 6.84 gal

Total Well Depth: 19.7 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: X Yes No

Well Volumes Purged: 5.8

Sample Field Filtered (must be 0.45 micron)?: Yes ☒ No ☐

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/21/2021

Sample Collection Time: 11:55

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes ☒ No ☐ If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3207947004 Final Lab Analysis CompletionDate: 11/2/2031

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments:

I.D. No 100008

Monitoring Point No. CWMP009W

Sample Date 10/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	22.5	EPA 350.3
BICARBONATE	53	SM18-2321
CALCIUM, TOTAL	155	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	112	EPA 410.4
CHLORIDE	540	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	34000	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	78.5	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	11900	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.2 ND	EPA 300.0
pH-FIELD (SU)	5.99	FIELD
pH-LAB (SU)	7.79	EPA 150.1
POTASSIUM, TOTAL	34.1	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	174	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	4100	FIELD
SPEC. COND., LAB (umhos/cm)	2650	EPA 120.1
SULFATE	5.8	EPA 300.0
ALKALINITY	53	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	1520	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	30.9	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	289	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP009W

Sample Date 10/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	2.7	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1.4	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

^T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised
12/16/2021

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FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP008W

X	Well	Spring	Stream	Other
---	------	--------	--------	-------

Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 16.97 "

Longitude: 76° 26' 47.58"

Depth to Water Level: 3.35 ft

Measured from: Land Surface X TOC

Casing Stickup: 2.80 ft

Elevation of Water Level: 418.95 ft./MSL

Sampling Depth: 19 ft

Volume of Water Column:	3.17	gal
-------------------------	------	-----

Total Well Depth: 22.8 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: X Yes No

Well Volumes Purged: 5.1

Sample Field Filtered (must be 0.45 micron)?: Yes ☒ No ☐

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/21/2021

Sample Collection Time: 12:54

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes ☒ No ☐ If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3207947005 Final Lab Analysis CompletionDate: 11/2/2031

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments:

I.D. No 100008

Monitoring Point No. CWMP008W

Sample Date 10/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	5.14	EPA 350.3
BICARBONATE	364	SM18-2321
CALCIUM, TOTAL	60.1	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	25	EPA 410.4
CHLORIDE	40	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	23100	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	28.4	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	14100	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.2 ND	EPA 300.0
pH-FIELD (SU)	6.11	FIELD
pH-LAB (SU)	8.03	EPA 150.1
POTASSIUM, TOTAL	8.3	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	36.7	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	1256	FIELD
SPEC. COND., LAB (umhos/cm)	878	EPA 120.1
SULFATE	6.4	EPA 300.0
ALKALINITY	364	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	478	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	5.9	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	187	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP008W

Sample Date 10/21/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1.1	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	2.6	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

^T Please indicate detection limit if analyte is not detected.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



Date Prepared/Revised
12/16/2021

DEP USE ONLY

Date Received

**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP012W ☒ Well ☐ Spring ☐ Stream ☐ Other
☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 1.48 " Longitude: 76 ° 26 ' 36.02 "

Depth to Water Level: _____ ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 1.90 ft Elevation of Water Level: #Error ft./MSL

Sampling Depth: 0 ft Volume of Water Column: #Error gal

Total Well Depth: 101.9 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: _____

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/22/2021 Sample Collection Time: 11:05

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ☐ Yes ☒ No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3208285001 Final Lab Analysis Completion Date: 11/5/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP012W

Sample Date 10/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	73	SM18-2321
CALCIUM, TOTAL	31.9	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	34.2	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	81100	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	9.2	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	390	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	8.3	EPA 300.0
pH-FIELD (SU)	5.66	FIELD
pH-LAB (SU)	7.68	EPA 150.1
POTASSIUM, TOTAL	1.6	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	14.1	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	476	FIELD
SPEC. COND., LAB (umhos/cm)	341	EPA 120.1
SULFATE	5.3	EPA 300.0
ALKALINITY	73	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	176	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	1.3	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	232	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP012W

Sample Date 10/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



Date Prepared/Revised
12/16/2021

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**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP002W ☒ Well ☐ Spring ☐ Stream ☐ Other
☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 19.97 " Longitude: 76 ° 26 ' 12.3 "

Depth to Water Level: 65.11 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: -1.19 ft Elevation of Water Level: 460.70 ft./MSL

Sampling Depth: 85 ft Volume of Water Column: 51.24 gal

Total Well Depth: 100 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: _____

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/22/2021 Sample Collection Time: 12:05

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ☐ Yes ☒ No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3208285002 Final Lab Analysis Completion Date: 11/5/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP002W

Sample Date 10/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	78	SM18-2321
CALCIUM, TOTAL	41.8	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	80.3	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	67 ND	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	13.9	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	900	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	4.7	EPA 300.0
pH-FIELD (SU)	5.4	FIELD
pH-LAB (SU)	7.53	EPA 150.1
POTASSIUM, TOTAL	2.8	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	26.5	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	733	FIELD
SPEC. COND., LAB (umhos/cm)	500	EPA 120.1
SULFATE	15.5	EPA 300.0
ALKALINITY	78	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	280	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	2.6	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP002W

Sample Date 10/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	9	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



Date Prepared/Revised
12/16/2021

DEP USE ONLY

Date Received

**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

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General Reference: Section 273.284
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SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP003W ☒ Well ☐ Spring ☐ Stream ☐ Other
☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 20.17 " Longitude: 76 ° 26 ' 8.37 "

Depth to Water Level: 64.29 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: -1.29 ft Elevation of Water Level: 459.92 ft./MSL

Sampling Depth: 100 ft Volume of Water Column: 15.73 gal

Total Well Depth: 75 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: _____

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/22/2021 Sample Collection Time: 12:20

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ☐ Yes ☒ No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3208285003 Final Lab Analysis Completion Date: 11/6/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP003W

Sample Date 10/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	21	SM18-2321
CALCIUM, TOTAL	21.9	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	60.9	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	67 ND	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	8.2	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	5.6 ND	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	6.9	EPA 300.0
pH-FIELD (SU)	5.15	FIELD
pH-LAB (SU)	7.32	EPA 150.1
POTASSIUM, TOTAL	1.7	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	20.1	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	462	FIELD
SPEC. COND., LAB (umhos/cm)	346	EPA 120.1
SULFATE	5.2	EPA 300.0
ALKALINITY	21	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	220	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.68	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP003W

Sample Date 10/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1.8	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



Date Prepared/Revised
12/16/2021

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Date Received

**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: CWMP004W ☒ Well ☐ Spring ☐ Stream ☐ Other
☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 17.9 " Longitude: 76 ° 26 ' 7.05 "

Depth to Water Level: 97.59 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: -1.37 ft Elevation of Water Level: 431.94 ft./MSL

Sampling Depth: 130 ft Volume of Water Column: 62.29 gal

Total Well Depth: 140 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: _____

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/22/2021 Sample Collection Time: 12:35

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ☐ Yes ☒ No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3208285004 Final Lab Analysis Completion Date: 11/5/2021

Name/Affiliation of Person who Filled Out Form: Daniel A. Brown

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP004W

Sample Date 10/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	27	SM18-2321
CALCIUM, TOTAL	19.5	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	45.8	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	67 ND	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	6.9	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	7.8	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	5.8	EPA 300.0
pH-FIELD (SU)	5.31	FIELD
pH-LAB (SU)	7.39	EPA 150.1
POTASSIUM, TOTAL	1.5	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	16	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	397	FIELD
SPEC. COND., LAB (umhos/cm)	292	EPA 120.1
SULFATE	5.9	EPA 300.0
ALKALINITY	27	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	166	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP004W

Sample Date 10/22/2021

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

November 30, 2021

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	CRESWELL	Workorder:	3207947
Purchase Order:	PO-1000246	Workorder ID:	4th QTR 2021 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, October 21, 2021.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

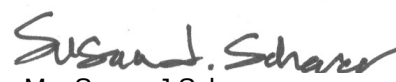
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Ashley Gichuki , Ms. Jordan Gallagher , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Ms. Susan J Scherer
Project Coordinator

ALS Environmental Laboratory Locations Across North America

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**SAMPLE SUMMARY**

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3207947001	CWMP018S	Ground Water	10/21/2021 10:00	10/21/2021 14:54	Mr. Brian G Shade
3207947002	CWMP017S	Ground Water	10/21/2021 10:25	10/21/2021 14:54	Mr. Brian G Shade
3207947003	CWMP010W	Ground Water	10/21/2021 11:21	10/21/2021 14:54	Mr. Brian G Shade
3207947004	CWMP009W	Ground Water	10/21/2021 11:55	10/21/2021 14:54	Mr. Brian G Shade
3207947005	CWMP008W	Ground Water	10/21/2021 12:54	10/21/2021 14:54	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

C	Please reference the Project Summary section of this Certificate of Analysis for case narrative comments.
J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ALS Environmental



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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: PJLA 74618
State Certifications: FL E871113 , WA C999 , MD 128 , VA 460157 , WV DW 9961-C , WV 343

PROJECT SUMMARY

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

Workorder Comments

Temperature of sample taken at time of sample receipt in the laboratory. See chain of custody for actual temperature.

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ANALYTICAL RESULTS

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207947001**
Sample ID: **CWMP018S**

Date Collected: 10/21/2021 10:00 Matrix: Ground Water
Date Received: 10/21/2021 14:54

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:02	PDK	G
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:02	PDK	G
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:02	PDK	G
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:02	PDK	G
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:02	PDK	G
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:02	PDK	G
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:02	PDK	G
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:02	PDK	G
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:02	PDK	G
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:02	PDK	G
Toluene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:02	PDK	G
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			10/23/21 02:02	PDK	G
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:02	PDK	G
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:02	PDK	G
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:02	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	96	C	%	62 - 133	SW846 8260B			10/23/21 02:02	PDK	G
4-Bromofluorobenzene (S)	93.9	C	%	79 - 114	SW846 8260B			10/23/21 02:02	PDK	G
Dibromofluoromethane (S)	90	C	%	78 - 116	SW846 8260B			10/23/21 02:02	PDK	G
Toluene-d8 (S)	93.4	C	%	76 - 127	SW846 8260B			10/23/21 02:02	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	315	C	mg/L	5	SM2320B-2011			11/2/31 23:58	MBS	B
Alkalinity, Total	369	C,5	mg/L	5	SM2320B-2011			11/2/31 23:58	MBS	I
Ammonia-N	1.12	C	mg/L	0.100	ASTM D6919-09			10/30/21 00:45	ALK	A
Chemical Oxygen Demand (COD)	19	C	mg/L	15	EPA 410.4			11/3/21 17:15	ALK	A
Chloride	533	C	mg/L	25.0	EPA 300.0			11/18/21 21:34	GJB	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			11/3/21 23:33	GJB	B
Nitrate-N	18.6	C	mg/L	0.20	EPA 300.0			11/3/21 23:33	GJB	B
pH	8.57	C,1	pH_Units		S4500HB-11			11/2/31 23:58	MBS	B
Phenolics	ND	C,3	mg/L	0.005	SW846 9066	10/27/21 11:04	MXF	11/3/21 09:10	MXF	F
Specific Conductance	2710	C	umhos/cm	10	SW846 9050A			11/1/21 14:45	MBS	B
Sulfate	45.7	C	mg/L	2.0	EPA 300.0			11/3/21 23:33	GJB	B
Total Dissolved Solids	1430	C	mg/L	25	S2540C-11			10/28/21 12:29	AKH	B
Total Organic Carbon (TOC)	6.0	C	mg/L	0.50	SW846 9060A			10/26/21 01:27	PAG	D
Turbidity	2.25	C,2	NTU	0.10	SM2130B-2011			11/15/21 12:59	BXD	B

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ANALYTICAL RESULTS

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207947001**
Sample ID: **CWMP018S**

Date Collected: 10/21/2021 10:00 Matrix: Ground Water
Date Received: 10/21/2021 14:54

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	73.8	C	mg/L	0.10	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:12	SRT	J
Iron, Total	0.19	C	mg/L	0.060	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:12	SRT	J
Magnesium, Total	67.9	C	mg/L	0.10	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:12	SRT	J
Manganese, Total	0.074	C	mg/L	0.0050	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:12	SRT	J
Potassium, Total	18.2	C	mg/L	0.50	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:12	SRT	J
Sodium, Total	321	C	mg/L	0.50	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:12	SRT	J
FIELD PARAMETERS										
Dissolved Oxygen	10.62	C	mg/L	0.01	Field			10/21/21 10:00	BGS	C
Oxidation-Reduction Potential	193	C	mV		Field			10/21/21 10:00	BGS	C
pH, Field (SM4500B)	8.40	C	pH_Units		Field			10/21/21 10:00	BGS	C
Specific Conductance, Field	3723	C	umhos/cm	1	Field			10/21/21 10:00	BGS	C
Temperature	15.12	C	Deg. C		Field			10/21/21 10:00	BGS	C
Turbidity, Field	ND	C	NTU	1	Field			10/21/21 10:00	BGS	C



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ANALYTICAL RESULTS

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207947002**
Sample ID: **CWMP017S**

Date Collected: 10/21/2021 10:25 Matrix: Ground Water
Date Received: 10/21/2021 14:54

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:24	PDK	G
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:24	PDK	G
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:24	PDK	G
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:24	PDK	G
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:24	PDK	G
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:24	PDK	G
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:24	PDK	G
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:24	PDK	G
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:24	PDK	G
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:24	PDK	G
Toluene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:24	PDK	G
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			10/23/21 02:24	PDK	G
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:24	PDK	G
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:24	PDK	G
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:24	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	97.3	C	%	62 - 133	SW846 8260B			10/23/21 02:24	PDK	G
4-Bromofluorobenzene (S)	94.7	C	%	79 - 114	SW846 8260B			10/23/21 02:24	PDK	G
Dibromofluoromethane (S)	89.6	C	%	78 - 116	SW846 8260B			10/23/21 02:24	PDK	G
Toluene-d8 (S)	93.8	C	%	76 - 127	SW846 8260B			10/23/21 02:24	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	47	C	mg/L	5	SM2320B-2011			11/3/21 23:51	MBS	B
Alkalinity, Total	48	C,5	mg/L	5	SM2320B-2011			11/3/21 23:51	MBS	I
Ammonia-N	ND	C,4	mg/L	0.250	ASTM D6919-09			11/13/21 05:13	ALK	A
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			11/3/21 17:15	ALK	A
Chloride	741	C	mg/L	25.0	EPA 300.0			11/18/21 21:50	GJB	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			11/3/21 23:49	GJB	B
Nitrate-N	30.3	C	mg/L	2.5	EPA 300.0			11/18/21 21:50	GJB	B
pH	8.42	C,1	pH_Units		S4500HB-11			11/2/21 23:58	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	10/27/21 11:04	MXF	11/3/21 09:10	MXF	F
Specific Conductance	3690	C	umhos/cm	10	SW846 9050A			11/1/21 14:45	MBS	B
Sulfate	59.2	C	mg/L	2.0	EPA 300.0			11/3/21 23:49	GJB	B
Total Dissolved Solids	1990	C	mg/L	25	S2540C-11			10/28/21 12:29	AKH	B
Total Organic Carbon (TOC)	3.7	C	mg/L	0.50	SW846 9060A			10/26/21 01:27	PAG	D
Turbidity	1.72	C,2	NTU	0.10	SM2130B-2011			11/15/21 12:59	BXD	B

