

May 22, 2018

Ms. Charlene Sauls; Regional Hydrogeologist
Pennsylvania Department of Environmental Protection
Bureau of Land Recycling and Waste Management
909 Elmerton Avenue
Harrisburg, PA 17110-8200

REF: Creswell Landfill (BWM Permit #100008)
Groundwater Monitoring; 2nd Quarter 2018

Dear Ms. Sauls:

Enclosed, as a PDF file, are the Form 19 reports for the sampling period completed at the above referenced facility. The laboratory results were reviewed to evaluate the quality of the data and historic trends.

- This sampling event was for the “Annual” Form 19 parameters, all the thirteen (13) GWMP locations were sampled.
- Enclosed, on CD, is a csv file that should be in the format compatible with your LandLinks software. Additionally, the CD includes a PDF file of all the Forms 19, PDF files of the laboratory reports, MCL and SMCL exceedance reports as you have requested.
- Up gradient well samples were below MCL and SMCL except for nitrate, iron, and manganese on well 1.
- Down gradient wells had similar results with 17 & 18 (surface Mann’s Run) showing high concentration of chlorides, TDS and nitrate-nitrogen related to surface influences and Turkey Hill discharge. Wells 5 & 7 exceeded MCL for nitrate. Wells 9 and 10 had elevated TDS and chlorides which shows surface influence of Mann’s Run. Wells 2 & 5 show manganese, 8 thru 12 show iron and manganese above the SMCL which is due to natural geologic parent material.
- Wells 2,3,4,8,9 and 12 with historic VOCs concentrations detected either stabilized or continue to decrease.

Page 2 of 2
Creswell Landfill (BWM Permit #100008)

1299 HARRISBURG PIKE | PO BOX 4425 | LANCASTER, PA 17604
PHONE: 717-397-9968 | FAX: 717-397-9973

www.lcswma.org

In summary, we observed no unusual trends, and the values reported are generally consistent with historic or seasonal results.

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

Respectfully Submitted,



Mark D. Reider
Director of Environmental Compliance

Enclosures

cc: Bob Zorbaugh; Daniel Brown; Bob Eshbach; Jeff Musser; Jordan Gallagher
Randy Weiss (PA DEP)



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/16/2018

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 Well Spring Stream Other
 Upgradient/Upstream 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: 4.23 ft Measured from: Land Surface TOC

Casing Stickup: 1.50 ft Elevation of Water Level: 449.17 ft./MSL

Sampling Depth: 33 ft Volume of Water Column: 47.39 gal

Total Well Depth: 36.5 ft Sampling Method: Pumped Bailed Grab

Well Purged: 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): 4/18/2018 Sample Collection Time: 10:00

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

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): 2309819001 Final Lab Analysis Completion Date: 4/28/2018

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No 100008

Monitoring Point No. CWMP007W

Sample Date 4/18/2018

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	0.252	ASTM D6919-09
BICARBONATE	18	SM20 2321
CALCIUM, TOTAL	17.8	SW846 6010C
CALCIUM, DISSOLVED	18.5	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	68.7	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	56 ND	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	9.3	SW846 6010C
MAGNESIUM, DISSOLVED	10.2	SW846 6010C
MANGANESE, TOTAL (ug/l)	7.1	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	6.2	SW846 6010C
NITRATE-NITROGEN	10.6	EPA 300
pH-FIELD (SU)	4.65	FIELD
pH-LAB (SU)	5.89	SM4500B
POTASSIUM, TOTAL	2.1	SW846 6010C
POTASSIUM, DISSOLVED	2.1	6SW846 010C
SODIUM, TOTAL	31.9	SW846 6010C
SODIUM, DISSOLVED	31.8	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	421	FIELD
SPEC. COND., LAB (umhos/cm)	342	EPA 120.1
SULFATE	16.1	EPA 300
ALKALINITY	18	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	238	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.54	SM20 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 4/18/2018

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.

I.D. No. 100008

Monitoring Point No. CWMP007W

Sample Date 4/18/2018

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

- 1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	52	SW846 6010C
BARIUM, DISSOLVED	52	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	7.7	SW846 6010C

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

I.D. No 100008

Monitoring Point No. CWMP007W

Sample Date 4/18/2018

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROENZENE	1 ND	SW846 8260B
1,3-DICHLOROENZENE	1 ND	SW846 8260B
1,4-DICHLOROENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP007W
Sample Date	4/18/2018

FORM 19
ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	5.6 ND	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.



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DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/16/2018

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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: 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: 29.07 ft Measured from: Land Surface TOC

Casing Stickup: 1.23 ft Elevation of Water Level: 486.06 ft./MSL

Sampling Depth: 57 ft Volume of Water Column: 54.68 gal

Total Well Depth: 66.3 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 2.3

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 4/18/2018 Sample Collection Time: 11:26

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

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): 2309819002 Final Lab Analysis Completion Date: 4/28/2018

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No 100008

Monitoring Point No. CWMP001W

Sample Date 4/18/2018

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	0.302	ASTM D6919-09
BICARBONATE	7	SM20 2321
CALCIUM, TOTAL	16.4	SW846 6010C
CALCIUM, DISSOLVED	16.4	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	33.2	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	4700	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	11.8	SW846 6010C
MAGNESIUM, DISSOLVED	11.8	SW846 6010C
MANGANESE, TOTAL (ug/l)	100	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	56	SW846 6010C
NITRATE-NITROGEN	21.6	EPA 300
pH-FIELD (SU)	4.92	FIELD
pH-LAB (SU)	5.68	SM4500B
POTASSIUM, TOTAL	2.5	SW846 6010C
POTASSIUM, DISSOLVED	2.3	6SW846 010C
SODIUM, TOTAL	15.2	SW846 6010C
SODIUM, DISSOLVED	15.2	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	333	FIELD
SPEC. COND., LAB (umhos/cm)	270	EPA 120.1
SULFATE	2.2	EPA 300
ALKALINITY	7	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	193	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	93.3	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 4/18/2018

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.

I.D. No. 100008

Monitoring Point No. CWMP001W

Sample Date 4/18/2018

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

- 1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	110	SW846 6010C
BARIUM, DISSOLVED	89	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.9	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	8.4	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	9.2	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	28	SW846 6010C
ZINC, DISSOLVED	19	SW846 6010C

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

I.D. No 100008

Monitoring Point No. CWMP001W

Sample Date 4/18/2018

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROENZENE	1 ND	SW846 8260B
1,3-DICHLOROENZENE	1 ND	SW846 8260B
1,4-DICHLOROENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

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I.D. No	100008
Monitoring Point No.	CWMP001W
Sample Date	4/18/2018

FORM 19
ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	8.7	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.



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DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
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MUNICIPAL WASTE LANDFILL
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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

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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: CWMP008W Well Spring Stream Other
 Upgradient/Upstream 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: 2.54 ft Measured from: Land Surface TOC

Casing Stickup: 2.80 ft Elevation of Water Level: 419.76 ft./MSL

Sampling Depth: 19 ft Volume of Water Column: 3.31 gal

Total Well Depth: 22.8 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 6.7

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 4/19/2018 Sample Collection Time: 13:47

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

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): 2310027001 Final Lab Analysis Completion Date: 4/30/2018

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP008W

Sample Date 4/19/2018

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	4.69	ASTM D6919-09
BICARBONATE	429	SM20 2321
CALCIUM, TOTAL	61.3	SW846 6010C
CALCIUM, DISSOLVED	60.9	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	17	EPA 410.4
CHLORIDE	33.4	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	24200	SW846 6010C
IRON, DISSOLVED (ug/l)	23100	SW846 6010C
MAGNESIUM, TOTAL	28.8	SW846 6010C
MAGNESIUM, DISSOLVED	28.7	SW846 6010C
MANGANESE, TOTAL (ug/l)	14400	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	14400	SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	5.71	FIELD
pH-LAB (SU)	6.32	SM4500B
POTASSIUM, TOTAL	7.2	SW846 6010C
POTASSIUM, DISSOLVED	7.1	6SW846 010C
SODIUM, TOTAL	29.7	SW846 6010C
SODIUM, DISSOLVED	29.7	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	864	FIELD
SPEC. COND., LAB (umhos/cm)	732	EPA 120.1
SULFATE	7.9	EPA 300
ALKALINITY	429	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	444	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	8.5	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	4.29	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 4/19/2018

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	2.1	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	3.3	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.

I.D. No. 100008

Monitoring Point No. CWMP008W

Sample Date 4/19/2018

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

- 1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	120	SW846 6010C
BARIUM, DISSOLVED	120	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

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

I.D. No 100008

Monitoring Point No. CWMP008W

Sample Date 4/19/2018

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROENZENE	9.8	SW846 8260B
CHLOROETHANE	5.3	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROENZENE	2	SW846 8260B
1,3-DICHLOROENZENE	1 ND	SW846 8260B
1,4-DICHLOROENZENE	14.1	SW846 8260B
DICHLORODIFLUOROMETHANE	1.1	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP008W
Sample Date	4/19/2018

FORM 19
ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	33	SW846 6010C
NICKEL	18	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT



Date Prepared/Revised
05/16/2018

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: CWMP009W Well Spring Stream Other
 Upgradient/Upstream 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: 8.95 ft Measured from: Land Surface TOC

Casing Stickup: 2.70 ft Elevation of Water Level: 395.25 ft./MSL

Sampling Depth: 16 ft Volume of Water Column: 7.02 gal

Total Well Depth: 19.7 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 4.9

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 4/19/2018 Sample Collection Time: 14:21

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

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): 2310027002 Final Lab Analysis Completion Date: 4/30/2018

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No 100008

Monitoring Point No. CWMP009W

Sample Date 4/19/2018

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	25.4	ASTM D6919-09
BICARBONATE	602	SM20 2321
CALCIUM, TOTAL	157	SW846 6010C
CALCIUM, DISSOLVED	156	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	92	EPA 410.4
CHLORIDE	685	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	39100	SW846 6010C
IRON, DISSOLVED (ug/l)	37400	SW846 6010C
MAGNESIUM, TOTAL	81.9	SW846 6010C
MAGNESIUM, DISSOLVED	82	SW846 6010C
MANGANESE, TOTAL (ug/l)	12500	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	12300	SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	5.71	FIELD
pH-LAB (SU)	6.39	SM4500B
POTASSIUM, TOTAL	33.1	SW846 6010C
POTASSIUM, DISSOLVED	33	6SW846 010C
SODIUM, TOTAL	155	SW846 6010C
SODIUM, DISSOLVED	155	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	3004	FIELD
SPEC. COND., LAB (umhos/cm)	2570	EPA 120.1
SULFATE	7.3	EPA 300
ALKALINITY	602	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	1580	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	28.9	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	6.33	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 4/19/2018

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1.7	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.

I.D. No. 100008

Monitoring Point No. CWMP009W

Sample Date 4/19/2018

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

- 1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.6	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	810	SW846 6010C
BARIUM, DISSOLVED	790	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.5	SW846 6010C
CHROMIUM, DISSOLVED	2.2	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

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

I.D. No 100008

Monitoring Point No. CWMP009W

Sample Date 4/19/2018

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROENZENE	12.5	SW846 8260B
CHLOROETHANE	9.3	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROENZENE	1.7	SW846 8260B
1,3-DICHLOROENZENE	1 ND	SW846 8260B
1,4-DICHLOROENZENE	10.9	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP009W
Sample Date	4/19/2018

FORM 19
ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ACETONE	11.9	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	57	SW846 6010C
NICKEL	69	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/16/2018

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: CWMP010W Well Spring Stream Other
 Upgradient/Upstream 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: 8.83 ft Measured from: Land Surface TOC

Casing Stickup: 2.10 ft Elevation of Water Level: 352.07 ft./MSL

Sampling Depth: 17 ft Volume of Water Column: 7.03 gal

Total Well Depth: 19.6 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.2

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 4/19/2018 Sample Collection Time: 14:44

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

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): 2310027003 Final Lab Analysis Completion Date: 4/30/2018

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP010W

Sample Date 4/19/2018

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	0.477	ASTM D6919-09
BICARBONATE	126	SM20 2321
CALCIUM, TOTAL	20.9	SW846 6010C
CALCIUM, DISSOLVED	44.9	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7	EPA 410.4
CHLORIDE	105	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	400	SW846 6010C
IRON, DISSOLVED (ug/l)	190	SW846 6010C
MAGNESIUM, TOTAL	17.2	SW846 6010C
MAGNESIUM, DISSOLVED	26.6	SW846 6010C
MANGANESE, TOTAL (ug/l)	260	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	740	SW846 6010C
NITRATE-NITROGEN	2.4	EPA 300
pH-FIELD (SU)	6.05	FIELD
pH-LAB (SU)	7.19	SM4500B
POTASSIUM, TOTAL	4.9	SW846 6010C
POTASSIUM, DISSOLVED	8.8	6SW846 010C
SODIUM, TOTAL	75.5	SW846 6010C
SODIUM, DISSOLVED	103	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	642	FIELD
SPEC. COND., LAB (umhos/cm)	562	EPA 120.1
SULFATE	26.1	EPA 300
ALKALINITY	126	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	348	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	2.9	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.87	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 4/19/2018

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.

I.D. No. 100008

Monitoring Point No. CWMP010W

Sample Date 4/19/2018

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

- 1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	22	SW846 6010C
BARIUM, DISSOLVED	50	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	12	SW846 6010C
CHROMIUM, DISSOLVED	12	SW846 6010C
COPPER, TOTAL	6.3	SW846 6010C
COPPER, DISSOLVED	8.8	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

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

I.D. No 100008

Monitoring Point No. CWMP010W

Sample Date 4/19/2018

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROENZENE	1 ND	SW846 8260B
1,3-DICHLOROENZENE	1 ND	SW846 8260B
1,4-DICHLOROENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP010W
Sample Date	4/19/2018

FORM 19
ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	17	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/16/2018

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: 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): 4/23/2018 Sample Collection Time: 10:46

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

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): 2310465001 Final Lab Analysis Completion Date: 5/2/2018

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP018S

Sample Date 4/23/2018

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	0.118	ASTM D6919-09
BICARBONATE	340	SM20 2321
CALCIUM, TOTAL	62.4	SW846 6010C
CALCIUM, DISSOLVED	59.3	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	24	EPA 410.4
CHLORIDE	347	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	76	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	77.5	SW846 6010C
MAGNESIUM, DISSOLVED	74.8	SW846 6010C
MANGANESE, TOTAL (ug/l)	21	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	17	SW846 6010C
NITRATE-NITROGEN	12.1	EPA 300
pH-FIELD (SU)	7.71	FIELD
pH-LAB (SU)	8.57	SM4500B
POTASSIUM, TOTAL	15.4	SW846 6010C
POTASSIUM, DISSOLVED	14.7	6SW846 010C
SODIUM, TOTAL	195	SW846 6010C
SODIUM, DISSOLVED	188	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	1947	FIELD
SPEC. COND., LAB (umhos/cm)	1730	EPA 120.1
SULFATE	36.3	EPA 300
ALKALINITY	385	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	957	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	7.1	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.95	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 4/23/2018

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.