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ANALYTICAL RESULTS

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207947002**
Sample ID: **CWMP017S**

Date Collected: 10/21/2021 10:25 Matrix: Ground Water
Date Received: 10/21/2021 14:54

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	84.8	C	mg/L	0.10	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:16	SRT	J
Iron, Total	0.41	C	mg/L	0.060	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:16	SRT	J
Magnesium, Total	91.2	C	mg/L	0.10	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:16	SRT	J
Manganese, Total	0.086	C	mg/L	0.0050	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:16	SRT	J
Potassium, Total	20.1	C	mg/L	0.50	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:16	SRT	J
Sodium, Total	465	C	mg/L	0.50	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:16	SRT	J
FIELD PARAMETERS										
Dissolved Oxygen	9.48	C	mg/L	0.01	Field			10/21/21 10:25	BGS	C
Oxidation-Reduction Potential	197	C	mV		Field			10/21/21 10:25	BGS	C
pH, Field (SM4500B)	7.81	C	pH_Units		Field			10/21/21 10:25	BGS	C
Specific Conductance, Field	5288	C	umhos/cm	1	Field			10/21/21 10:25	BGS	C
Temperature	19.45	C	Deg. C		Field			10/21/21 10:25	BGS	C
Turbidity, Field	ND	C	NTU	1	Field			10/21/21 10:25	BGS	C



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ANALYTICAL RESULTS

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207947003**
Sample ID: **CWMP010W**

Date Collected: 10/21/2021 11:21 Matrix: Ground Water
Date Received: 10/21/2021 14:54

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:47	PDK	G
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:47	PDK	G
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:47	PDK	G
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:47	PDK	G
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:47	PDK	G
cis-1,2-Dichloroethene	ND	C,4,5	ug/L	1.0	SW846 8260B			10/23/21 02:47	PDK	G
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:47	PDK	G
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:47	PDK	G
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:47	PDK	G
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:47	PDK	G
Toluene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:47	PDK	G
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			10/23/21 02:47	PDK	G
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:47	PDK	G
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 02:47	PDK	G
Vinyl Chloride	ND	C,3	ug/L	1.0	SW846 8260B			10/23/21 02:47	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	96.2	C	%	62 - 133	SW846 8260B			10/23/21 02:47	PDK	G
4-Bromofluorobenzene (S)	91.8	C	%	79 - 114	SW846 8260B			10/23/21 02:47	PDK	G
Dibromofluoromethane (S)	88.4	C	%	78 - 116	SW846 8260B			10/23/21 02:47	PDK	G
Toluene-d8 (S)	92.5	C	%	76 - 127	SW846 8260B			10/23/21 02:47	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	216	C	mg/L	5	SM2320B-2011			11/2/31 23:58	MBS	B
Alkalinity, Total	216	C,7	mg/L	5	SM2320B-2011			11/2/31 23:58	MBS	I
Ammonia-N	0.639	C	mg/L	0.100	ASTM D6919-09			10/29/21 22:53	ALK	A
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			11/3/21 17:15	ALK	A
Chloride	335	C	mg/L	25.0	EPA 300.0			11/18/21 22:07	GJB	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			11/4/21 00:05	GJB	B
Nitrate-N	8.0	C	mg/L	0.20	EPA 300.0			11/4/21 00:05	GJB	B
pH	8.25	C,1	pH_Units		S4500HB-11			11/2/31 23:58	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	10/27/21 11:04	MXF	11/3/21 09:10	MXF	F
Specific Conductance	1530	C	umhos/cm	1	SW846 9050A			11/1/21 14:45	MBS	B
Sulfate	32.6	C	mg/L	2.0	EPA 300.0			11/4/21 00:05	GJB	B
Total Dissolved Solids	870	C	mg/L	25	S2540C-11			10/28/21 12:29	AKH	B
Total Organic Carbon (TOC)	3.3	C	mg/L	0.50	SW846 9060A			10/26/21 01:27	PAG	D

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ANALYTICAL RESULTS

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207947003**
Sample ID: **CWMP010W**

Date Collected: 10/21/2021 11:21 Matrix: Ground Water
Date Received: 10/21/2021 14:54

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Turbidity	2.92	C,2	NTU	0.10	SM2130B-2011			11/15/21 12:59	BXD	B
METALS										
Calcium, Total	43.4	C	mg/L	0.10	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:20	SRT	J
Iron, Total	0.090	C	mg/L	0.060	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:20	SRT	J
Magnesium, Total	41.2	C	mg/L	0.10	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:20	SRT	J
Manganese, Total	0.078	C	mg/L	0.0050	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:20	SRT	J
Potassium, Total	9.9	C	mg/L	0.50	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:20	SRT	J
Sodium, Total	177	C	mg/L	0.50	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:20	SRT	J
FIELD PARAMETERS										
Depth to Water Level	8.74	C	Feet		Field			10/21/21 11:21	BGS	C
Dissolved Oxygen	3.78	C	mg/L	0.01	Field			10/21/21 11:21	BGS	C
Elev Top MW Casing above MSL	360.90	C	Feet		Field			10/21/21 11:21	BGS	C
Flow Rate	1.17	C	gal/min		Field			10/21/21 11:21	BGS	C
Ground Water Elevation	352.16	C	ft/MSL		Field			10/21/21 11:21	BGS	C
Oxidation-Reduction Potential	49	C	mV		Field			10/21/21 11:21	BGS	C
pH, Field (SM4500B)	6.58	C	pH_Units		Field			10/21/21 11:21	BGS	C
Sample Depth	17.00	C	Feet		Field			10/21/21 11:21	BGS	C
Specific Conductance, Field	2359	C	umhos/cm	1	Field			10/21/21 11:21	BGS	C
Temperature	16.77	C	Deg. C		Field			10/21/21 11:21	BGS	C
Total Well Depth	19.60	C	Feet		Field			10/21/21 11:21	BGS	C
Turbidity, Field	2	C	NTU	1	Field			10/21/21 11:21	BGS	C
Volume in Water Column	7.06	C	Gallons		Field			10/21/21 11:21	BGS	C
Water Level After Purge	16.13	C	Feet		Field			10/21/21 11:21	BGS	C
Well Volumes Purged	1.66	C	Vol		Field			10/21/21 11:21	BGS	C


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ANALYTICAL RESULTS

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207947004**
Sample ID: **CWMP009W**

Date Collected: 10/21/2021 11:55 Matrix: Ground Water
Date Received: 10/21/2021 14:54

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	2.7	C	ug/L	1.0	SW846 8260B			10/23/21 03:09	PDK	G
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:09	PDK	G
1,1-Dichloroethane	1.4	C	ug/L	1.0	SW846 8260B			10/23/21 03:09	PDK	G
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:09	PDK	G
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:09	PDK	G
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:09	PDK	G
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:09	PDK	G
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:09	PDK	G
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:09	PDK	G
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:09	PDK	G
Toluene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:09	PDK	G
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			10/23/21 03:09	PDK	G
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:09	PDK	G
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:09	PDK	G
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:09	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	95.3	C	%	62 - 133	SW846 8260B			10/23/21 03:09	PDK	G
4-Bromofluorobenzene (S)	93.2	C	%	79 - 114	SW846 8260B			10/23/21 03:09	PDK	G
Dibromofluoromethane (S)	89.1	C	%	78 - 116	SW846 8260B			10/23/21 03:09	PDK	G
Toluene-d8 (S)	91.5	C	%	76 - 127	SW846 8260B			10/23/21 03:09	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	53	C	mg/L	5	SM2320B-2011			11/3/21 23:51	MBS	B
Alkalinity, Total	53	C,4	mg/L	5	SM2320B-2011			11/3/21 23:51	MBS	I
Ammonia-N	22.5	C	mg/L	0.100	ASTM D6919-09			10/30/21 01:27	ALK	A
Chemical Oxygen Demand (COD)	112	C	mg/L	15	EPA 410.4			11/3/21 17:15	ALK	A
Chloride	540	C	mg/L	25.0	EPA 300.0			11/18/21 22:23	GJB	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			11/4/21 00:21	GJB	B
Nitrate-N	ND	C	mg/L	0.20	EPA 300.0			11/4/21 00:21	GJB	B
pH	7.79	C,1	pH_Units		S4500HB-11			11/2/21 23:58	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	10/27/21 11:04	MXF	11/3/21 09:10	MXF	F
Specific Conductance	2650	C	umhos/cm	10	SW846 9050A			11/1/21 14:45	MBS	B
Sulfate	5.8	C	mg/L	2.0	EPA 300.0			11/4/21 00:21	GJB	B
Total Dissolved Solids	1520	C	mg/L	25	S2540C-11			10/28/21 12:29	AKH	B
Total Organic Carbon (TOC)	30.9	C	mg/L	5.0	SW846 9060A			10/26/21 01:27	PAG	D
Turbidity	289	C,2	NTU	0.10	SM2130B-2011			11/15/21 12:59	BXD	B

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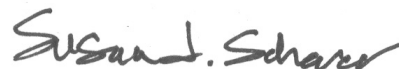
ANALYTICAL RESULTS

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207947004**
Sample ID: **CWMP009W**

Date Collected: 10/21/2021 11:55 Matrix: Ground Water
Date Received: 10/21/2021 14:54

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	155	C	mg/L	0.10	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:23	SRT	J
Iron, Total	34.0	C	mg/L	0.060	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:23	SRT	J
Magnesium, Total	78.5	C	mg/L	0.10	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:23	SRT	J
Manganese, Total	11.9	C	mg/L	0.0050	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:23	SRT	J
Potassium, Total	34.1	C	mg/L	0.50	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:23	SRT	J
Sodium, Total	174	C	mg/L	0.50	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:23	SRT	J
FIELD PARAMETERS										
Depth to Water Level	9.22	C	Feet		Field			10/21/21 11:55	BGS	C
Dissolved Oxygen	0.02	C	mg/L	0.01	Field			10/21/21 11:55	BGS	C
Elev Top MW Casing above MSL	404.20	C	Feet		Field			10/21/21 11:55	BGS	C
Flow Rate	1.97	C	gal/min		Field			10/21/21 11:55	BGS	C
Ground Water Elevation	394.98	C	ft/MSL		Field			10/21/21 11:55	BGS	C
Oxidation-Reduction Potential	-40	C	mV		Field			10/21/21 11:55	BGS	C
pH, Field (SM4500B)	5.99	C	pH_Units		Field			10/21/21 11:55	BGS	C
Sample Depth	16.00	C	Feet		Field			10/21/21 11:55	BGS	C
Specific Conductance, Field	4100	C	umhos/cm	1	Field			10/21/21 11:55	BGS	C
Temperature	15.74	C	Deg. C		Field			10/21/21 11:55	BGS	C
Total Well Depth	19.70	C	Feet		Field			10/21/21 11:55	BGS	C
Turbidity, Field	ND	C	NTU	1	Field			10/21/21 11:55	BGS	C
Volume in Water Column	6.81	C	Gallons		Field			10/21/21 11:55	BGS	C
Water Level After Purge	11.13	C	Feet		Field			10/21/21 11:55	BGS	C
Well Volumes Purged	5.80	C	Vol		Field			10/21/21 11:55	BGS	C


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ANALYTICAL RESULTS

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207947005**
Sample ID: **CWMP008W**

Date Collected: 10/21/2021 12:54 Matrix: Ground Water
Date Received: 10/21/2021 14:54

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	1.1	C	ug/L	1.0	SW846 8260B			10/23/21 03:32	PDK	G
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:32	PDK	G
1,1-Dichloroethane	2.6	C	ug/L	1.0	SW846 8260B			10/23/21 03:32	PDK	G
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:32	PDK	G
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:32	PDK	G
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:32	PDK	G
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:32	PDK	G
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:32	PDK	G
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:32	PDK	G
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:32	PDK	G
Toluene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:32	PDK	G
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			10/23/21 03:32	PDK	G
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:32	PDK	G
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:32	PDK	G
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			10/23/21 03:32	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	94.7	C	%	62 - 133	SW846 8260B			10/23/21 03:32	PDK	G
4-Bromofluorobenzene (S)	93.8	C	%	79 - 114	SW846 8260B			10/23/21 03:32	PDK	G
Dibromofluoromethane (S)	87.9	C	%	78 - 116	SW846 8260B			10/23/21 03:32	PDK	G
Toluene-d8 (S)	91.7	C	%	76 - 127	SW846 8260B			10/23/21 03:32	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	364	C	mg/L	5	SM2320B-2011			11/2/31 23:58	MBS	B
Alkalinity, Total	364	C,4	mg/L	5	SM2320B-2011			11/2/31 23:58	MBS	I
Ammonia-N	5.14	C	mg/L	0.100	ASTM D6919-09			10/30/21 01:41	ALK	A
Chemical Oxygen Demand (COD)	25	C	mg/L	15	EPA 410.4			11/3/21 16:20	ALK	A
Chloride	40.0	C	mg/L	2.0	EPA 300.0			11/4/21 00:38	GJB	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			11/4/21 00:38	GJB	B
Nitrate-N	ND	C	mg/L	0.20	EPA 300.0			11/4/21 00:38	GJB	B
pH	8.03	C,1	pH_Units		S4500HB-11			11/2/31 23:58	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	10/27/21 11:04	MXF	11/3/21 09:10	MXF	F
Specific Conductance	878	C	umhos/cm	1	SW846 9050A			11/1/21 14:45	MBS	B
Sulfate	6.4	C	mg/L	2.0	EPA 300.0			11/4/21 00:38	GJB	B
Total Dissolved Solids	478	C	mg/L	25	S2540C-11			10/28/21 12:29	AKH	B
Total Organic Carbon (TOC)	5.9	C	mg/L	2.5	SW846 9060A			10/26/21 01:27	PAG	D
Turbidity	187	C,2	NTU	0.10	SM2130B-2011			11/15/21 12:59	BXD	B

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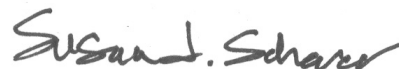
ANALYTICAL RESULTS

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207947005**
Sample ID: **CWMP008W**

Date Collected: 10/21/2021 12:54 Matrix: Ground Water
Date Received: 10/21/2021 14:54

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	60.1	C	mg/L	0.10	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:27	SRT	J
Iron, Total	23.1	C	mg/L	0.060	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:27	SRT	J
Magnesium, Total	28.4	C	mg/L	0.10	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:27	SRT	J
Manganese, Total	14.1	C	mg/L	0.0050	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:27	SRT	J
Potassium, Total	8.3	C	mg/L	0.50	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:27	SRT	J
Sodium, Total	36.7	C	mg/L	0.50	SW846 6010C	10/22/21 21:39	JSE	10/26/21 14:27	SRT	J
FIELD PARAMETERS										
Depth to Water Level	3.35	C	Feet		Field			10/21/21 12:54	BGS	C
Dissolved Oxygen	0.06	C	mg/L	0.01	Field			10/21/21 12:54	BGS	C
Elev Top MW Casing above MSL	422.30	C	Feet		Field			10/21/21 12:54	BGS	C
Flow Rate	0.80	C	gal/min		Field			10/21/21 12:54	BGS	C
Ground Water Elevation	418.95	C	ft/MSL		Field			10/21/21 12:54	BGS	C
Oxidation-Reduction Potential	-27	C	mV		Field			10/21/21 12:54	BGS	C
pH, Field (SM4500B)	6.11	C	pH_Units		Field			10/21/21 12:54	BGS	C
Sample Depth	19.00	C	Feet		Field			10/21/21 12:54	BGS	C
Specific Conductance, Field	1256	C	umhos/cm	1	Field			10/21/21 12:54	BGS	C
Temperature	16.37	C	Deg. C		Field			10/21/21 12:54	BGS	C
Total Well Depth	22.80	C	Feet		Field			10/21/21 12:54	BGS	C
Turbidity, Field	ND	C	NTU	1	Field			10/21/21 12:54	BGS	C
Volume in Water Column	3.11	C	Gallons		Field			10/21/21 12:54	BGS	C
Water Level After Purge	9.51	C	Feet		Field			10/21/21 12:54	BGS	C
Well Volumes Purged	5.14	C	Vol		Field			10/21/21 12:54	BGS	C


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ANALYTICAL RESULTS

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3207947001	1	CWMP018S	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3207947001	2	CWMP018S	SM2130B-2011	Turbidity
This sample was analyzed after the 48 hour holding time for Turbidity as required by the method.				
3207947001	3	CWMP018S	SW846 9066	Phenolics
The QC sample type MSD for method 420.4/9066 was outside the control limits for the analyte Phenolics. The % Recovery was reported as 111 and the control limits were 90 to 110.				
3207947001	5	CWMP018S	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3207947002	1	CWMP017S	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3207947002	2	CWMP017S	SM2130B-2011	Turbidity
This sample was analyzed after the 48 hour holding time for Turbidity as required by the method.				
3207947002	4	CWMP017S	ASTM D6919-09	Ammonia-N
Due to sample matrix interferences, this analyte was analyzed at a dilution and the detection levels adjusted accordingly.				
3207947002	5	CWMP017S	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3207947003	1	CWMP010W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3207947003	2	CWMP010W	SM2130B-2011	Turbidity
This sample was analyzed after the 48 hour holding time for Turbidity as required by the method.				
3207947003	3	CWMP010W	SW846 8260B	Vinyl Chloride
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Vinyl Chloride. The % Recovery was reported as 144 and the control limits were 27 to 138.				
3207947003	4	CWMP010W	SW846 8260B	cis-1,2-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte cis-1,2-Dichloroethene. The % Recovery was reported as 150 and the control limits were 78 to 125.				
3207947003	5	CWMP010W	SW846 8260B	cis-1,2-Dichloroethene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte cis-1,2-Dichloroethene. The % Recovery was reported as 136 and the control limits were 78 to 125.				
3207947003	7	CWMP010W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3207947004	1	CWMP009W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3207947004	2	CWMP009W	SM2130B-2011	Turbidity
This sample was analyzed after the 48 hour holding time for Turbidity as required by the method.				
3207947004	4	CWMP009W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				

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**ANALYTICAL RESULTS**

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

3207947005	1	CWMP008W	S4500HB-11	pH
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The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.

3207947005	2	CWMP008W	SM2130B-2011	Turbidity
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This sample was analyzed after the 48 hour holding time for Turbidity as required by the method.

3207947005	4	CWMP008W	SM2320B-2011	Alkalinity, Total
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The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO₃/L.

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method	Leachate Method
3207947001	CWMP018S	ASTM D6919-09		
3207947001	CWMP018S	EPA 300.0		
3207947001	CWMP018S	EPA 410.4		
3207947001	CWMP018S	Field		
3207947001	CWMP018S	S2540C-11		
3207947001	CWMP018S	S4500HB-11		
3207947001	CWMP018S	SM2130B-2011		
3207947001	CWMP018S	SM2320B-2011		
3207947001	CWMP018S	SW846 6010C	SW846 3015	
3207947001	CWMP018S	SW846 8260B		
3207947001	CWMP018S	SW846 9050A		
3207947001	CWMP018S	SW846 9060A		
3207947001	CWMP018S	SW846 9066	420.4/9066	
3207947002	CWMP017S	ASTM D6919-09		
3207947002	CWMP017S	EPA 300.0		
3207947002	CWMP017S	EPA 410.4		
3207947002	CWMP017S	Field		
3207947002	CWMP017S	S2540C-11		
3207947002	CWMP017S	S4500HB-11		
3207947002	CWMP017S	SM2130B-2011		
3207947002	CWMP017S	SM2320B-2011		
3207947002	CWMP017S	SW846 6010C	SW846 3015	
3207947002	CWMP017S	SW846 8260B		
3207947002	CWMP017S	SW846 9050A		
3207947002	CWMP017S	SW846 9060A		
3207947002	CWMP017S	SW846 9066	420.4/9066	
3207947003	CWMP010W	ASTM D6919-09		
3207947003	CWMP010W	EPA 300.0		
3207947003	CWMP010W	EPA 410.4		
3207947003	CWMP010W	Field		
3207947003	CWMP010W	S2540C-11		
3207947003	CWMP010W	S4500HB-11		
3207947003	CWMP010W	SM2130B-2011		
3207947003	CWMP010W	SM2320B-2011		
3207947003	CWMP010W	SW846 6010C	SW846 3015	
3207947003	CWMP010W	SW846 8260B		
3207947003	CWMP010W	SW846 9050A		
3207947003	CWMP010W	SW846 9060A		
3207947003	CWMP010W	SW846 9066	420.4/9066	
3207947004	CWMP009W	ASTM D6919-09		
3207947004	CWMP009W	EPA 300.0		
3207947004	CWMP009W	EPA 410.4		
3207947004	CWMP009W	Field		
3207947004	CWMP009W	S2540C-11		
3207947004	CWMP009W	S4500HB-11		
3207947004	CWMP009W	SM2130B-2011		

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3207947 4th QTR 2021 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method	Leachate Method
3207947004	CWMP009W	SM2320B-2011		
3207947004	CWMP009W	SW846 6010C	SW846 3015	
3207947004	CWMP009W	SW846 8260B		
3207947004	CWMP009W	SW846 9050A		
3207947004	CWMP009W	SW846 9060A		
3207947004	CWMP009W	SW846 9066	420.4/9066	
3207947005	CWMP008W	ASTM D6919-09		
3207947005	CWMP008W	EPA 300.0		
3207947005	CWMP008W	EPA 410.4		
3207947005	CWMP008W	Field		
3207947005	CWMP008W	S2540C-11		
3207947005	CWMP008W	S4500HB-11		
3207947005	CWMP008W	SM2130B-2011		
3207947005	CWMP008W	SM2320B-2011		
3207947005	CWMP008W	SW846 6010C	SW846 3015	
3207947005	CWMP008W	SW846 8260B		
3207947005	CWMP008W	SW846 9050A		
3207947005	CWMP008W	SW846 9060A		
3207947005	CWMP008W	SW846 9066	420.4/9066	

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT /
SAMPLER. INSTRUCTIONS ON THE BACK.

Client Name: Lancaster County Solid Waste MA

Address: 1299 Harrisburg Pike, P.O. Box 4424
Lancaster, PA 17604

Contact: Dan Brown

Phone#: (717) 735-0193

Project Name#: Creswell/GWMP Form 19Q Wells

Bill To: Lancaster County Solid Waste MA

TAT ☒ Normal-Standard TAT is 10-12 business days.
☐ Rush-Subject to ALS approval and surcharges.

Date Required: _____ Approved By: _____

Email? ☒ -Y mreider@LCSWMA.com

Fax? ☒ -Y No: (717) 397-9973

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time
1. CWMP018S	10/21/21	1000
2. CWMP017S	10/21/21	1025
3. CWMP010W	10/21/21	1121
4. CWMP009W	10/21/21	1155
5. CWMP008W	10/21/21	1254
6		
7		
8		
9		
10		

Project Comments:

LOGGED BY (signature): _____

REVIEWED BY (signature): _____

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1. <i>Bob Nadeau</i> ALS	10/21/21	1454	<i>Shirley</i>	10/21/21	1454
3					
5					
7					
9					

Container Type	AG	AN	CG	PL	PL	PL	PL	PL
40 ml	40 ml	125 ml	40 ml	—	—	250 ml	125 ml	500 ml
Preservative	HCl	H2SO4	HCl	—	—	H2SO4	HNO3	None

ANALYSES/METHOD REQUESTED

Field Measurements	8260 VOCs - Form 19Q	Sample Depth for AUX Data	NH3-N, COD	Total Metals: Ca, Fe, Mn, Mg, K, Na	pH, NO3, Cl, F, SPC, SO4, Turb.	Alkalinity, HCO3
TOC	2	1	2	1	1	1
O-H	2	1	2	1	1	1
G or C	2	1	2	1	1	1
G	2	1	2	1	1	1
GW	2	1	2	1	1	1
GW	2	1	2	1	1	1
GW	2	1	2	1	1	1
GW	2	1	2	1	1	1
GW	2	1	2	1	1	1

Enter Number of Containers Per Sample or Field Results Below.

ALS Field Services:	Composite_Sampling	Pickup	Labor	Rental_Equipment	Other:
☐	☐	☐	☐	☐	☐

Cooler Temp:	Therm ID:
6	575

No. of Coolers:	Y	N	Initial

Custody Seals Present?	(if present) Seals Intact?	Received on Ice?	COC/Labels Complete/Accurate?	Cont. in Good Cond?	Correct Containers?	Correct Sample Volumes?	Correct Preservation?	HeadSpace/Volatiles?

Courier/Tracking #:	Sample/COC Comments

ALS Field Services:	Composite_Sampling	Pickup	Labor	Rental_Equipment	Other:
☐	☐	☐	☐	☐	☐

Standard	CLP-like	USACE	State Samples Collected In
☐	☐	☐	☐ NY ☐ NJ ☐ PA ☐ NC

Special Processing	USACE	Navy	Sample Disposal
☐	☐	☐	☐ Lab ☐ Special

Reportable to PADEP?	Yes	No	PWSID #	EDDS: Formal Type
☐	☐	☐		

Deliverables	Standard	CLP-like	USACE	State Samples Collected In
☐	☐	☐	☐	☐ NY ☐ NJ ☐ PA ☐ NC

ALS Field Services:	Composite_Sampling	Pickup	Labor	Rental_Equipment	Other:
☐	☐	☐	☐	☐	☐

Cooler Temp:	Therm ID:
6	575

No. of Coolers:	Y	N	Initial

Custody Seals Present?	(if present) Seals Intact?	Received on Ice?	COC/Labels Complete/Accurate?	Cont. in Good Cond?	Correct Containers?	Correct Sample Volumes?	Correct Preservation?	HeadSpace/Volatiles?

Courier/Tracking #:	Sample/COC Comments

ALS Field Services:	Composite_Sampling	Pickup	Labor	Rental_Equipment	Other:
☐	☐	☐	☐	☐	☐

Standard	CLP-like	USACE	State Samples Collected In
☐	☐	☐	☐ NY ☐ NJ ☐ PA ☐ NC

Special Processing	USACE	Navy	Sample Disposal
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☐	☐	☐	☐	☐	☐

Cooler Temp:	Therm ID:
6	575

No. of Coolers:	Y	N	Initial

Custody Seals Present?	(if present) Seals Intact?	Received on Ice?	COC/Labels Complete/Accurate?	Cont. in Good Cond?	Correct Containers?	Correct Sample Volumes?	Correct Preservation?	HeadSpace/Volatiles?

Courier/Tracking #:	Sample/COC Comments

ALS Field Services:	Composite_Sampling	Pickup	Labor	Rental_Equipment	Other:
☐	☐	☐	☐	☐	☐

Standard	CLP-like	USACE	State Samples Collected In
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☐	☐	☐	☐ Lab ☐ Special

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☐	☐	☐		

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☐	☐	☐	☐	☐ NY ☐ NJ ☐ PA ☐ NC

ALS Field Services:	Composite_Sampling	Pickup	Labor	Rental_Equipment	Other:
☐	☐	☐	☐	☐	☐

Cooler Temp:	Therm ID:
6	575

No. of Coolers:	Y	N	Initial

Custody Seals Present?	(if present) Seals Intact?	Received on Ice?	COC/Labels Complete/Accurate?	Cont. in Good Cond?	Correct Containers?	Correct Sample Volumes?	Correct Preservation?	HeadSpace/Volatiles?

Courier/Tracking #:	Sample/COC Comments

ALS Field Services:	Composite_Sampling	Pickup	Labor	Rental_Equipment	Other:
☐	☐	☐	☐	☐	☐

Standard	CLP-like	USACE	State Samples Collected In
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Special Processing	USACE	Navy	Sample Disposal
☐	☐	☐	☐ Lab ☐ Special

Reportable to PADEP?	Yes	No	PWSID #	EDDS: Formal Type
☐	☐	☐		

Deliverables	Standard	CLP-like	USACE	State Samples Collected In
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ALS Field Services:	Composite_Sampling	Pickup	Labor	Rental_Equipment	Other:
☐	☐	☐	☐	☐	☐

Cooler Temp:	Therm ID:
6	575

No. of Coolers:	Y	N	Initial

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☐	☐	☐	☐	☐	☐

Standard	CLP-like	USACE	State Samples Collected In
☐	☐	☐	☐ NY ☐ NJ ☐ PA ☐ NC

Special Processing	USACE	Navy	Sample Disposal
☐	☐	☐	☐ Lab ☐ Special

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☐	☐	☐		

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☐	☐	☐	☐	☐ NY ☐ NJ ☐ PA ☐ NC

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☐	☐	☐	☐	☐	☐

Cooler Temp:	Therm ID:
6	575

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Custody Seals Present?	(if present) Seals Intact?	Received on Ice?	COC/Labels Complete/Accurate?	Cont. in Good Cond?	Correct Containers?	Correct Sample Volumes?	Correct Preservation?	HeadSpace/Volatiles?