I.D. No. 100008

Monitoring Point No. CWMP018S

Sample Date 4/23/2018

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

- 1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	35	SW846 6010C
BARIUM, DISSOLVED	33	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	6	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	7.4	SW846 6010C
ZINC, DISSOLVED	7.5	SW846 6010C

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

I.D. No 100008

Monitoring Point No. CWMP018S

Sample Date 4/23/2018

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROENZENE	1 ND	SW846 8260B
1,3-DICHLOROENZENE	1 ND	SW846 8260B
1,4-DICHLOROENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP018S
Sample Date	4/23/2018

FORM 19
ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	13	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/16/2018

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): 4/23/2018 Sample Collection Time: 11:02

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

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): 2310465002 Final Lab Analysis Completion Date: 5/2/2018

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP017S

Sample Date 4/23/2018

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	0.133	ASTM D6919-09
BICARBONATE	544	SM20 2321
CALCIUM, TOTAL	65.9	SW846 6010C
CALCIUM, DISSOLVED	64.9	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	17	EPA 410.4
CHLORIDE	474	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	140	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	114	SW846 6010C
MAGNESIUM, DISSOLVED	113	SW846 6010C
MANGANESE, TOTAL (ug/l)	60	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	56	SW846 6010C
NITRATE-NITROGEN	12.2	EPA 300
pH-FIELD (SU)	7.61	FIELD
pH-LAB (SU)	8.33	SM4500B
POTASSIUM, TOTAL	16.1	SW846 6010C
POTASSIUM, DISSOLVED	15.8	6SW846 010C
SODIUM, TOTAL	297	SW846 6010C
SODIUM, DISSOLVED	286	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	2561	FIELD
SPEC. COND., LAB (umhos/cm)	2280	EPA 120.1
SULFATE	50.6	EPA 300
ALKALINITY	552	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	1190	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	4.5	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.45	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 4/23/2018

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.

I.D. No. 100008

Monitoring Point No. CWMP017S

Sample Date 4/23/2018

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

- 1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	32	SW846 6010C
BARIUM, DISSOLVED	31	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	7	SW846 6010C
COPPER, DISSOLVED	6.4	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	56	SW846 6010C
ZINC, DISSOLVED	51	SW846 6010C

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

I.D. No 100008

Monitoring Point No. CWMP017S

Sample Date 4/23/2018

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROENZENE	1 ND	SW846 8260B
1,3-DICHLOROENZENE	1 ND	SW846 8260B
1,4-DICHLOROENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP017S
Sample Date	4/23/2018

FORM 19
ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	9	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.



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

Date Prepared/Revised
05/16/2018

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: 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: 8.63 ft Measured from: Land Surface TOC

Casing Stickup: 2.53 ft Elevation of Water Level: 303.34 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: 1.6

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 4/23/2018 Sample Collection Time: 13:29

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

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): 2310465003 Final Lab Analysis Completion Date: 5/2/2018

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP016W

Sample Date 4/23/2018

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	0.196	ASTM D6919-09
BICARBONATE	12	SM20 2321
CALCIUM, TOTAL	5	SW846 6010C
CALCIUM, DISSOLVED	4.9	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	2.5	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	120	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	1.1	SW846 6010C
MAGNESIUM, DISSOLVED	1.1	SW846 6010C
MANGANESE, TOTAL (ug/l)	6.5	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	5.9	SW846 6010C
NITRATE-NITROGEN	0.54	EPA 300
pH-FIELD (SU)	4.73	FIELD
pH-LAB (SU)	7.04	SM4500B
POTASSIUM, TOTAL	0.43	SW846 6010C
POTASSIUM, DISSOLVED	0.42	6SW846 010C
SODIUM, TOTAL	3	SW846 6010C
SODIUM, DISSOLVED	3.1	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	64	FIELD
SPEC. COND., LAB (umhos/cm)	52	EPA 120.1
SULFATE	12.1	EPA 300
ALKALINITY	12	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	16	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.61	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.6	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. CWMP016W

Sample Date 4/23/2018

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.

I.D. No. 100008

Monitoring Point No. CWMP016W

Sample Date 4/23/2018

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

- 1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	8.4	SW846 6010C
BARIUM, DISSOLVED	8.3	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

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

I.D. No 100008

Monitoring Point No. CWMP016W

Sample Date 4/23/2018

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROENZENE	1 ND	SW846 8260B
1,3-DICHLOROENZENE	1 ND	SW846 8260B
1,4-DICHLOROENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP016W
Sample Date	4/23/2018

FORM 19
ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	5.6 ND	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/16/2018

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: 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: 41.66 ft Measured from: Land Surface TOC

Casing Stickup: -0.37 ft Elevation of Water Level: 471.77 ft./MSL

Sampling Depth: 130 ft Volume of Water Column: 144.43 gal

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

Well Purged: Yes No Well Volumes Purged: 2.2

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 4/20/2018 Sample Collection Time: 14:46

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

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): 2310476001 Final Lab Analysis Completion Date: 5/2/2018

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No 100008

Monitoring Point No. CWMP005W

Sample Date 4/20/2018

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	0.144	ASTM D6919-09
BICARBONATE	18	SM20 2321
CALCIUM, TOTAL	18.4	SW846 6010C
CALCIUM, DISSOLVED	18.5	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	99.1	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	56 ND	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	11	SW846 6010C
MAGNESIUM, DISSOLVED	11	SW846 6010C
MANGANESE, TOTAL (ug/l)	52	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	52	SW846 6010C
NITRATE-NITROGEN	10.2	EPA 300
pH-FIELD (SU)	4.14	FIELD
pH-LAB (SU)	5.83	SM4500B
POTASSIUM, TOTAL	2.5	SW846 6010C
POTASSIUM, DISSOLVED	2.5	6SW846 010C
SODIUM, TOTAL	40.4	SW846 6010C
SODIUM, DISSOLVED	40	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	480	FIELD
SPEC. COND., LAB (umhos/cm)	421	EPA 120.1
SULFATE	3.1	EPA 300
ALKALINITY	18	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	214	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.26	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 4/20/2018

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.

I.D. No. 100008

Monitoring Point No. CWMP005W

Sample Date 4/20/2018

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

- 1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	69	SW846 6010C
BARIUM, DISSOLVED	70	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	13	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	9.700001	SW846 6010C
ZINC, DISSOLVED	10	SW846 6010C

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

I.D. No 100008

Monitoring Point No. CWMP005W

Sample Date 4/20/2018

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROENZENE	1 ND	SW846 8260B
1,3-DICHLOROENZENE	1 ND	SW846 8260B
1,4-DICHLOROENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP005W
Sample Date	4/20/2018

FORM 19
ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	7	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/16/2018

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: 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: 50.43 ft Measured from: Land Surface TOC

Casing Stickup: 1.90 ft Elevation of Water Level: 332.27 ft./MSL

Sampling Depth: 0 ft Volume of Water Column: 75.59 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): 4/24/2018 Sample Collection Time: 9:35

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

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): 2310742001 Final Lab Analysis Completion Date: 5/2/2018

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP012W

Sample Date 4/24/2018

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	0.457	ASTM D6919-09
BICARBONATE	73	SM20 2321
CALCIUM, TOTAL	29.7	SW846 6010C
CALCIUM, DISSOLVED	30.9	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	35	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	37700	SW846 6010C
IRON, DISSOLVED (ug/l)	70	SW846 6010C
MAGNESIUM, TOTAL	9.1	SW846 6010C
MAGNESIUM, DISSOLVED	9.2	SW846 6010C
MANGANESE, TOTAL (ug/l)	130	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	95	SW846 6010C
NITRATE-NITROGEN	10	EPA 300
pH-FIELD (SU)	5.42	FIELD
pH-LAB (SU)	6.4	SM4500B
POTASSIUM, TOTAL	1.4	SW846 6010C
POTASSIUM, DISSOLVED	1.4	6SW846 010C
SODIUM, TOTAL	13	SW846 6010C
SODIUM, DISSOLVED	13.2	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	391	FIELD
SPEC. COND., LAB (umhos/cm)	298	EPA 120.1
SULFATE	4.5	EPA 300
ALKALINITY	73	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	207	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	1.8	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	384	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 4/24/2018

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	1.4	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.

I.D. No. 100008

Monitoring Point No. CWMP012W

Sample Date 4/24/2018

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

- 1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	94	SW846 6010C
BARIUM, DISSOLVED	83	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	6.8	SW846 6010C

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

I.D. No 100008

Monitoring Point No. CWMP012W

Sample Date 4/24/2018

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROENZENE	1 ND	SW846 8260B
1,3-DICHLOROENZENE	1 ND	SW846 8260B
1,4-DICHLOROENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP012W
Sample Date	4/24/2018

FORM 19
ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	6.6	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/16/2018

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: 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: 71.68 ft Measured from: Land Surface TOC

Casing Stickup: -1.19 ft Elevation of Water Level: 454.13 ft./MSL

Sampling Depth: 85 ft Volume of Water Column: 41.59 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): 4/24/2018 Sample Collection Time: 10:57

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

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): 2310742002 Final Lab Analysis Completion Date: 5/2/2018

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP002W

Sample Date 4/24/2018

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	0.396	ASTM D6919-09
BICARBONATE	67	SM20 2321
CALCIUM, TOTAL	48.4	SW846 6010C
CALCIUM, DISSOLVED	47.5	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	107	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	56 ND	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	15.7	SW846 6010C
MAGNESIUM, DISSOLVED	15	SW846 6010C
MANGANESE, TOTAL (ug/l)	1100	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	1100	SW846 6010C
NITRATE-NITROGEN	3.3	EPA 300
pH-FIELD (SU)	5.35	FIELD
pH-LAB (SU)	6.15	SM4500B
POTASSIUM, TOTAL	2.6	SW846 6010C
POTASSIUM, DISSOLVED	2.5	6SW846 010C
SODIUM, TOTAL	20.9	SW846 6010C
SODIUM, DISSOLVED	20.4	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	608	FIELD
SPEC. COND., LAB (umhos/cm)	543	EPA 120.1
SULFATE	25.7	EPA 300
ALKALINITY	67	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	323	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	3	SM20 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. CWMP002W

Sample Date 4/24/2018

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	8.3	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	1.1	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.

I.D. No. 100008

Monitoring Point No. CWMP002W

Sample Date 4/24/2018

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

- 1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	39	SW846 6010C
BARIUM, DISSOLVED	40	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.8	SW846 6010C
ZINC, DISSOLVED	6.5	SW846 6010C

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

I.D. No 100008

Monitoring Point No. CWMP002W

Sample Date 4/24/2018

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROENZENE	1 ND	SW846 8260B
CHLOROETHANE	3.7	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROENZENE	1 ND	SW846 8260B
1,3-DICHLOROENZENE	1 ND	SW846 8260B
1,4-DICHLOROENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	4/24/2018

FORM 19
ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	24	SW846 6010C
NICKEL	25	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/16/2018

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: 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: 99.98 ft Measured from: Land Surface TOC

Casing Stickup: -1.29 ft Elevation of Water Level: 424.23 ft./MSL

Sampling Depth: 100 ft Volume of Water Column: -36.69 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): 4/24/2018 Sample Collection Time: 11:08

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

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): 2310742003 Final Lab Analysis Completion Date: 5/2/2018

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP003W

Sample Date 4/24/2018

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	0.327	ASTM D6919-09
BICARBONATE	23	SM20 2321
CALCIUM, TOTAL	27.2	SW846 6010C
CALCIUM, DISSOLVED	26.9	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	73.2	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	56 ND	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	10.1	SW846 6010C
MAGNESIUM, DISSOLVED	9.6	SW846 6010C
MANGANESE, TOTAL (ug/l)	5.6 ND	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	5.6 ND	SW846 6010C
NITRATE-NITROGEN	8	EPA 300
pH-FIELD (SU)	5.35	FIELD
pH-LAB (SU)	6.3	SM4500B
POTASSIUM, TOTAL	1.6	SW846 6010C
POTASSIUM, DISSOLVED	1.5	6SW846 010C
SODIUM, TOTAL	20.2	SW846 6010C
SODIUM, DISSOLVED	18.8	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	413	FIELD
SPEC. COND., LAB (umhos/cm)	341	EPA 120.1
SULFATE	5.6	EPA 300
ALKALINITY	23	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	235	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.52	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.15	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 4/24/2018

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	2.3	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.

I.D. No. 100008

Monitoring Point No. CWMP003W

Sample Date 4/24/2018

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

- 1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	16	SW846 6010C
BARIUM, DISSOLVED	15	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	6.2	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

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

I.D. No 100008

Monitoring Point No. CWMP003W

Sample Date 4/24/2018

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-A. Organics (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLORO BENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLORO BENZENE	1 ND	SW846 8260B
1,3-DICHLORO BENZENE	1 ND	SW846 8260B
1,4-DICHLORO BENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP003W
Sample Date	4/24/2018

FORM 19
ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	10	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/16/2018

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: 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: 112.36 ft Measured from: Land Surface TOC

Casing Stickup: -1.37 ft Elevation of Water Level: 417.17 ft./MSL

Sampling Depth: 130 ft Volume of Water Column: 40.59 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): 4/24/2018 Sample Collection Time: 11:20

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

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): 2310742004 Final Lab Analysis Completion Date: 5/2/2018

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP004W

Sample Date 4/24/2018

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	0.323	ASTM D6919-09
BICARBONATE	30	SM20 2321
CALCIUM, TOTAL	19.7	SW846 6010C
CALCIUM, DISSOLVED	19.5	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	42.4	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	110	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	6.5	SW846 6010C
MAGNESIUM, DISSOLVED	6.2	SW846 6010C
MANGANESE, TOTAL (ug/l)	11	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	8.1	SW846 6010C
NITRATE-NITROGEN	6.6	EPA 300
pH-FIELD (SU)	5.48	FIELD
pH-LAB (SU)	6.39	SM4500B
POTASSIUM, TOTAL	1.3	SW846 6010C
POTASSIUM, DISSOLVED	1.2	6SW846 010C
SODIUM, TOTAL	14.7	SW846 6010C
SODIUM, DISSOLVED	14.2	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	289	FIELD
SPEC. COND., LAB (umhos/cm)	233	EPA 120.1
SULFATE	6.3	EPA 300
ALKALINITY	30	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	195	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.7	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.44	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 4/24/2018

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	1.1	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.