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☐	☐	☐	☐	☐	☐

Cooler Temp:	Therm ID:
6	575

No. of Coolers:	Y	N	Initial

Custody Seals Present?	(if present) Seals Intact?	Received on Ice?	COC/Labels Complete/Accurate?	Cont. in Good Cond?	Correct Containers?	Correct Sample Volumes?	Correct Preservation?	HeadSpace/Volatiles?

Courier/Tracking #:	Sample/COC Comments

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☐	☐	☐	☐	☐	☐

Standard	CLP-like	USACE	State Samples Collected In
☐	☐	☐	☐ NY ☐ NJ ☐ PA ☐ NC

Special Processing	USACE	Navy	Sample Disposal
☐	☐	☐	☐ Lab ☐ Special

Reportable to PADEP?	Yes	No	PWSID #	EDDS: Formal Type
☐	☐	☐		

Deliverables	Standard	CLP-like	USACE	State Samples Collected In
☐	☐	☐	☐	☐ NY ☐ NJ ☐ PA ☐ NC

ALS Field Services:	Composite_Sampling	Pickup	Labor	Rental_Equipment	Other:
☐	☐	☐	☐	☐	☐

Cooler Temp:	Therm ID:
6	575

No. of Coolers:	Y	N	Initial

Custody Seals Present?	(if present) Seals Intact?	Received on Ice?	COC/Labels Complete/Accurate?	Cont. in Good Cond?	Correct Containers?	Correct Sample Volumes?	Correct Preservation?	HeadSpace/Volatiles?

Courier/Tracking #:	Sample/COC Comments

ALS Field Services:	Composite_Sampling	Pickup	Labor	Rental_Equipment	Other:
☐	☐	☐	☐	☐	☐

Standard	CLP-like	USACE	State Samples Collected In
☐	☐	☐	☐ NY ☐ NJ ☐ PA ☐ NC

Special Processing	USACE	Navy	Sample Disposal
☐	☐	☐	☐ Lab ☐ Special



301 Fulling Mill Road
Middletown, PA 17057

P: (717) 944-55

F: (717) 944-143

3207947

dition of Sample Receipt Form

Client:

Lancaster County Solid Waste
Authority

Initials:

LCB

Date:

10.22.21

1. Were airbills / tracking numbers present and recorded?.....	NONE	YES	NO
Tracking number: _____			
2. Are Custody Seals on shipping containers intact?.....	NONE	YES	NO
3. Are Custody Seals on sample containers intact?.....	NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present?.....		YES	NO
5. Are the COC and bottle labels complete, legible and in agreement?.....		YES	NO
5a. Does the COC contain sample locations?.....		YES	NO
5b. Does the COC contain date and time of sample collection for all samples?.....		YES	NO
5c. Does the COC contain sample collectors name?.....		YES	NO
5d. Does the COC note the type(s) of preservation for all bottles?.....		YES	NO
5e. Does the COC note the number of bottles submitted for each sample?.....		YES	NO
5f. Does the COC note the type of sample, composite or grab?.....		YES	NO
5g. Does the COC note the matrix of the sample(s)?.....		YES	NO
6. Are all aqueous samples requiring preservation preserved correctly? ¹	N/A	YES	NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?.....		YES	NO
8. Are all samples within holding times for the requested analyses?.....		YES	NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.).....		YES	NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?.....	N/A	YES	NO
11. Were the samples received on ice?.....		YES	NO
12. Were sample temperatures measured at 0.0-6.0°C.....		YES	NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below.....		YES	NO
13a. Are the samples required for SDWA compliance reporting?.....	N/A	YES	NO
13b. Did the client provide a SDWA PWS ID#?.....	N/A	YES	NO
13c. Are all aqueous unpreserved SDWA samples pH 5-9?.....	N/A	YES	NO
13d. Did the client provide the SDWA sample location ID/Description?.....	N/A	YES	NO
13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?.....	N/A	YES	NO

Cooler #: _____

Temperature (°C): 6

Thermometer ID: 575

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

¹Final determination of correct preservation for analysis such as volatiles, microbiology, and oil and grease is made in the analytical department at the time of or following the analysis

December 7, 2021

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	CRESWELL	Workorder:	3208285
Purchase Order:	PO-1000246	Workorder ID:	4th QTR 2021 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Friday, October 22, 2021.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

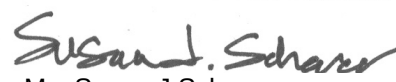
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Ashley Gichuki , Ms. Jordan Gallagher , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Ms. Susan J Scherer
Project Coordinator

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**SAMPLE SUMMARY**

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3208285001	CWMP012W	Ground Water	10/22/2021 11:05	10/22/2021 15:18	Mr. Brian G Shade
3208285002	CWMP002W	Ground Water	10/22/2021 12:05	10/22/2021 15:18	Mr. Brian G Shade
3208285003	CWMP003W	Ground Water	10/22/2021 12:20	10/22/2021 15:18	Mr. Brian G Shade
3208285004	CWMP004W	Ground Water	10/22/2021 12:35	10/22/2021 15:18	Mr. Brian G Shade
3208285005	Field Blank	Water	10/22/2021 13:49	10/22/2021 15:18	Mr. Brian G Shade
3208285006	Trip Blank	Water	10/22/2021 15:18	10/22/2021 15:18	Mr. Brian G Shade

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Vancouver Waterloo · Winnipeg · Yellowknife **United States:** Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York **Mexico:** Monterrey

SAMPLE SUMMARY

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

C	Please reference the Project Summary section of this Certificate of Analysis for case narrative comments.
J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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PROJECT SUMMARY

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Workorder Comments

Temperature of sample taken at time of sample receipt in the laboratory. See chain of custody for actual temperature.

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ANALYTICAL RESULTS

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3208285001**
Sample ID: **CWMP012W**

Date Collected: 10/22/2021 11:05 Matrix: Ground Water
Date Received: 10/22/2021 15:18

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:58	PDK	G
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:58	PDK	G
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:58	PDK	G
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:58	PDK	G
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:58	PDK	G
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:58	PDK	G
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:58	PDK	G
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:58	PDK	G
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:58	PDK	G
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:58	PDK	G
Toluene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:58	PDK	G
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			10/26/21 06:58	PDK	G
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:58	PDK	G
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:58	PDK	G
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:58	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	90.8	C	%	62 - 133	SW846 8260B			10/26/21 06:58	PDK	G
4-Bromofluorobenzene (S)	96.1	C	%	79 - 114	SW846 8260B			10/26/21 06:58	PDK	G
Dibromofluoromethane (S)	89.3	C	%	78 - 116	SW846 8260B			10/26/21 06:58	PDK	G
Toluene-d8 (S)	89.1	C	%	76 - 127	SW846 8260B			10/26/21 06:58	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	73	C	mg/L	5	SM2320B-2011			11/3/21 23:51	MBS	B
Alkalinity, Total	73	C,3	mg/L	5	SM2320B-2011			11/3/21 23:51	MBS	I
Ammonia-N	ND	C	mg/L	0.100	ASTM D6919-09			10/29/21 13:20	ALK	A
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			11/3/21 16:20	ALK	A
Chloride	34.2	C	mg/L	2.0	EPA 300.0			11/5/21 16:01	GJB	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			11/5/21 16:01	GJB	B
Nitrate-N	8.3	C,4	mg/L	0.20	EPA 300.0			11/5/21 16:01	GJB	B
pH	7.68	C,1	pH_Units		S4500HB-11			11/3/21 23:51	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	11/2/21 12:07	MXF	11/3/21 09:10	MXF	F
Specific Conductance	341	C	umhos/cm	1	SW846 9050A			11/1/21 14:45	MBS	B
Sulfate	5.3	C	mg/L	2.0	EPA 300.0			11/5/21 16:01	GJB	B
Total Dissolved Solids	176	C	mg/L	25	S2540C-11			10/28/21 13:10	AKH	B
Total Organic Carbon (TOC)	1.3	C	mg/L	0.50	SW846 9060A			10/28/21 15:30	PAG	D
Turbidity	232	C	NTU	0.10	SM2130B-2011			10/23/21 07:54	LXZ	B

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ANALYTICAL RESULTS

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3208285001**
Sample ID: **CWMP012W**

Date Collected: 10/22/2021 11:05 Matrix: Ground Water
Date Received: 10/22/2021 15:18

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	31.9	C	mg/L	0.11	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:30	SRT	J1
Iron, Total	81.1	C	mg/L	0.067	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:30	SRT	J1
Magnesium, Total	9.2	C	mg/L	0.11	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:30	SRT	J1
Manganese, Total	0.39	C	mg/L	0.0056	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:30	SRT	J1
Potassium, Total	1.6	C	mg/L	0.56	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:30	SRT	J1
Sodium, Total	14.1	C	mg/L	0.56	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:30	SRT	J1
FIELD PARAMETERS										
Dissolved Oxygen	3.73	C	mg/L	0.01	Field			10/21/21 11:05	BGS	C
Oxidation-Reduction Potential	181	C	mV		Field			10/21/21 11:05	BGS	C
pH, Field (SM4500B)	5.66	C	pH_Units		Field			10/21/21 11:05	BGS	C
Specific Conductance, Field	476	C	umhos/cm	1	Field			10/21/21 11:05	BGS	C
Temperature	13.57	C	Deg. C		Field			10/21/21 11:05	BGS	C
Turbidity, Field	218	C	NTU	1	Field			10/21/21 11:05	BGS	C



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3208285002**
Sample ID: **CWMP002W**

Date Collected: 10/22/2021 12:05 Matrix: Ground Water
Date Received: 10/22/2021 15:18

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Bromoform	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Chloroethane	14.4	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Chloroform	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
1,1-Dichloroethane	9.0	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
1,3-Dichloropropene, Total	ND	C	ug/L	2.0	SW846 8260B			10/26/21 05:50	PDK	G
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Styrene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Toluene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			10/26/21 05:50	PDK	G
1,2,4-Trichlorobenzene	ND	C	ug/L	2.0	SW846 8260B			10/26/21 05:50	PDK	G
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			10/26/21 05:50	PDK	G
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 05:50	PDK	G
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr

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ANALYTICAL RESULTS

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3208285002**
Sample ID: **CWMP002W**

Date Collected: 10/22/2021 12:05 Matrix: Ground Water
Date Received: 10/22/2021 15:18

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	91.6	C	%	62 - 133	SW846 8260B			10/26/21 05:50	PDK	G
4-Bromofluorobenzene (S)	93.8	C	%	79 - 114	SW846 8260B			10/26/21 05:50	PDK	G
Dibromofluoromethane (S)	90.6	C	%	78 - 116	SW846 8260B			10/26/21 05:50	PDK	G
Toluene-d8 (S)	89.2	C	%	76 - 127	SW846 8260B			10/26/21 05:50	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	78	C	mg/L	5	SM2320B-2011			11/3/21 23:51	MBS	B
Alkalinity, Total	78	C,3	mg/L	5	SM2320B-2011			11/3/21 23:51	MBS	I
Ammonia-N	ND	C	mg/L	0.100	ASTM D6919-09			11/5/21 20:26	ALK	A
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			11/4/21 14:30	ALK	A
Chloride	80.3	C	mg/L	2.0	EPA 300.0			11/5/21 17:24	GJB	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			11/5/21 17:24	GJB	B
Nitrate-N	4.7	C,4	mg/L	0.20	EPA 300.0			11/5/21 17:24	GJB	B
pH	7.53	C,1	pH_Units		S4500HB-11			11/3/21 23:51	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	11/2/21 12:07	MXF	11/3/21 09:10	MXF	F
Specific Conductance	500	C	umhos/cm	1	SW846 9050A			11/1/21 14:45	MBS	B
Sulfate	15.5	C	mg/L	2.0	EPA 300.0			11/5/21 17:24	GJB	B
Total Dissolved Solids	280	C	mg/L	25	S2540C-11			10/28/21 13:10	AKH	B
Total Organic Carbon (TOC)	2.6	C	mg/L	0.50	SW846 9060A			10/26/21 19:43	PAG	D
Turbidity	0.10	C	NTU	0.10	SM2130B-2011			10/23/21 07:54	LXZ	B
METALS										
Calcium, Total	41.8	C	mg/L	0.11	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:34	SRT	J1
Iron, Total	ND	C	mg/L	0.067	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:34	SRT	J1
Magnesium, Total	13.9	C	mg/L	0.11	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:34	SRT	J1
Manganese, Total	0.90	C	mg/L	0.0056	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:34	SRT	J1
Potassium, Total	2.8	C	mg/L	0.56	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:34	SRT	J1
Sodium, Total	26.5	C	mg/L	0.56	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:34	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	65.11	C	Feet		Field			10/22/21 12:05	BGS	C
Dissolved Oxygen	4.08	C	mg/L	0.01	Field			10/22/21 12:05	BGS	C
Elev Top MW Casing above MSL	525.81	C	Feet		Field			10/22/21 12:05	BGS	C
Ground Water Elevation	460.70	C	ft/MSL		Field			10/22/21 12:05	BGS	C
Oxidation-Reduction Potential	247	C	mV		Field			10/22/21 12:05	BGS	C
pH, Field (SM4500B)	5.40	C	pH_Units		Field			10/22/21 12:05	BGS	C
Sample Depth	85.00	C	Feet		Field			10/22/21 12:05	BGS	C
Specific Conductance, Field	733	C	umhos/cm	1	Field			10/22/21 12:05	BGS	C

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**ANALYTICAL RESULTS**

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3208285002**
Sample ID: **CWMP002W**Date Collected: 10/22/2021 12:05 Matrix: Ground Water
Date Received: 10/22/2021 15:18

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Temperature	14.01	C	Deg. C		Field			10/22/21 12:05	BGS	C
Total Well Depth	100.00	C	Feet		Field			10/22/21 12:05	BGS	C
Turbidity, Field	10	C	NTU	1	Field			10/22/21 12:05	BGS	C


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Project Coordinator**ALS Environmental Laboratory Locations Across North America**Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
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ANALYTICAL RESULTS

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3208285003**
Sample ID: **CWMP003W**

Date Collected: 10/22/2021 12:20 Matrix: Ground Water
Date Received: 10/22/2021 15:18