I.D. No. 100008

Monitoring Point No. CWMP004W

Sample Date 4/24/2018

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

- 1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	12	SW846 6010C
BARIUM, DISSOLVED	11	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	3.3	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	9.9	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

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

I.D. No 100008

Monitoring Point No. CWMP004W

Sample Date 4/24/2018

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROENZENE	1 ND	SW846 8260B
1,3-DICHLOROENZENE	1 ND	SW846 8260B
1,4-DICHLOROENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No 100008

Monitoring Point No. CWMP004W

Sample Date 4/24/2018

FORM 19
ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On List - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	6.3	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

Lancaster County Solid Waste Management Authority
Creswell Landfill

Exceedence Report

<i>Parameter Name</i>	<i>Units</i>	<i>Concentration</i>	<i>Criteria Conc</i>	<i>Qualifiers</i>	<i>Criteria</i>
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP001W	2309819002	04/18/2018	GW		
NITRATE-NITROGEN	mg/l	21.60	10.00		EPA-MCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP005W	2310476001	04/20/2018	GW		
NITRATE-NITROGEN	mg/l	10.20	10.00		EPA-MCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP007W	2309819001	04/18/2018	GW		
NITRATE-NITROGEN	mg/l	10.60	10.00		EPA-MCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP017S	2310465002	04/23/2018	GW		
NITRATE-NITROGEN	mg/l	12.20	10.00		EPA-MCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP018S	2310465001	04/23/2018	GW		
NITRATE-NITROGEN	mg/l	12.10	10.00		EPA-MCL

Lancaster County Solid Waste Management Authority
Creswell Landfill

Exceedence Report

<i>Parameter Name</i>	<i>Units</i>	<i>Concentration</i>	<i>Criteria Conc</i>	<i>Qualifiers</i>	<i>Criteria</i>
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP001W	2309819002	04/18/2018	GW		
IRON, TOTAL	mg/l	4.70	0.30		EPA-SMCL
MANGANESE, DISSOLVED	mg/l	0.06	0.05		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.10	0.05		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP002W	2310742002	04/24/2018	GW		
MANGANESE, DISSOLVED	mg/l	1.10	0.05		EPA-SMCL
MANGANESE, TOTAL	mg/l	1.10	0.05		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP005W	2310476001	04/20/2018	GW		
MANGANESE, DISSOLVED	mg/l	0.05	0.05		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.05	0.05		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP008W	2310027001	04/19/2018	GW		
IRON, DISSOLVED	mg/l	23.10	0.30		EPA-SMCL
IRON, TOTAL	mg/l	24.20	0.30		EPA-SMCL
MANGANESE, DISSOLVED	mg/l	14.40	0.05		EPA-SMCL
MANGANESE, TOTAL	mg/l	14.40	0.05		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP009W	2310027002	04/19/2018	GW		
CHLORIDE	mg/l	685.00	250.00		EPA-SMCL
IRON, DISSOLVED	mg/l	37.40	0.30		EPA-SMCL
IRON, TOTAL	mg/l	39.10	0.30		EPA-SMCL
MANGANESE, DISSOLVED	mg/l	12.30	0.05		EPA-SMCL
MANGANESE, TOTAL	mg/l	12.50	0.05		EPA-SMCL
TDS (TOTAL DISSOLVED SOLIDS)	mg/l	1,580.00	500.00		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP010W	2310027003	04/19/2018	GW		
IRON, TOTAL	mg/l	0.40	0.30		EPA-SMCL
MANGANESE, DISSOLVED	mg/l	0.74	0.05		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.26	0.05		EPA-SMCL

<i>Parameter Name</i>	<i>Units</i>	<i>Concentration</i>	<i>Criteria Conc</i>	<i>Qualifiers</i>	<i>Criteria</i>
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP012W	2310742001	04/24/2018	GW		
IRON, TOTAL	mg/l	37.70	0.30	EPA-SMCL	
MANGANESE, DISSOLVED	mg/l	0.09	0.05	EPA-SMCL	
MANGANESE, TOTAL	mg/l	0.13	0.05	EPA-SMCL	
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP017S	2310465002	04/23/2018	GW		
CHLORIDE	mg/l	474.00	250.00	EPA-SMCL	
MANGANESE, DISSOLVED	mg/l	0.06	0.05	EPA-SMCL	
MANGANESE, TOTAL	mg/l	0.06	0.05	EPA-SMCL	
TDS (TOTAL DISSOLVED SOLIDS)	mg/l	1,190.00	500.00	EPA-SMCL	
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP018S	2310465001	04/23/2018	GW		
CHLORIDE	mg/l	347.00	250.00	EPA-SMCL	
pH-LAB	SU	8.57	8.50	EPA-SMCL	
TDS (TOTAL DISSOLVED SOLIDS)	mg/l	957.00	500.00	EPA-SMCL	

May 1, 2018

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

Certificate of Analysis

Project Name:	2018-CRESWELL	Workorder:	2309819
Purchase Order:	PO1000127	Workorder ID:	2ND QTR 2018 CWMP-FORM 19A

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, April 18, 2018.

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.

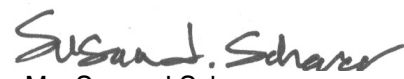
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications 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. Jordan Gallagher , Mr. Mark Reider , 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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Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey

SAMPLE SUMMARY

Workorder: 2309819 2ND QTR 2018 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2309819001	CWMP007W	Ground Water	4/18/2018 10:00	4/18/2018 16:31	Mr. Brian G Shade
2309819002	CWMP001W	Ground Water	4/18/2018 11:26	4/18/2018 16:31	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: 2309819 2ND QTR 2018 CWMP-FORM 19A

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.

Standard Acronyms/Flags

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

ALS Environmental Laboratory Locations Across North AmericaCanada: 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: 2309819 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2309819001** Date Collected: 4/18/2018 10:00 Matrix: Ground Water
Sample ID: **CWMP007W** Date Received: 4/18/2018 16:31

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/23/18 14:05	TMP	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/23/18 14:05	TMP	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/23/18 14:05	TMP	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/23/18 14:05	TMP	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/23/18 14:05	TMP	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/23/18 14:05	TMP	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/23/18 14:05	TMP	J

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ANALYTICAL RESULTS

Workorder: 2309819 2ND QTR 2018 CWMP-FORM 19A

 Lab ID: **2309819001** Date Collected: 4/18/2018 10:00 Matrix: Ground Water
 Sample ID: **CWMP007W** Date Received: 4/18/2018 16:31

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/23/18 14:05	TMP	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/23/18 14:05	TMP	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/23/18 14:05	TMP	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/23/18 14:05	TMP	J

Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	112		%	62 - 133	SW846 8260B			4/23/18 14:05	TMP	J
4-Bromofluorobenzene (S)	99.4		%	79 - 114	SW846 8260B			4/23/18 14:05	TMP	J
Dibromofluoromethane (S)	110		%	78 - 116	SW846 8260B			4/23/18 14:05	TMP	J
Toluene-d8 (S)	99.5		%	76 - 127	SW846 8260B			4/23/18 14:05	TMP	J

LIBRARY SEARCH - VOLATILES

No TIC's Detected . Lib Search VOC 4/23/18 14:05 CPK J

WET CHEMISTRY

Alkalinity, Bicarbonate	18		mg/L	5	S2320B-97			4/20/18 09:18	MSA	B
Alkalinity, Total	18	1	mg/L	5	S2320B-97			4/20/18 09:18	MSA	B
Ammonia-N	0.252		mg/L	0.100	D6919-09			4/27/18 02:15	CMM	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			4/28/18 15:45	AK	C
Chloride	68.7		mg/L	2.0	EPA 300.0			4/19/18 08:20	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/19/18 08:20	CHW	B
Nitrate-N	10.6		mg/L	0.20	EPA 300.0			4/19/18 08:20	CHW	B
pH	5.89	2	pH_Units		S4500HB-11			4/20/18 09:18	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	4/24/18 14:04	NJA	4/25/18 14:45	NJA	I
Specific Conductance	342		umhos/cm	1	S2510B-97			4/20/18 09:18	MSA	B
Sulfate	16.1		mg/L	2.0	EPA 300.0			4/19/18 08:20	CHW	B
Total Dissolved Solids	238		mg/L	5	S2540C-11			4/24/18 11:00	BMK	B
Total Organic Carbon (TOC)	0.54		mg/L	0.50	S5310B-00			4/20/18 11:30	PAG	G
Turbidity	ND		NTU	0.10	S2130B-01			4/20/18 02:01	MSA	B

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ANALYTICAL RESULTS

Workorder: 2309819 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2309819001** Date Collected: 4/18/2018 10:00 Matrix: Ground Water
Sample ID: **CWMP007W** Date Received: 4/18/2018 16:31

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:41	MO	D1
Barium, Total	0.052		mg/L	0.0056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Barium, Dissolved	0.052		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:41	MO	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:41	MO	D1
Calcium, Total	17.8		mg/L	0.11	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Calcium, Dissolved	18.5		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:41	MO	D1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:41	MO	D1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:41	MO	D1
Iron, Total	ND		mg/L	0.056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:41	MO	D1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:41	MO	D1
Magnesium, Total	9.3		mg/L	0.11	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Magnesium, Dissolved	10.2		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:41	MO	D1
Manganese, Total	0.0071		mg/L	0.0056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Manganese, Dissolved	0.0062		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:41	MO	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/26/18 08:00	AXC	4/26/18 11:28	AXC	E3
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/18 08:00	AXC	4/26/18 11:48	AXC	D2
Nickel, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Potassium, Total	2.1		mg/L	0.11	SW846 6020A	4/24/18 02:00	LXC	4/25/18 16:39	MO	E2
Potassium, Dissolved	2.1		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:41	MO	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:41	MO	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:41	MO	D1
Sodium, Total	31.9		mg/L	0.11	SW846 6020A	4/24/18 02:00	LXC	4/25/18 16:39	MO	E2
Sodium, Dissolved	31.8		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:41	MO	D1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:35	MO	E2

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ANALYTICAL RESULTS

Workorder: 2309819 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2309819001** Date Collected: 4/18/2018 10:00 Matrix: Ground Water
Sample ID: **CWMP007W** Date Received: 4/18/2018 16:31

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Cntr	
Zinc, Dissolved	0.0077		mg/L	0.0056	SW846 6020A	4/24/18 10:30 DXC	4/25/18 01:41 MO	D1	
FIELD PARAMETERS									
Depth to Water Level	4.230		Feet		Field		4/18/18 10:00 BGS	F	
Elev Top MW Casing above MSL	453.40		Feet		Field		4/18/18 10:00 BGS	F	
Flow Rate	2.00		gal/min		Field		4/18/18 10:00 BGS	F	
Ground Water Elevation	449.170		ft/MSL		Field		4/18/18 10:00 BGS	F	
pH, Field (SM4500B)	4.650		pH_Units		Field		4/18/18 10:00 BGS	F	
Sample Depth	33.000		Feet		Field		4/18/18 10:00 BGS	F	
Specific Conductance, Field	421		umhos/cm	1	Field		4/18/18 10:00 BGS	F	
Temperature	10.37		Deg. C		Field		4/18/18 10:00 BGS	F	
Total Well Depth	36.500		Feet		Field		4/18/18 10:00 BGS	F	
Volume in Water Column	47.437		Gallons		Field		4/18/18 10:00 BGS	F	
Water Level After Purge	5.760		Feet		Field		4/18/18 10:00 BGS	F	
Well Volumes Purged	2.53		Vol		Field		4/18/18 10:00 BGS	F	



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2309819 2ND QTR 2018 CWMP-FORM 19A

 Lab ID: **2309819002** Date Collected: 4/18/2018 11:26 Matrix: Ground Water
 Sample ID: **CWMP001W** Date Received: 4/18/2018 16:31

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/23/18 14:28	TMP	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:28	TMP	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:28	TMP	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:28	TMP	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:28	TMP	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:28	TMP	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/23/18 14:28	TMP	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:28	TMP	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:28	TMP	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/18 14:28	TMP	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/23/18 14:28	TMP	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/23/18 14:28	TMP	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/23/18 14:28	TMP	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/23/18 14:28	TMP	J
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	114		%	62 - 133	SW846 8260B			4/23/18 14:28	TMP	J
4-Bromofluorobenzene (S)	100		%	79 - 114	SW846 8260B			4/23/18 14:28	TMP	J
Dibromofluoromethane (S)	111		%	78 - 116	SW846 8260B			4/23/18 14:28	TMP	J
Toluene-d8 (S)	100		%	76 - 127	SW846 8260B			4/23/18 14:28	TMP	J

LIBRARY SEARCH - VOLATILES

No TIC's Detected . Lib Search VOC 4/23/18 14:28 CPK J

METALS

Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:45	MO	D1
Barium, Total	0.11		mg/L	0.0056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Barium, Dissolved	0.089		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:45	MO	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:45	MO	D1
Calcium, Total	16.4		mg/L	0.11	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Calcium, Dissolved	16.4		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:45	MO	D1
Chromium, Total	0.0029		mg/L	0.0022	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:45	MO	D1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Copper, Total	0.0084		mg/L	0.0056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:45	MO	D1

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ANALYTICAL RESULTS

Workorder: 2309819 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2309819002** Date Collected: 4/18/2018 11:26 Matrix: Ground Water
Sample ID: **CWMP001W** Date Received: 4/18/2018 16:31

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Iron, Total	4.7		mg/L	0.056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:45	MO	D1
Lead, Total	0.0092		mg/L	0.0022	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:45	MO	D1
Magnesium, Total	11.8		mg/L	0.11	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Magnesium, Dissolved	11.8		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:45	MO	D1
Manganese, Total	0.10		mg/L	0.0056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Manganese, Dissolved	0.056		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:45	MO	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/26/18 08:00	AXC	4/26/18 11:29	AXC	E3
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/18 08:00	AXC	4/26/18 11:49	AXC	D2
Nickel, Total	0.0087		mg/L	0.0056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Potassium, Total	2.5		mg/L	0.11	SW846 6020A	4/24/18 02:00	LXC	4/25/18 16:43	MO	E2
Potassium, Dissolved	2.3		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:45	MO	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:45	MO	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:45	MO	D1
Sodium, Total	15.2		mg/L	0.11	SW846 6020A	4/24/18 02:00	LXC	4/25/18 16:43	MO	E2
Sodium, Dissolved	15.2		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:45	MO	D1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Zinc, Total	0.028		mg/L	0.0056	SW846 6020A	4/24/18 02:00	LXC	4/24/18 14:39	MO	E2
Zinc, Dissolved	0.019		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:45	MO	D1
WET CHEMISTRY										
Alkalinity, Bicarbonate	7		mg/L	5	S2320B-97			4/20/18 09:26	MSA	B
Alkalinity, Total	7	1	mg/L	5	S2320B-97			4/20/18 09:26	MSA	B
Ammonia-N	0.302		mg/L	0.100	D6919-09			4/27/18 02:29	CMM	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			4/28/18 15:45	AK	C
Chloride	33.2		mg/L	2.0	EPA 300.0			4/19/18 08:33	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/19/18 08:33	CHW	B
Nitrate-N	21.6		mg/L	1.0	EPA 300.0			4/19/18 08:46	CHW	B
pH	5.68	2	pH_Units		S4500HB-11			4/20/18 09:26	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	4/24/18 14:04	NJA	4/25/18 14:45	NJA	I
Specific Conductance	270		umhos/cm	1	S2510B-97			4/20/18 09:26	MSA	B
Sulfate	2.2		mg/L	2.0	EPA 300.0			4/19/18 08:33	CHW	B
Total Dissolved Solids	193		mg/L	5	S2540C-11			4/24/18 11:00	BMK	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	S5310B-00			4/20/18 11:30	PAG	G