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Bromoform	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Chloroform	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
1,1-Dichloroethane	1.8	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
1,3-Dichloropropene, Total	ND	C	ug/L	2.0	SW846 8260B			10/26/21 06:13	PDK	G
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Styrene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Toluene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			10/26/21 06:13	PDK	G
1,2,4-Trichlorobenzene	ND	C	ug/L	2.0	SW846 8260B			10/26/21 06:13	PDK	G
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			10/26/21 06:13	PDK	G
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:13	PDK	G
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr

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ANALYTICAL RESULTS

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3208285003**
Sample ID: **CWMP003W**

Date Collected: 10/22/2021 12:20 Matrix: Ground Water
Date Received: 10/22/2021 15:18

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	90.4	C	%	62 - 133	SW846 8260B			10/26/21 06:13	PDK	G
4-Bromofluorobenzene (S)	93.5	C	%	79 - 114	SW846 8260B			10/26/21 06:13	PDK	G
Dibromofluoromethane (S)	89.1	C	%	78 - 116	SW846 8260B			10/26/21 06:13	PDK	G
Toluene-d8 (S)	88.1	C	%	76 - 127	SW846 8260B			10/26/21 06:13	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	21	C	mg/L	5	SM2320B-2011			11/3/21 23:51	MBS	B
Alkalinity, Total	21	C,3	mg/L	5	SM2320B-2011			11/3/21 23:51	MBS	I
Ammonia-N	ND	C	mg/L	0.100	ASTM D6919-09			11/6/21 16:56	ALK	A
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			11/5/21 18:25	ALK	A
Chloride	60.9	C	mg/L	2.0	EPA 300.0			11/5/21 16:15	GJB	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			11/5/21 16:15	GJB	B
Nitrate-N	6.9	C,4	mg/L	0.20	EPA 300.0			11/5/21 16:15	GJB	B
pH	7.32	C,1	pH_Units		S4500HB-11			11/3/21 23:51	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	11/2/21 12:07	MXF	11/3/21 09:10	MXF	F
Specific Conductance	346	C	umhos/cm	1	SW846 9050A			11/1/21 14:45	MBS	B
Sulfate	5.2	C	mg/L	2.0	EPA 300.0			11/5/21 16:15	GJB	B
Total Dissolved Solids	220	C	mg/L	25	S2540C-11			10/28/21 13:10	AKH	B
Total Organic Carbon (TOC)	ND	C	mg/L	0.50	SW846 9060A			10/26/21 19:43	PAG	D
Turbidity	0.68	C	NTU	0.10	SM2130B-2011			10/23/21 07:54	LXZ	B
METALS										
Calcium, Total	21.9	C	mg/L	0.11	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:37	SRT	J1
Iron, Total	ND	C	mg/L	0.067	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:37	SRT	J1
Magnesium, Total	8.2	C	mg/L	0.11	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:37	SRT	J1
Manganese, Total	ND	C	mg/L	0.0056	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:37	SRT	J1
Potassium, Total	1.7	C	mg/L	0.56	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:37	SRT	J1
Sodium, Total	20.1	C	mg/L	0.56	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:37	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	64.29	C	Feet		Field			10/22/21 12:20	BGS	C
Dissolved Oxygen	11.63	C	mg/L	0.01	Field			10/22/21 12:20	BGS	C
Elev Top MW Casing above MSL	524.21	C	Feet		Field			10/22/21 12:20	BGS	C
Ground Water Elevation	459.92	C	ft/MSL		Field			10/22/21 12:20	BGS	C
Oxidation-Reduction Potential	269	C	mV		Field			10/22/21 12:20	BGS	C
pH, Field (SM4500B)	5.15	C	pH_Units		Field			10/22/21 12:20	BGS	C
Sample Depth	100.00	C	Feet		Field			10/22/21 12:20	BGS	C
Specific Conductance, Field	462	C	umhos/cm	1	Field			10/22/21 12:20	BGS	C

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**ANALYTICAL RESULTS**

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3208285003**
Sample ID: **CWMP003W**Date Collected: 10/22/2021 12:20 Matrix: Ground Water
Date Received: 10/22/2021 15:18

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Temperature	14.62	C	Deg. C		Field			10/22/21 12:20	BGS	C
Total Well Depth	140.00	C	Feet		Field			10/22/21 12:20	BGS	C
Turbidity, Field	8	C	NTU	1	Field			10/22/21 12:20	BGS	C


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ANALYTICAL RESULTS

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3208285004**
Sample ID: **CWMP004W**

Date Collected: 10/22/2021 12:35 Matrix: Ground Water
Date Received: 10/22/2021 15:18

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Bromoform	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Chloroform	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
1,3-Dichloropropene, Total	ND	C	ug/L	2.0	SW846 8260B			10/26/21 06:36	PDK	G
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Styrene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Toluene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			10/26/21 06:36	PDK	G
1,2,4-Trichlorobenzene	ND	C	ug/L	2.0	SW846 8260B			10/26/21 06:36	PDK	G
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			10/26/21 06:36	PDK	G
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 06:36	PDK	G
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr

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ANALYTICAL RESULTS

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3208285004**
Sample ID: **CWMP004W**

Date Collected: 10/22/2021 12:35 Matrix: Ground Water
Date Received: 10/22/2021 15:18

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	90.1	C	%	62 - 133	SW846 8260B			10/26/21 06:36	PDK	G
4-Bromofluorobenzene (S)	93.6	C	%	79 - 114	SW846 8260B			10/26/21 06:36	PDK	G
Dibromofluoromethane (S)	89.2	C	%	78 - 116	SW846 8260B			10/26/21 06:36	PDK	G
Toluene-d8 (S)	88.7	C	%	76 - 127	SW846 8260B			10/26/21 06:36	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	27	C	mg/L	5	SM2320B-2011			11/3/21 11:51	MBS	B
Alkalinity, Total	27	C,3	mg/L	5	SM2320B-2011			11/3/21 11:51	MBS	I
Ammonia-N	ND	C	mg/L	0.100	ASTM D6919-09			11/5/21 19:16	ALK	A
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			11/4/21 14:30	ALK	A
Chloride	45.8	C	mg/L	2.0	EPA 300.0			11/5/21 16:29	GJB	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			11/5/21 16:29	GJB	B
Nitrate-N	5.8	C,4	mg/L	0.20	EPA 300.0			11/5/21 16:29	GJB	B
pH	7.39	C,1	pH_Units		S4500HB-11			11/3/21 11:51	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	11/2/21 12:07	MXF	11/3/21 09:10	MXF	F
Specific Conductance	292	C	umhos/cm	1	SW846 9050A			11/1/21 14:45	MBS	B
Sulfate	5.9	C	mg/L	2.0	EPA 300.0			11/5/21 16:29	GJB	B
Total Dissolved Solids	166	C	mg/L	25	S2540C-11			10/29/21 12:26	AKH	B
Total Organic Carbon (TOC)	ND	C	mg/L	0.50	SW846 9060A			10/26/21 19:43	PAG	D
Turbidity	ND	C	NTU	0.10	SM2130B-2011			10/23/21 07:54	LXZ	B
METALS										
Calcium, Total	19.5	C	mg/L	0.11	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:41	SRT	J1
Iron, Total	ND	C	mg/L	0.067	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:41	SRT	J1
Magnesium, Total	6.9	C	mg/L	0.11	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:41	SRT	J1
Manganese, Total	0.0078	C	mg/L	0.0056	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:41	SRT	J1
Potassium, Total	1.5	C	mg/L	0.56	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:41	SRT	J1
Sodium, Total	16.0	C	mg/L	0.56	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:41	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	97.59	C	Feet		Field			10/22/21 12:35	BGS	C
Dissolved Oxygen	7.61	C	mg/L	0.01	Field			10/22/21 12:35	BGS	C
Elev Top MW Casing above MSL	529.53	C	Feet		Field			10/22/21 12:35	BGS	C
Ground Water Elevation	431.94	C	ft/MSL		Field			10/22/21 12:35	BGS	C
Oxidation-Reduction Potential	272	C	mV		Field			10/22/21 12:35	BGS	C
pH, Field (SM4500B)	5.31	C	pH_Units		Field			10/22/21 12:35	BGS	C
Sample Depth	130.00	C	Feet		Field			10/22/21 12:35	BGS	C
Specific Conductance, Field	397	C	umhos/cm	1	Field			10/22/21 12:35	BGS	C

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**ANALYTICAL RESULTS**

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3208285004**
Sample ID: **CWMP004W**Date Collected: 10/22/2021 12:35 Matrix: Ground Water
Date Received: 10/22/2021 15:18

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Temperature	14.07	C	Deg. C		Field			10/22/21 12:35	BGS	C
Total Well Depth	140.00	C	Feet		Field			10/22/21 12:35	BGS	C
Turbidity, Field	ND	C	NTU	1	Field			10/22/21 12:35	BGS	C

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ANALYTICAL RESULTS

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3208285005**
Sample ID: **Field Blank**

Date Collected: 10/22/2021 13:49 Matrix: Water
Date Received: 10/22/2021 15:18

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Bromoform	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Chloroform	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
1,3-Dichloropropene, Total	ND	C	ug/L	2.0	SW846 8260B			10/26/21 04:20	PDK	G
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Styrene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Toluene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			10/26/21 04:20	PDK	G
1,2,4-Trichlorobenzene	ND	C	ug/L	2.0	SW846 8260B			10/26/21 04:20	PDK	G
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			10/26/21 04:20	PDK	G
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 04:20	PDK	G
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr

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ANALYTICAL RESULTS

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3208285005**

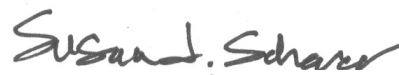
Date Collected: 10/22/2021 13:49

Matrix: Water

Sample ID: **Field Blank**

Date Received: 10/22/2021 15:18

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	90.3	C	%	62 - 133	SW846 8260B			10/26/21 04:20	PDK	G
4-Bromofluorobenzene (S)	94.3	C	%	79 - 114	SW846 8260B			10/26/21 04:20	PDK	G
Dibromofluoromethane (S)	89.6	C	%	78 - 116	SW846 8260B			10/26/21 04:20	PDK	G
Toluene-d8 (S)	88.3	C	%	76 - 127	SW846 8260B			10/26/21 04:20	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND	C	mg/L	5	SM2320B-2011			11/3/21 11:51	MBS	B
Alkalinity, Total	ND	C,3	mg/L	5	SM2320B-2011			11/3/21 11:51	MBS	I
Ammonia-N	ND	C	mg/L	0.100	ASTM D6919-09			11/6/21 16:28	ALK	A
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			11/5/21 18:25	ALK	A
Chloride	ND	C	mg/L	2.0	EPA 300.0			11/5/21 17:38	GJB	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			11/5/21 17:38	GJB	B
Nitrate-N	ND	C,4	mg/L	0.20	EPA 300.0			11/5/21 17:38	GJB	B
pH	6.85	C,1	pH_Units		S4500HB-11			11/3/21 11:51	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	11/2/21 12:07	MXF	11/3/21 09:10	MXF	F
Specific Conductance	335	C	umhos/cm	1	SW846 9050A			11/1/21 14:45	MBS	B
Sulfate	ND	C	mg/L	2.0	EPA 300.0			11/5/21 17:38	GJB	B
Total Dissolved Solids	ND	C	mg/L	25	S2540C-11			10/29/21 12:26	AKH	B
Total Organic Carbon (TOC)	ND	C	mg/L	0.50	SW846 9060A			10/26/21 19:43	PAG	D
Turbidity	0.12	C	NTU	0.10	SM2130B-2011			10/23/21 07:54	LXZ	B
METALS										
Calcium, Total	ND	C	mg/L	0.11	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:59	SRT	J1
Iron, Total	ND	C	mg/L	0.067	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:59	SRT	J1
Magnesium, Total	ND	C	mg/L	0.11	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:59	SRT	J1
Manganese, Total	ND	C	mg/L	0.0056	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:59	SRT	J1
Potassium, Total	ND	C	mg/L	0.56	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:59	SRT	J1
Sodium, Total	ND	C	mg/L	0.56	SW846 6010C	10/25/21 21:26	SXC	10/26/21 14:59	SRT	J1



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3208285006**

Date Collected: 10/22/2021 15:18

Matrix: Water

Sample ID: **Trip Blank**

Date Received: 10/22/2021 15:18

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Bromodichloromethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Bromoform	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Bromomethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Carbon Tetrachloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Chlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Chlorodibromomethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Chloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Chloroform	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Chloromethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
1,2-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
1,3-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
1,4-Dichlorobenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
1,2-Dichloropropane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
1,3-Dichloropropene, Total	ND	C	ug/L	2.0	SW846 8260B			10/26/21 03:57	PDK	G
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Styrene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
1,1,2,2-Tetrachloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Toluene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			10/26/21 03:57	PDK	G
1,2,4-Trichlorobenzene	ND	C	ug/L	2.0	SW846 8260B			10/26/21 03:57	PDK	G
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
1,1,2-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Trichlorofluoromethane	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
1,2,3-Trichloropropane	ND	C	ug/L	2.0	SW846 8260B			10/26/21 03:57	PDK	G
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			10/26/21 03:57	PDK	G
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr

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**ANALYTICAL RESULTS**

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3208285006**

Date Collected: 10/22/2021 15:18

Matrix: Water

Sample ID: **Trip Blank**

Date Received: 10/22/2021 15:18

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	90.1	C	%	62 - 133	SW846 8260B			10/26/21 03:57	PDK	G
4-Bromofluorobenzene (S)	94.6	C	%	79 - 114	SW846 8260B			10/26/21 03:57	PDK	G
Dibromofluoromethane (S)	89.5	C	%	78 - 116	SW846 8260B			10/26/21 03:57	PDK	G
Toluene-d8 (S)	90.3	C	%	76 - 127	SW846 8260B			10/26/21 03:57	PDK	G