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ANALYTICAL RESULTS

Workorder: 2309819 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2309819002** Date Collected: 4/18/2018 11:26 Matrix: Ground Water
Sample ID: **CWMP001W** Date Received: 4/18/2018 16:31

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Cntr
Turbidity	93.3		NTU	0.10	S2130B-01		4/20/18 02:01	MSA B
FIELD PARAMETERS								
Depth to Water Level	29.070		Feet		Field		4/18/18 11:26	BGS F
Elev Top MW Casing above MSL	515.13		Feet		Field		4/18/18 11:26	BGS F
Flow Rate	1.76		gal/min		Field		4/18/18 11:26	BGS F
Ground Water Elevation	486.060		ft/MSL		Field		4/18/18 11:26	BGS F
pH, Field (SM4500B)	4.920		pH_Units		Field		4/18/18 11:26	BGS F
Sample Depth	57.000		Feet		Field		4/18/18 11:26	BGS F
Specific Conductance, Field	333		umhos/cm	1	Field		4/18/18 11:26	BGS F
Temperature	11.36		Deg. C		Field		4/18/18 11:26	BGS F
Total Well Depth	66.300		Feet		Field		4/18/18 11:26	BGS F
Volume in Water Column	54.728		Gallons		Field		4/18/18 11:26	BGS F
Water Level After Purge	50.720		Feet		Field		4/18/18 11:26	BGS F
Well Volumes Purged	2.26		Vol		Field		4/18/18 11:26	BGS F



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2309819 2ND QTR 2018 CWMP-FORM 19A

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2309819001	1	CWMP007W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2309819001	2	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.				
2309819002	1	CWMP001W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2309819002	2	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.				

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May 12, 2018

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

Certificate of Analysis

Project Name:	2018-CRESWELL	Workorder:	2310742
Purchase Order:	PO1000127	Workorder ID:	2ND QTR 2018 CWMP-FORM 19A

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, April 24, 2018.

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.

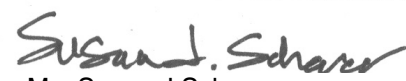
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications 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. Jordan Gallagher , Mr. Mark Reider , 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: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2310742001	CWMP012W	Ground Water	4/24/2018 09:35	4/24/2018 16:05	Mr. Brian G Shade
2310742002	CWMP002W	Ground Water	4/24/2018 10:57	4/24/2018 16:05	Mr. Brian G Shade
2310742003	CWMP003W	Ground Water	4/24/2018 11:08	4/24/2018 16:05	Mr. Brian G Shade
2310742004	CWMP004W	Ground Water	4/24/2018 11:20	4/24/2018 16:05	Mr. Brian G Shade
2310742005	Field Blank	Water	4/24/2018 12:26	4/24/2018 16:05	Mr. Brian G Shade
2310742006	Trip Blank	Water	4/24/2018 16:05	4/24/2018 16:05	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

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.

Standard Acronyms/Flags

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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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742001** Date Collected: 4/24/2018 09:35 Matrix: Ground Water
Sample ID: **CWMP012W** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/26/18 22:59	CJG	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/26/18 22:59	CJG	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/26/18 22:59	CJG	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/26/18 22:59	CJG	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/26/18 22:59	CJG	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
1,1-Dichloroethane	1.4		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/26/18 22:59	CJG	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/26/18 22:59	CJG	J

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742001** Date Collected: 4/24/2018 09:35 Matrix: Ground Water
Sample ID: **CWMP012W** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/26/18 22:59	CJG	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/26/18 22:59	CJG	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/26/18 22:59	CJG	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/26/18 22:59	CJG	J

Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	103		%	62 - 133	SW846 8260B			4/26/18 22:59	CJG	J
4-Bromofluorobenzene (S)	94.4		%	79 - 114	SW846 8260B			4/26/18 22:59	CJG	J
Dibromofluoromethane (S)	101		%	78 - 116	SW846 8260B			4/26/18 22:59	CJG	J
Toluene-d8 (S)	80.5		%	76 - 127	SW846 8260B			4/26/18 22:59	CJG	J

LIBRARY SEARCH - VOLATILES

No TIC's Detected . Lib Search VOC 4/26/18 22:59 JAH J

WET CHEMISTRY

Alkalinity, Bicarbonate	73		mg/L	5	S2320B-97			4/25/18 12:25	MSA	B
Alkalinity, Total	73	1	mg/L	5	S2320B-97			4/25/18 12:25	MSA	B
Ammonia-N	0.457		mg/L	0.100	D6919-09			5/1/18 16:59	CMM	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			5/1/18 15:08	AK	C
Chloride	35.0		mg/L	2.0	EPA 300.0			4/25/18 11:47	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/25/18 11:47	CHW	B
Nitrate-N	10		mg/L	0.20	EPA 300.0			4/25/18 11:47	CHW	B
pH	6.40	2	pH_Units		S4500HB-11			4/25/18 12:25	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	5/2/18 12:00	NJA	5/2/18 13:51	NJA	I
Specific Conductance	298		umhos/cm	1	S2510B-97			4/25/18 12:25	MSA	B
Sulfate	4.5		mg/L	2.0	EPA 300.0			4/25/18 11:47	CHW	B
Total Dissolved Solids	207		mg/L	5	S2540C-11			4/30/18 13:00	BMK	B
Total Organic Carbon (TOC)	1.8		mg/L	0.50	S5310B-00			4/25/18 13:03	PAG	G
Turbidity	384		NTU	0.10	S2130B-01			4/26/18 05:05	MSA	B

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742001** Date Collected: 4/24/2018 09:35 Matrix: Ground Water
Sample ID: **CWMP012W** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:37	MO	D2
Barium, Total	0.094		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Barium, Dissolved	0.083		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:37	MO	D2
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:37	MO	D2
Calcium, Total	29.7		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Calcium, Dissolved	30.9		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:37	MO	D2
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:37	MO	D2
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:37	MO	D2
Iron, Total	37.7		mg/L	0.056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Iron, Dissolved	0.070		mg/L	0.056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:37	MO	D2
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:37	MO	D2
Magnesium, Total	9.1		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Magnesium, Dissolved	9.2		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:37	MO	D2
Manganese, Total	0.13		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Manganese, Dissolved	0.095		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:37	MO	D2
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	5/2/18 09:30	AXC	5/2/18 13:32	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/18 08:00	AXC	4/26/18 12:00	AXC	D1
Nickel, Total	0.0066		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Potassium, Total	1.4		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Potassium, Dissolved	1.4		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:37	MO	D2
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:37	MO	D2
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:37	MO	D2
Sodium, Total	13.0		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Sodium, Dissolved	13.2		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:37	MO	D2
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:41	MO	E1

ALS Environmental Laboratory Locations Across North America

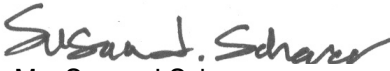
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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742001** Date Collected: 4/24/2018 09:35 Matrix: Ground Water
Sample ID: **CWMP012W** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	0.0068		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:37	MO	D2
FIELD PARAMETERS										
Depth to Water Level	50.430		Feet		Field			4/24/18 09:35	BGS	F
pH, Field (SM4500B)	5.420		pH_Units		Field			4/24/18 09:35	BGS	F
Specific Conductance, Field	391		umhos/cm	1	Field			4/24/18 09:35	BGS	F
Temperature	12.37		Deg. C		Field			4/24/18 09:35	BGS	F