Ms. Susan J Scherer

Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3208285001	1	CWMP012W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3208285001	3	CWMP012W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3208285001	4	CWMP012W	EPA 300.0	Nitrate-N
Analyte was analyzed past the 48 hour holding time.				
3208285002	1	CWMP002W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3208285002	3	CWMP002W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3208285002	4	CWMP002W	EPA 300.0	Nitrate-N
Analyte was analyzed past the 48 hour holding time.				
3208285003	1	CWMP003W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3208285003	3	CWMP003W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3208285003	4	CWMP003W	EPA 300.0	Nitrate-N
Analyte was analyzed past the 48 hour holding time.				
3208285004	1	CWMP004W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3208285004	3	CWMP004W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3208285004	4	CWMP004W	EPA 300.0	Nitrate-N
Analyte was analyzed past the 48 hour holding time.				
3208285005	1	Field Blank	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3208285005	3	Field Blank	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3208285005	4	Field Blank	EPA 300.0	Nitrate-N
Analyte was analyzed past the 48 hour holding time.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method	Leachate Method
3208285001	CWMP012W	ASTM D6919-09		
3208285001	CWMP012W	EPA 300.0		
3208285001	CWMP012W	EPA 410.4		
3208285001	CWMP012W	Field		
3208285001	CWMP012W	S2540C-11		
3208285001	CWMP012W	S4500HB-11		
3208285001	CWMP012W	SM2130B-2011		
3208285001	CWMP012W	SM2320B-2011		
3208285001	CWMP012W	SW846 6010C	SW846 3015	
3208285001	CWMP012W	SW846 8260B		
3208285001	CWMP012W	SW846 9050A		
3208285001	CWMP012W	SW846 9060A		
3208285001	CWMP012W	SW846 9066	420.4/9066	
3208285002	CWMP002W	ASTM D6919-09		
3208285002	CWMP002W	EPA 300.0		
3208285002	CWMP002W	EPA 410.4		
3208285002	CWMP002W	Field		
3208285002	CWMP002W	S2540C-11		
3208285002	CWMP002W	S4500HB-11		
3208285002	CWMP002W	SM2130B-2011		
3208285002	CWMP002W	SM2320B-2011		
3208285002	CWMP002W	SW846 6010C	SW846 3015	
3208285002	CWMP002W	SW846 8260B		
3208285002	CWMP002W	SW846 9050A		
3208285002	CWMP002W	SW846 9060A		
3208285002	CWMP002W	SW846 9066	420.4/9066	
3208285003	CWMP003W	ASTM D6919-09		
3208285003	CWMP003W	EPA 300.0		
3208285003	CWMP003W	EPA 410.4		
3208285003	CWMP003W	Field		
3208285003	CWMP003W	S2540C-11		
3208285003	CWMP003W	S4500HB-11		
3208285003	CWMP003W	SM2130B-2011		
3208285003	CWMP003W	SM2320B-2011		
3208285003	CWMP003W	SW846 6010C	SW846 3015	
3208285003	CWMP003W	SW846 8260B		
3208285003	CWMP003W	SW846 9050A		
3208285003	CWMP003W	SW846 9060A		
3208285003	CWMP003W	SW846 9066	420.4/9066	
3208285004	CWMP004W	ASTM D6919-09		
3208285004	CWMP004W	EPA 300.0		
3208285004	CWMP004W	EPA 410.4		
3208285004	CWMP004W	Field		
3208285004	CWMP004W	S2540C-11		
3208285004	CWMP004W	S4500HB-11		
3208285004	CWMP004W	SM2130B-2011		

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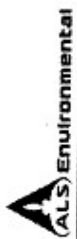
ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3208285 4th QTR 2021 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method	Leachate Method
3208285004	CWMP004W	SM2320B-2011		
3208285004	CWMP004W	SW846 6010C	SW846 3015	
3208285004	CWMP004W	SW846 8260B		
3208285004	CWMP004W	SW846 9050A		
3208285004	CWMP004W	SW846 9060A		
3208285004	CWMP004W	SW846 9066	420.4/9066	
3208285005	Field Blank	ASTM D6919-09		
3208285005	Field Blank	EPA 300.0		
3208285005	Field Blank	EPA 410.4		
3208285005	Field Blank	S2540C-11		
3208285005	Field Blank	S4500HB-11		
3208285005	Field Blank	SM2130B-2011		
3208285005	Field Blank	SM2320B-2011		
3208285005	Field Blank	SW846 6010C	SW846 3015	
3208285005	Field Blank	SW846 8260B		
3208285005	Field Blank	SW846 9050A		
3208285005	Field Blank	SW846 9060A		
3208285005	Field Blank	SW846 9066	420.4/9066	
3208285006	Trip Blank	SW846 8260B		

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS SAMPLER. INSTRUCTIONS ON THE BACK.

Client Name: Lancaster County Solid Waste MA

Address: 1299 Harrisburg Pike, P.O. Box 4424

Lancaster, PA 17604

Contact: Dan Brown

Phone#: (717) 735-0193

Project Name#: Creswell/GWMP Form 19Q Wells

Bill To: Lancaster County Solid Waste MA

TAT ☒ Normal-Standard TAT is 10-12 business days.
☐ Rush-Subject to ALS approval and surcharges.

Date Required: _____ Approved By: _____

Email? ☒ Y ☐ N dbrown@lcswna.org

Fax? ☒ Y ☐ N No: (717) 397-9973

Sample Description/Location
(as it will appear on the lab report)

Matrix ☒ G ☐ C ☐ R

Sample	Date	Time
1. CWMP012W	10/24/21	1105
2. CWMP002W	10/24/21	1205
3. CWMP003W	10/24/21	1220
4. CWMP004W	10/24/21	1235
5. Field Blank	10/24/21	1349
6. Trip Blank	10/24/21	1510
7		
8		
9		
10		

Project Comments:

LOGGED BY (signature): _____

REVIEWED BY (signature): _____

Date Time

Relinquished By/ Company Name

Received By/ Company Name

Date Time

Signature

Signature

Container Type	AG	AN	CG	PL	PL	PL	PL	PL
Container Size	40 ml	125 ml	40 ml	250 ml	125 ml	500 ml	500 ml	500 ml
Preservative	HCl	H2SO4	HCl	H2SO4	HNO3	None	None	None

ANALYSES/METHOD REQUESTED

Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Total Metals: Ca, Fe, Mn, Mg, K, Na	PH, NO3, Cl, F, SPC, SO4, Turb.	Alkalinity, HCO3
8260 VOCs - Form 19Q					
O-OH					
TOC					

Enter Number of Containers Per Sample or Field Results Below.

Matrix	G	C	R
1. CWMP012W	2	1	1
2. CWMP002W	2	1	1
3. CWMP003W	2	1	1
4. CWMP004W	2	1	1
5. Field Blank	2	1	1
6. Trip Blank	2	1	1
7	2	1	1
8			
9			
10			

Sample/COC Comments

Samples collected and received 10/24/21. The Ars Field Sample inadvertently listed 10/21 on the CoC-card bottles. Not rec'd. 10/25/21

S. Scherer 10/29/21

ALS Field Services: ☐ Pickup ☐ Labor ☐ Composite Sampling ☐ Rental Equipment ☐ Other:

Standard	CLP-like	USACE	State Samples Collected In
☐	☐	☐	USACE ☐ Navy ☐ NY ☐ NJ ☐ PA ☐ NC ☐
Reportable to PADEP?	Yes	Sample Disposal	Special
☐	☐	Lab ☒ Special ☐	
PWSID #	EDDS: Format Type		

* G=Grab; C=Composite

**Matrix - Air=Air; DW=Drinking Water; GW=Groundwater; Oil=Oil; OL=Other Liquid; SL=Sludge; SQ=Soil; WP=Wipe; WW=Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057

Rev 8/04



301 Fulling Mill Road
Middletown, PA 17057

P: (717) 944-5541

F: (717) 944-1430

3208285

Lancaster County Solid Waste
Authority

lition of Sample Receipt Form

Client:

Initials:

Date:

12/10/2021

1. Were airbills / tracking numbers present and recorded?..... NONE YES NO
Tracking number: _____
2. Are Custody Seals on shipping containers intact?..... NONE YES NO
3. Are Custody Seals on sample containers intact?..... NONE YES NO
4. Is there a COC (Chain-of-Custody) present?..... YES YES NO
5. Are the COC and bottle labels complete, legible and in agreement?..... YES YES NO
 - 5a. Does the COC contain sample locations?..... YES YES NO
 - 5b. Does the COC contain date and time of sample collection for all samples?..... YES YES NO
 - 5c. Does the COC contain sample collectors name?..... YES YES NO
 - 5d. Does the COC note the type(s) of preservation for all bottles?..... YES YES NO
 - 5e. Does the COC note the number of bottles submitted for each sample?..... YES YES NO
 - 5f. Does the COC note the type of sample, composite or grab?..... YES YES NO
 - 5g. Does the COC note the matrix of the sample(s)?..... YES YES NO
6. Are all aqueous samples requiring preservation preserved correctly?¹..... N/A YES YES NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... YES YES NO
8. Are all samples within holding times for the requested analyses?..... YES YES NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... YES YES NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... N/A YES YES NO
11. Were the samples received on ice?..... YES YES NO
12. Were sample temperatures measured at 0.0-6.0°C..... YES YES NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below..... YES NO
 - 13a. Are the samples required for SDWA compliance reporting?..... N/A YES NO
 - 13b. Did the client provide a SDWA PWS ID#?..... N/A YES NO
 - 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... N/A YES NO
 - 13d. Did the client provide the SDWA sample location ID/Description?..... N/A YES NO
 - 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... N/A YES NO

Cooler #: _____

Temperature (°C): 5 _____

Thermometer ID: 570 _____

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

only the 8260s rec'd for TRS.

¹Final determination of correct preservation for analysis such as volatiles, microbiology, and oil and grease is made in the analytical department at the time of or following the analysis

November 24, 2021

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	CRESWELL	Workorder:	3207155
Purchase Order:	PO-1000246	Workorder ID:	4th QTR 2021 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Monday, October 18, 2021.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

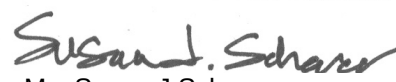
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Ashley Gichuki , Ms. Jordan Gallagher , Mr. Jeff Musser

*This page is included as part of the Analytical Report and
must be retained as a permanent record thereof.*


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3207155 4th QTR 2021 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3207155001	CWMP007W	Ground Water	10/18/2021 11:08	10/18/2021 16:47	Mr. Brian G Shade
3207155002	CWMP001W	Ground Water	10/18/2021 12:23	10/18/2021 16:47	Mr. Brian G Shade
3207155003	CWMP005W	Ground Water	10/18/2021 13:58	10/18/2021 16:47	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3207155 4th QTR 2021 GWMP-FORM 19Q

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

C	Please reference the Project Summary section of this Certificate of Analysis for case narrative comments.
J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: PJLA 74618
State Certifications: FL E871113 , WA C999 , MD 128 , VA 460157 , WV DW 9961-C , WV 343

PROJECT SUMMARY

Workorder: 3207155 4th QTR 2021 GWMP-FORM 19Q

Workorder Comments

Temperature of sample taken at time of sample receipt in the laboratory. See chain of custody for actual temperature.

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ANALYTICAL RESULTS

Workorder: 3207155 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207155001**
Sample ID: **CWMP007W**

Date Collected: 10/18/2021 11:08 Matrix: Ground Water
Date Received: 10/18/2021 16:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 04:48	PDK	G
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			10/22/21 04:48	PDK	G
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/22/21 04:48	PDK	G
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/22/21 04:48	PDK	G
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 04:48	PDK	G
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 04:48	PDK	G
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 04:48	PDK	G
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 04:48	PDK	G
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			10/22/21 04:48	PDK	G
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 04:48	PDK	G
Toluene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 04:48	PDK	G
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			10/22/21 04:48	PDK	G
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/22/21 04:48	PDK	G
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 04:48	PDK	G
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			10/22/21 04:48	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	114	C	%	62 - 133	SW846 8260B			10/22/21 04:48	PDK	G
4-Bromofluorobenzene (S)	102	C	%	79 - 114	SW846 8260B			10/22/21 04:48	PDK	G
Dibromofluoromethane (S)	89.4	C	%	78 - 116	SW846 8260B			10/22/21 04:48	PDK	G
Toluene-d8 (S)	94.3	C	%	76 - 127	SW846 8260B			10/22/21 04:48	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	13	C	mg/L	5	SM2320B-2011			10/29/21 18:22	MBS	B
Alkalinity, Total	13	C,3	mg/L	5	SM2320B-2011			10/29/21 18:22	MBS	I
Ammonia-N	ND	C	mg/L	0.100	ASTM D6919-09			10/26/21 19:21	ALK	A
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			10/22/21 17:45	ALK	A
Chloride	80.5	C	mg/L	2.0	EPA 300.0			10/25/21 22:11	MBS	B
Fluoride	0.40	C	mg/L	0.20	EPA 300.0			10/25/21 22:11	MBS	B
Nitrate-N	ND	C	mg/L	0.20	EPA 300.0			10/25/21 22:11	MBS	B
pH	6.71	C,1	pH_Units		S4500HB-11			10/29/21 18:22	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	10/27/21 11:02	MXF	10/28/21 09:11	MXF	F
Specific Conductance	350	C	umhos/cm	1	SW846 9050A			10/29/21 14:45	JSE	B
Sulfate	26.9	C	mg/L	2.0	EPA 300.0			10/25/21 22:11	MBS	B
Total Dissolved Solids	322	C	mg/L	25	S2540C-11			10/22/21 12:08	AKH	B
Total Organic Carbon (TOC)	ND	C	mg/L	0.50	SW846 9060A			10/21/21 00:23	PAG	D
Turbidity	ND	C	NTU	0.10	SM2130B-2011			10/20/21 10:31	BXD	B

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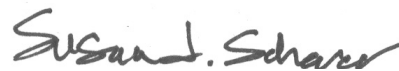
ANALYTICAL RESULTS

Workorder: 3207155 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207155001**
Sample ID: **CWMP007W**

Date Collected: 10/18/2021 11:08 Matrix: Ground Water
Date Received: 10/18/2021 16:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	19.0	C	mg/L	0.11	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:13	SRT	J2
Iron, Total	ND	C	mg/L	0.067	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:13	SRT	J2
Magnesium, Total	10.1	C	mg/L	0.11	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:13	SRT	J2
Manganese, Total	0.0061	C	mg/L	0.0056	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:13	SRT	J2
Potassium, Total	2.4	C	mg/L	0.56	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:13	SRT	J2
Sodium, Total	33.9	C	mg/L	0.56	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:13	SRT	J2
FIELD PARAMETERS										
Depth to Water Level	7.29	C	Feet		Field			10/18/21 11:08	BGS	C
Dissolved Oxygen	5.24	C	mg/L	0.01	Field			10/18/21 11:08	BGS	C
Elev Top MW Casing above MSL	453.40	C	Feet		Field			10/18/21 11:08	BGS	C
Flow Rate	1.51	C	gal/min		Field			10/18/21 11:08	BGS	C
Ground Water Elevation	446.11	C	ft/MSL		Field			10/18/21 11:08	BGS	C
Oxidation-Reduction Potential	358	C	mV		Field			10/18/21 11:08	BGS	C
pH, Field (SM4500B)	5.01	C	pH_Units		Field			10/18/21 11:08	BGS	C
Sample Depth	33.00	C	Feet		Field			10/18/21 11:08	BGS	C
Specific Conductance, Field	546	C	umhos/cm	1	Field			10/18/21 11:08	BGS	C
Temperature	13.55	C	Deg. C		Field			10/18/21 11:08	BGS	C
Total Well Depth	36.50	C	Feet		Field			10/18/21 11:08	BGS	C
Turbidity, Field	ND	C	NTU	1	Field			10/18/21 11:08	BGS	C
Volume in Water Column	42.94	C	Gallons		Field			10/18/21 11:08	BGS	C
Water Level After Purge	8.04	C	Feet		Field			10/18/21 11:08	BGS	C
Well Volumes Purged	2.46	C	Vol		Field			10/18/21 11:08	BGS	C


Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3207155 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207155002**
Sample ID: **CWMP001W**

Date Collected: 10/18/2021 12:23 Matrix: Ground Water
Date Received: 10/18/2021 16:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:11	PDK	G
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:11	PDK	G
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:11	PDK	G
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:11	PDK	G
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:11	PDK	G
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:11	PDK	G
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:11	PDK	G
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:11	PDK	G
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:11	PDK	G
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:11	PDK	G
Toluene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:11	PDK	G
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			10/22/21 05:11	PDK	G
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:11	PDK	G
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:11	PDK	G
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:11	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	118	C	%	62 - 133	SW846 8260B			10/22/21 05:11	PDK	G
4-Bromofluorobenzene (S)	102	C	%	79 - 114	SW846 8260B			10/22/21 05:11	PDK	G
Dibromofluoromethane (S)	91.6	C	%	78 - 116	SW846 8260B			10/22/21 05:11	PDK	G
Toluene-d8 (S)	97.6	C	%	76 - 127	SW846 8260B			10/22/21 05:11	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	6	C	mg/L	5	SM2320B-2011			10/29/21 18:33	MBS	B
Alkalinity, Total	6	C,3	mg/L	5	SM2320B-2011			10/29/21 18:33	MBS	I
Ammonia-N	ND	C	mg/L	0.100	ASTM D6919-09			10/28/21 06:06	ALK	A
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			10/28/21 20:00	ALK	A
Chloride	28.0	C	mg/L	2.0	EPA 300.0			10/26/21 01:10	MBS	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			10/26/21 01:10	MBS	B
Nitrate-N	19.7	C	mg/L	0.20	EPA 300.0			10/26/21 01:10	MBS	B
pH	6.57	C,1	pH_Units		S4500HB-11			10/29/21 18:33	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	10/27/21 11:02	MXF	10/28/21 09:11	MXF	F
Specific Conductance	251	C	umhos/cm	1	SW846 9050A			10/29/21 14:45	JSE	B
Sulfate	2.7	C	mg/L	2.0	EPA 300.0			10/26/21 01:10	MBS	B
Total Dissolved Solids	284	C	mg/L	25	S2540C-11			10/22/21 12:08	AKH	B
Total Organic Carbon (TOC)	ND	C	mg/L	0.50	SW846 9060A			10/21/21 00:23	PAG	D
Turbidity	12.3	C	NTU	0.10	SM2130B-2011			10/20/21 10:31	BXD	B

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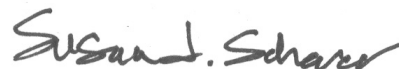
ANALYTICAL RESULTS

Workorder: 3207155 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207155002**
Sample ID: **CWMP001W**

Date Collected: 10/18/2021 12:23 Matrix: Ground Water
Date Received: 10/18/2021 16:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	14.7	C	mg/L	0.11	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:17	SRT	J2
Iron, Total	0.14	C	mg/L	0.067	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:17	SRT	J2
Magnesium, Total	10.4	C	mg/L	0.11	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:17	SRT	J2
Manganese, Total	0.048	C	mg/L	0.0056	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:17	SRT	J2
Potassium, Total	2.4	C	mg/L	0.56	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:17	SRT	J2
Sodium, Total	13.1	C	mg/L	0.56	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:17	SRT	J2
FIELD PARAMETERS										
Depth to Water Level	28.59	C	Feet		Field			10/18/21 12:23	BGS	C
Dissolved Oxygen	8.64	C	mg/L	0.01	Field			10/18/21 12:23	BGS	C
Elev Top MW Casing above MSL	515.13	C	Feet		Field			10/18/21 12:23	BGS	C
Flow Rate	1.88	C	gal/min		Field			10/18/21 12:23	BGS	C
Ground Water Elevation	486.54	C	ft/MSL		Field			10/18/21 12:23	BGS	C
Oxidation-Reduction Potential	341	C	mV		Field			10/18/21 12:23	BGS	C
pH, Field (SM4500B)	5.26	C	pH_Units		Field			10/18/21 12:23	BGS	C
Sample Depth	57.00	C	Feet		Field			10/18/21 12:23	BGS	C
Specific Conductance, Field	372	C	umhos/cm	1	Field			10/18/21 12:23	BGS	C
Temperature	13.62	C	Deg. C		Field			10/18/21 12:23	BGS	C
Total Well Depth	66.30	C	Feet		Field			10/18/21 12:23	BGS	C
Turbidity, Field	16	C	NTU	1	Field			10/18/21 12:23	BGS	C
Volume in Water Column	55.43	C	Gallons		Field			10/18/21 12:23	BGS	C
Water Level After Purge	49.28	C	Feet		Field			10/18/21 12:23	BGS	C
Well Volumes Purged	2.04	C	Vol		Field			10/18/21 12:23	BGS	C


Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3207155 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207155003**
Sample ID: **CWMP005W**

Date Collected: 10/18/2021 13:58 Matrix: Ground Water
Date Received: 10/18/2021 16:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:33	PDK	G
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:33	PDK	G
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:33	PDK	G
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:33	PDK	G
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:33	PDK	G
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:33	PDK	G
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:33	PDK	G
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:33	PDK	G
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:33	PDK	G
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:33	PDK	G
Toluene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:33	PDK	G
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			10/22/21 05:33	PDK	G
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:33	PDK	G
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:33	PDK	G
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			10/22/21 05:33	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	114	C	%	62 - 133	SW846 8260B			10/22/21 05:33	PDK	G
4-Bromofluorobenzene (S)	100	C	%	79 - 114	SW846 8260B			10/22/21 05:33	PDK	G
Dibromofluoromethane (S)	90.7	C	%	78 - 116	SW846 8260B			10/22/21 05:33	PDK	G
Toluene-d8 (S)	94.3	C	%	76 - 127	SW846 8260B			10/22/21 05:33	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	16	C	mg/L	5	SM2320B-2011			10/29/21 18:43	MBS	B
Alkalinity, Total	16	C,3	mg/L	5	SM2320B-2011			10/29/21 18:43	MBS	I
Ammonia-N	ND	C	mg/L	0.100	ASTM D6919-09			10/28/21 13:33	ALK	A
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			10/28/21 20:00	ALK	A
Chloride	57.7	C	mg/L	2.0	EPA 300.0			10/26/21 01:24	MBS	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			10/26/21 01:24	MBS	B
Nitrate-N	8.2	C	mg/L	0.20	EPA 300.0			10/26/21 01:24	MBS	B
pH	6.87	C,1	pH_Units		S4500HB-11			10/29/21 18:43	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	10/27/21 11:02	MXF	10/28/21 09:11	MXF	F
Specific Conductance	282	C	umhos/cm	1	SW846 9050A			10/29/21 14:45	JSE	B
Sulfate	4.9	C	mg/L	2.0	EPA 300.0			10/26/21 01:24	MBS	B
Total Dissolved Solids	238	C	mg/L	25	S2540C-11			10/22/21 12:08	AKH	B
Total Organic Carbon (TOC)	ND	C	mg/L	0.50	SW846 9060A			10/21/21 00:23	PAG	D
Turbidity	1.66	C	NTU	0.10	SM2130B-2011			10/20/21 10:31	BXD	B

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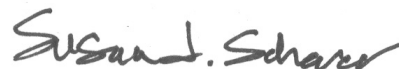
ANALYTICAL RESULTS

Workorder: 3207155 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207155003**
Sample ID: **CWMP005W**

Date Collected: 10/18/2021 13:58 Matrix: Ground Water
Date Received: 10/18/2021 16:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	13.7	C	mg/L	0.11	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:20	SRT	J2
Iron, Total	ND	C	mg/L	0.067	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:20	SRT	J2
Magnesium, Total	7.3	C	mg/L	0.11	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:20	SRT	J2
Manganese, Total	0.051	C	mg/L	0.0056	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:20	SRT	J2
Potassium, Total	2.4	C	mg/L	0.56	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:20	SRT	J2
Sodium, Total	29.2	C	mg/L	0.56	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:20	SRT	J2
FIELD PARAMETERS										
Depth to Water Level	43.49	C	Feet		Field			10/18/21 13:58	BGS	C
Dissolved Oxygen	6.76	C	mg/L	0.01	Field			10/18/21 13:58	BGS	C
Elev Top MW Casing above MSL	513.43	C	Feet		Field			10/18/21 13:58	BGS	C
Flow Rate	2.27	C	gal/min		Field			10/18/21 13:58	BGS	C
Ground Water Elevation	469.94	C	ft/MSL		Field			10/18/21 13:58	BGS	C
Oxidation-Reduction Potential	329	C	mV		Field			10/18/21 13:58	BGS	C
pH, Field (SM4500B)	5.08	C	pH_Units		Field			10/18/21 13:58	BGS	C
Sample Depth	130.00	C	Feet		Field			10/18/21 13:58	BGS	C
Specific Conductance, Field	434	C	umhos/cm	1	Field			10/18/21 13:58	BGS	C
Temperature	13.05	C	Deg. C		Field			10/18/21 13:58	BGS	C
Total Well Depth	138.92	C	Feet		Field			10/18/21 13:58	BGS	C
Turbidity, Field	ND	C	NTU	1	Field			10/18/21 13:58	BGS	C
Volume in Water Column	140.28	C	Gallons		Field			10/18/21 13:58	BGS	C
Water Level After Purge	44.93	C	Feet		Field			10/18/21 13:58	BGS	C
Well Volumes Purged	1.13	C	Vol		Field			10/18/21 13:58	BGS	C


Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3207155 4th QTR 2021 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3207155001	1	CWMP007W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3207155001	3	CWMP007W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3207155002	1	CWMP001W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3207155002	3	CWMP001W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3207155003	1	CWMP005W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3207155003	3	CWMP005W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3207155 4th QTR 2021 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method	Leachate Method
3207155001	CWMP007W	ASTM D6919-09		
3207155001	CWMP007W	EPA 300.0		
3207155001	CWMP007W	EPA 410.4		
3207155001	CWMP007W	Field		
3207155001	CWMP007W	S2540C-11		
3207155001	CWMP007W	S4500HB-11		
3207155001	CWMP007W	SM2130B-2011		
3207155001	CWMP007W	SM2320B-2011		
3207155001	CWMP007W	SW846 6010C	SW846 3015	
3207155001	CWMP007W	SW846 8260B		
3207155001	CWMP007W	SW846 9050A		
3207155001	CWMP007W	SW846 9060A		
3207155001	CWMP007W	SW846 9066	420.4/9066	
3207155002	CWMP001W	ASTM D6919-09		
3207155002	CWMP001W	EPA 300.0		
3207155002	CWMP001W	EPA 410.4		
3207155002	CWMP001W	Field		
3207155002	CWMP001W	S2540C-11		
3207155002	CWMP001W	S4500HB-11		
3207155002	CWMP001W	SM2130B-2011		
3207155002	CWMP001W	SM2320B-2011		
3207155002	CWMP001W	SW846 6010C	SW846 3015	
3207155002	CWMP001W	SW846 8260B		
3207155002	CWMP001W	SW846 9050A		
3207155002	CWMP001W	SW846 9060A		
3207155002	CWMP001W	SW846 9066	420.4/9066	
3207155003	CWMP005W	ASTM D6919-09		
3207155003	CWMP005W	EPA 300.0		
3207155003	CWMP005W	EPA 410.4		
3207155003	CWMP005W	Field		
3207155003	CWMP005W	S2540C-11		
3207155003	CWMP005W	S4500HB-11		
3207155003	CWMP005W	SM2130B-2011		
3207155003	CWMP005W	SM2320B-2011		
3207155003	CWMP005W	SW846 6010C	SW846 3015	
3207155003	CWMP005W	SW846 8260B		
3207155003	CWMP005W	SW846 9050A		
3207155003	CWMP005W	SW846 9060A		
3207155003	CWMP005W	SW846 9066	420.4/9066	

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CHAIN OF CUSTODY/

REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

Generated by ALS

COC
ALS

Client Name: Lancaster County Solid Waste MA

Address: 1299 Harrisburg Pike, P.O. Box 4424

Lancaster, PA 17604

Contact: Dan Brown

Phone#: (717) 735-0193

Project Name/ID: Creswell/GWMP Form 19Q Wells

Bill To: Lancaster County Solid Waste MA

TAT ☒ Normal-Standard TAT is 10-12 business days.

☐ Rush-Subject to ALS approval and surcharges.

Date Required: _____ Approved By: _____

Email? ☒ Y ☒ N dbrown@lcswwma.org

Fax? ☒ Y ☒ N No.: (717) 397-9973

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time
1. CWMP007W	10/18/21	1108
2. CWMP001W	10/18/21	1223
3. CWMP005W	10/18/21	1358
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Project Comments:

LOGGED BY (signature):

REVIEWED BY (signature):

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1. <i>[Signature]</i>	10-18-21	1647	2.		
3.			4.		
5.			6.		
7.			8.		
9.			10.		

* G=Grab; C=Composite

**Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057

Rev 8/04



3207155

Receipt Information (completion by Receiving Lab)

Cooler Temp: 3 Therm ID: 514

No. of Coolers: 1 Y N Initial *[Signature]*

Custody Seals Present? ☒

(If present) Seals Intact? ☒

Received on Ice? ☒

COC Labels Complete/Accurate? ☒

Cont. in Good Cond.? ☒

Correct Containers? ☒

Correct Sample Volumes? ☒

Correct Preservation? ☒

Headspace/Volatiles? ☒

Courier Tracking #: *[Signature]*

Sample/COC Comments

ALS Field Services: ☐ Pickup ☐ Labor
☐ Composite Sampling ☐ Rental Equipment
☐ Other:

Standard ☐ CLP-like ☐ USACE ☐

Deliverables ☐ USACE ☐

Reportable to PADEP? Yes ☐ No ☒

PWSID # ☐

EDDS: Format Type: ☐

Special Processing: USACE ☐ Navy ☐

State Samples Collected In: NY ☐ NJ ☐ PA ☒ NC ☐

Sample Disposal: Lab ☒ Special ☐

ALS



301 Fulling Mill Road
Middletown, PA

P: (717) 944

F: (717) 944

3207155

Lancaster County Solid Waste
Authority

Condition of Sample Receipt Form

Client:

Initials:

Date:

W 10/19/21

1. Were airbills / tracking numbers present and recorded?.....	<u>NONE</u>	YES	NO
Tracking number: _____			
2. Are Custody Seals on shipping containers intact?.....	<u>NONE</u>	YES	NO
3. Are Custody Seals on sample containers intact?.....	<u>NONE</u>	YES	NO
4. Is there a COC (Chain-of-Custody) present?.....	<u>YES</u>	YES	NO
5. Are the COC and bottle labels complete, legible and in agreement?.....	<u>YES</u>	YES	NO
5a. Does the COC contain sample locations?.....	<u>YES</u>	YES	NO
5b. Does the COC contain date and time of sample collection for all samples?.....	<u>YES</u>	YES	NO
5c. Does the COC contain sample collectors name?.....	<u>YES</u>	YES	NO
5d. Does the COC note the type(s) of preservation for all bottles?.....	<u>YES</u>	YES	NO
5e. Does the COC note the number of bottles submitted for each sample?.....	<u>YES</u>	YES	NO
5f. Does the COC note the type of sample, composite or grab?.....	<u>YES</u>	YES	NO
5g. Does the COC note the matrix of the sample(s)?.....	<u>YES</u>	YES	NO
6. Are all aqueous samples requiring preservation preserved correctly? ¹	N/A	YES	NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?.....		YES	NO
8. Are all samples within holding times for the requested analyses?.....		YES	NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.).....		YES	NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?.....	<u>N/A</u>	YES	NO
11. Were the samples received on ice?.....		<u>YES</u>	NO
12. Were sample temperatures measured at 0.0-6.0°C.....		<u>YES</u>	NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below.....		YES	<u>NO</u>
13a. Are the samples required for SDWA compliance reporting?.....	N/A	YES	NO
13b. Did the client provide a SDWA PWS ID#?.....	N/A	YES	NO
13c. Are all aqueous unpreserved SDWA samples pH 5-9?.....	N/A	YES	NO
13d. Did the client provide the SDWA sample location ID/Description?.....	N/A	YES	NO
13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?.....	N/A	YES	NO

Cooler #: _____

Temperature (°C): 3

Thermometer ID: 574

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

¹Final determination of correct preservation for analysis such as volatiles, microbiology, and oil and grease is made in the analytical department at the time of or following the analysis

November 29, 2021

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	CRESWELL	Workorder:	3207608
Purchase Order:	PO-1000246	Workorder ID:	4th QTR 2021 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, October 20, 2021.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

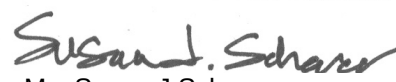
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Ashley Gichuki , Ms. Jordan Gallagher , Mr. Jeff Musser

*This page is included as part of the Analytical Report and
must be retained as a permanent record thereof.*


Ms. Susan J Scherer
Project Coordinator

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**SAMPLE SUMMARY**

Workorder: 3207608 4th QTR 2021 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3207608001	CWMP016W	Ground Water	10/20/2021 14:00	10/20/2021 16:15	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3207608 4th QTR 2021 GWMP-FORM 19Q

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

C	Please reference the Project Summary section of this Certificate of Analysis for case narrative comments.
J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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State Certifications: FL E871113 , WA C999 , MD 128 , VA 460157 , WV DW 9961-C , WV 343

PROJECT SUMMARY

Workorder: 3207608 4th QTR 2021 GWMP-FORM 19Q

Workorder Comments

Temperature of sample taken at time of sample receipt in the laboratory. See chain of custody for actual temperature.

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ANALYTICAL RESULTS

Workorder: 3207608 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207608001**
Sample ID: **CWMP016W**

Date Collected: 10/20/2021 14:00 Matrix: Ground Water
Date Received: 10/20/2021 16:15

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 01:39	PDK	G
1,2-Dibromoethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 01:39	PDK	G
1,1-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 01:39	PDK	G
1,2-Dichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 01:39	PDK	G
1,1-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 01:39	PDK	G
cis-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 01:39	PDK	G
trans-1,2-Dichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 01:39	PDK	G
Ethylbenzene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 01:39	PDK	G
Methylene Chloride	ND	C	ug/L	1.0	SW846 8260B			10/23/21 01:39	PDK	G
Tetrachloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 01:39	PDK	G
Toluene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 01:39	PDK	G
Total Xylenes	ND	C	ug/L	3.0	SW846 8260B			10/23/21 01:39	PDK	G
1,1,1-Trichloroethane	ND	C	ug/L	1.0	SW846 8260B			10/23/21 01:39	PDK	G
Trichloroethene	ND	C	ug/L	1.0	SW846 8260B			10/23/21 01:39	PDK	G
Vinyl Chloride	ND	C	ug/L	1.0	SW846 8260B			10/23/21 01:39	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	94	C	%	62 - 133	SW846 8260B			10/23/21 01:39	PDK	G
4-Bromofluorobenzene (S)	92	C	%	79 - 114	SW846 8260B			10/23/21 01:39	PDK	G
Dibromofluoromethane (S)	87.9	C	%	78 - 116	SW846 8260B			10/23/21 01:39	PDK	G
Toluene-d8 (S)	91.9	C	%	76 - 127	SW846 8260B			10/23/21 01:39	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	12	C	mg/L	5	SM2320B-2011			11/2/21 23:58	MBS	B
Alkalinity, Total	12	C,5	mg/L	5	SM2320B-2011			11/2/21 23:58	MBS	I
Ammonia-N	ND	C	mg/L	0.100	ASTM D6919-09			10/28/21 10:18	ALK	A
Chemical Oxygen Demand (COD)	ND	C	mg/L	15	EPA 410.4			10/28/21 20:00	ALK	A
Chloride	8.9	C	mg/L	2.0	EPA 300.0			10/21/21 16:19	MBS	B
Fluoride	ND	C	mg/L	0.20	EPA 300.0			10/21/21 16:19	MBS	B
Nitrate-N	2.8	C	mg/L	0.20	EPA 300.0			10/21/21 16:19	MBS	B
pH	7.05	C,1	pH_Units		S4500HB-11			11/2/21 23:58	MBS	B
Phenolics	ND	C	mg/L	0.005	SW846 9066	10/27/21 11:03	MXF	11/3/21 09:10	MXF	F
Specific Conductance	89	C	umhos/cm	1	SW846 9050A			11/2/21 16:30	JSE	B
Sulfate	13.3	C	mg/L	2.0	EPA 300.0			10/21/21 16:19	MBS	B
Total Dissolved Solids	46	C	mg/L	25	S2540C-11			10/26/21 12:32	AKH	B
Total Organic Carbon (TOC)	ND	C	mg/L	0.50	SW846 9060A			10/21/21 20:38	PAG	D

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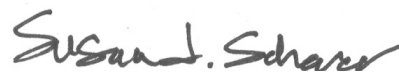
ANALYTICAL RESULTS

Workorder: 3207608 4th QTR 2021 GWMP-FORM 19Q

Lab ID: **3207608001**
Sample ID: **CWMP016W**

Date Collected: 10/20/2021 14:00 Matrix: Ground Water
Date Received: 10/20/2021 16:15

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Turbidity	2.99	C,2,3	NTU	0.10	SM2130B-2011			11/23/21 13:52	LXZ	B
METALS										
Calcium, Total	5.9	C	mg/L	0.11	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:31	SRT	J1
Iron, Total	0.22	C	mg/L	0.067	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:31	SRT	J1
Magnesium, Total	1.5	C	mg/L	0.11	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:31	SRT	J1
Manganese, Total	0.0084	C	mg/L	0.0056	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:31	SRT	J1
Potassium, Total	0.57	C	mg/L	0.56	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:31	SRT	J1
Sodium, Total	3.6	C	mg/L	0.56	SW846 6010C	10/22/21 17:52	JSE	10/26/21 13:31	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	11.13	C	Feet		Field			10/20/21 14:00	BGS	C
Dissolved Oxygen	8.55	C	mg/L	0.01	Field			10/20/21 14:00	BGS	C
Elev Top MW Casing above MSL	311.97	C	Feet		Field			10/20/21 14:00	BGS	C
Flow Rate	2.14	C	gal/min		Field			10/20/21 14:00	BGS	C
Ground Water Elevation	300.84	C	ft/MSL		Field			10/20/21 14:00	BGS	C
Oxidation-Reduction Potential	339	C	mV		Field			10/20/21 14:00	BGS	C
pH, Field (SM4500B)	5.20	C	pH_Units		Field			10/20/21 14:00	BGS	C
Sample Depth	71.00	C	Feet		Field			10/20/21 14:00	BGS	C
Specific Conductance, Field	95	C	umhos/cm	1	Field			10/20/21 14:00	BGS	C
Temperature	12.56	C	Deg. C		Field			10/20/21 14:00	BGS	C
Total Well Depth	73.52	C	Feet		Field			10/20/21 14:00	BGS	C
Turbidity, Field	1	C	NTU	1	Field			10/20/21 14:00	BGS	C
Volume in Water Column	91.71	C	Gallons		Field			10/20/21 14:00	BGS	C
Water Level After Purge	20.42	C	Feet		Field			10/20/21 14:00	BGS	C
Well Volumes Purged	1.98	C	Vol		Field			10/20/21 14:00	BGS	C


Ms. Susan J Scherer
Project Coordinator

ALS Environmental Laboratory Locations Across North America

Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
Vancouver Waterloo · Winnipeg · Yellowknife **United States:** Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York **Mexico:** Monterrey

**ANALYTICAL RESULTS**

Workorder: 3207608 4th QTR 2021 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3207608001	1	CWMP016W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3207608001	2	CWMP016W	SM2130B-2011	Turbidity
Analyte was analyzed past the 48 hour holding time.				
3207608001	3	CWMP016W	SM2130B-2011	Turbidity
3207608001	5	CWMP016W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				

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Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey

**ANALYSIS - PREP METHOD CROSS REFERENCE TABLE**

Workorder: 3207608 4th QTR 2021 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method	Leachate Method
3207608001	CWMP016W	ASTM D6919-09		
3207608001	CWMP016W	EPA 300.0		
3207608001	CWMP016W	EPA 410.4		
3207608001	CWMP016W	Field		
3207608001	CWMP016W	S2540C-11		
3207608001	CWMP016W	S4500HB-11		
3207608001	CWMP016W	SM2130B-2011		
3207608001	CWMP016W	SM2320B-2011		
3207608001	CWMP016W	SW846 6010C	SW846 3015	
3207608001	CWMP016W	SW846 8260B		
3207608001	CWMP016W	SW846 9050A		
3207608001	CWMP016W	SW846 9060A		
3207608001	CWMP016W	SW846 9066	420.4/9066	

ALS Environmental Laboratory Locations Across North America

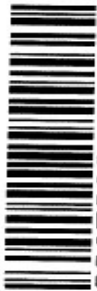
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Vancouver Waterloo · Winnipeg · Yellowknife **United States:** Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York **Mexico:** Monterrey



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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS SAMPLER. INSTRUCTIONS ON THE BACK.



3207608

8 of 1

Client Name: Lancaster County Solid Waste MA

Address: 1299 Harrisburg Pike, P.O. Box 4424

Lancaster, PA 17604

Contact: Dan Brown

Phone#: (717) 735-0193

Project Name/ID: Creswell/GWMP Form 19Q Wells

Bill To: Lancaster County Solid Waste MA

TAT ☒ Normal-Standard TAT is 10-12 business days.

☐ Rush-Subject to ALS approval and surcharges.

Date Required: Approved By: _____

Email? ☒ Y ☐ N dbrown@LCSWMA.com

Fax? ☒ Y ☐ N No.: (717) 397-9973

Sample Description/Location (as it will appear on the lab report)

Sample Date Time

1. CWMP016W 10/20/21 1400 G GW

2

3

4

5

6

7

8

9

10

Project Comments:

LOGGED BY (signature):

REVIEWED BY (signature):

Date Time Received By / Company Name

1. 10/20/21 1400 G GW

3

5

7

9

Relinquished By / Company Name

1. 10/20/21 1400 G GW

3

5

7

9

State Samples Collected In

Standard CLP-like USACE

Special Processing USACE Navy

ALS Field Services: ☐ Pickup ☐ Labor

☐ Composite Sampling ☐ Rental Equipment

☐ Other:

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301 Fulling Mill Road
Middletown, PA 17057

P: (717) 944-5541

F: (717) 944-1430

3207608

Lancaster County Solid Waste
Authority

tion of Sample Receipt Form

Client:

Initials:

Date:

SHC

10/21/21

1. Were airbills / tracking numbers present and recorded?..... NONE YES NO
Tracking number: _____
2. Are Custody Seals on shipping containers intact?..... NONE YES NO
3. Are Custody Seals on sample containers intact?..... NONE YES NO
4. Is there a COC (Chain-of-Custody) present?..... YES NO
5. Are the COC and bottle labels complete, legible and in agreement?..... YES NO
- 5a. Does the COC contain sample locations?..... YES NO
- 5b. Does the COC contain date and time of sample collection for all samples?..... YES NO
- 5c. Does the COC contain sample collectors name?..... YES NO
- 5d. Does the COC note the type(s) of preservation for all bottles?..... None = UNP YES NO
- 5e. Does the COC note the number of bottles submitted for each sample?..... YES NO
- 5f. Does the COC note the type of sample, composite or grab?..... YES NO
- 5g. Does the COC note the matrix of the sample(s)?..... GW YES NO
6. Are all aqueous samples requiring preservation preserved correctly?..... N/A YES NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... YES NO
8. Are all samples within holding times for the requested analyses?..... YES NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... YES NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... N/A YES NO
11. Were the samples received on ice?..... YES NO
12. Were sample temperatures measured at 0.0-6.0°C..... YES NO
13. Are the samples DW matrix ? IF YES, fill out Reportable Drinking Water questions below..... YES NO
- 13a. Are the samples required for SDWA compliance reporting?..... N/A YES NO
- 13b. Did the client provide a SDWA PWS ID#?..... N/A YES NO
- 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... N/A YES NO
- 13d. Did the client provide the SDWA sample location ID/Description?..... N/A YES NO
- 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... N/A YES NO

Cooler #:

Temperature (°C):

3°

Thermometer ID:

570

Radiological (µCi):

COMMENTS (Required for all NO responses above and any sample non-conformance):

¹Final determination of correct preservation for analysis such as volatiles, microbiology, and oil and grease is made in the analytical department at the time of or following the analysis

Rev 1/20/2020