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742002** Date Collected: 4/24/2018 10:57 Matrix: Ground Water
Sample ID: **CWMP002W** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/26/18 23:21	CJG	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/26/18 23:21	CJG	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/26/18 23:21	CJG	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Chloroethane	3.7		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/26/18 23:21	CJG	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/26/18 23:21	CJG	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
1,1-Dichloroethane	8.3		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/26/18 23:21	CJG	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/26/18 23:21	CJG	J

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: 2310742002 **Date Collected:** 4/24/2018 10:57 **Matrix:** Ground Water
Sample ID: CWMP002W **Date Received:** 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/26/18 23:21	CJG	J
1,1,1-Trichloroethane	1.1		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/26/18 23:21	CJG	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/26/18 23:21	CJG	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/26/18 23:21	CJG	J

Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	103		%	62 - 133	SW846 8260B			4/26/18 23:21	CJG	J
4-Bromofluorobenzene (S)	93.6		%	79 - 114	SW846 8260B			4/26/18 23:21	CJG	J
Dibromofluoromethane (S)	98.8		%	78 - 116	SW846 8260B			4/26/18 23:21	CJG	J
Toluene-d8 (S)	77.6		%	76 - 127	SW846 8260B			4/26/18 23:21	CJG	J

LIBRARY SEARCH - VOLATILES

No TIC's Detected Lib Search VOC 4/26/18 23:21 JAH J

WET CHEMISTRY

Alkalinity, Bicarbonate	67		mg/L	5	S2320B-97			4/25/18 12:34	MSA	B
Alkalinity, Total	67	1	mg/L	5	S2320B-97			4/25/18 12:34	MSA	B
Ammonia-N	0.396		mg/L	0.100	D6919-09			5/1/18 17:13	CMM	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			5/1/18 15:08	AK	C
Chloride	107		mg/L	2.0	EPA 300.0			4/25/18 11:59	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/25/18 11:59	CHW	B
Nitrate-N	3.3		mg/L	0.20	EPA 300.0			4/25/18 11:59	CHW	B
pH	6.15	2	pH_Units		S4500HB-11			4/25/18 12:34	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	5/2/18 12:00	NJA	5/2/18 13:51	NJA	I
Specific Conductance	543		umhos/cm	1	S2510B-97			4/25/18 12:34	MSA	B
Sulfate	25.7		mg/L	2.0	EPA 300.0			4/25/18 11:59	CHW	B
Total Dissolved Solids	323		mg/L	5	S2540C-11			4/30/18 13:00	BMK	B
Total Organic Carbon (TOC)	3.0		mg/L	0.50	S5310B-00			4/25/18 13:03	PAG	G
Turbidity	ND		NTU	0.10	S2130B-01			4/26/18 05:05	MSA	B

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742002** Date Collected: 4/24/2018 10:57 Matrix: Ground Water
Sample ID: **CWMP002W** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:54	MO	D2
Barium, Total	0.039		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Barium, Dissolved	0.040		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:54	MO	D2
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:54	MO	D2
Calcium, Total	48.4		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Calcium, Dissolved	47.5		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:54	MO	D2
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:54	MO	D2
Cobalt, Total	0.024		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:54	MO	D2
Iron, Total	ND		mg/L	0.056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:54	MO	D2
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:54	MO	D2
Magnesium, Total	15.7		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Magnesium, Dissolved	15.0		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:54	MO	D2
Manganese, Total	1.1		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Manganese, Dissolved	1.1		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:54	MO	D2
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	5/2/18 09:30	AXC	5/2/18 13:33	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/18 08:00	AXC	4/26/18 12:01	AXC	D1
Nickel, Total	0.025		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Potassium, Total	2.6		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Potassium, Dissolved	2.5		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:54	MO	D2
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:54	MO	D2
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:54	MO	D2
Sodium, Total	20.9		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Sodium, Dissolved	20.4		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:54	MO	D2
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1
Zinc, Total	0.0058		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:45	MO	E1

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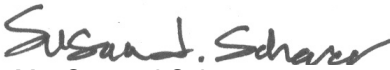
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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742002** Date Collected: 4/24/2018 10:57 Matrix: Ground Water
Sample ID: **CWMP002W** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	0.0065		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:54	MO	D2
FIELD PARAMETERS										
Depth to Water Level	71.680		Feet		Field			4/24/18 10:56	BGS	F
Elev Top MW Casing above MSL	525.81		Feet		Field			4/24/18 10:56	BGS	F
Ground Water Elevation	454.130		ft/MSL		Field			4/24/18 10:56	BGS	F
pH, Field (SM4500B)	5.350		pH_Units		Field			4/24/18 10:56	BGS	F
Sample Depth	85.000		Feet		Field			4/24/18 10:56	BGS	F
Specific Conductance, Field	608		umhos/cm	1	Field			4/24/18 10:56	BGS	F
Temperature	11.92		Deg. C		Field			4/24/18 10:56	BGS	F
Total Well Depth	100.000		Feet		Field			4/24/18 10:56	BGS	F


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Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: 2310742003 **Date Collected:** 4/24/2018 11:08 **Matrix:** Ground Water
Sample ID: CWMP003W **Date Received:** 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/26/18 23:43	CJG	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/26/18 23:43	CJG	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/26/18 23:43	CJG	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/26/18 23:43	CJG	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/26/18 23:43	CJG	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
1,1-Dichloroethane	2.3		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/26/18 23:43	CJG	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/26/18 23:43	CJG	J

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

 Lab ID: **2310742003** Date Collected: 4/24/2018 11:08 Matrix: Ground Water
 Sample ID: **CWMP003W** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/26/18 23:43	CJG	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/26/18 23:43	CJG	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/26/18 23:43	CJG	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/26/18 23:43	CJG	J

Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	104		%	62 - 133	SW846 8260B			4/26/18 23:43	CJG	J
4-Bromofluorobenzene (S)	92.9		%	79 - 114	SW846 8260B			4/26/18 23:43	CJG	J
Dibromofluoromethane (S)	102		%	78 - 116	SW846 8260B			4/26/18 23:43	CJG	J
Toluene-d8 (S)	80.2		%	76 - 127	SW846 8260B			4/26/18 23:43	CJG	J

LIBRARY SEARCH - VOLATILES

No TIC's Detected . Lib Search VOC 4/26/18 23:43 JAH J

WET CHEMISTRY

Alkalinity, Bicarbonate	23		mg/L	5	S2320B-97			4/25/18 12:42	MSA	B
Alkalinity, Total	23	1	mg/L	5	S2320B-97			4/25/18 12:42	MSA	B
Ammonia-N	0.327		mg/L	0.100	D6919-09			5/1/18 17:27	CMM	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			5/1/18 15:08	AK	C
Chloride	73.2		mg/L	2.0	EPA 300.0			4/25/18 12:11	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/25/18 12:11	CHW	B
Nitrate-N	8.0		mg/L	0.20	EPA 300.0			4/25/18 12:11	CHW	B
pH	6.30	2	pH_Units		S4500HB-11			4/25/18 12:42	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	5/2/18 12:00	NJA	5/2/18 13:51	NJA	I
Specific Conductance	341		umhos/cm	1	S2510B-97			4/25/18 12:42	MSA	B
Sulfate	5.6		mg/L	2.0	EPA 300.0			4/25/18 12:11	CHW	B
Total Dissolved Solids	235		mg/L	5	S2540C-11			4/30/18 13:00	BMK	B
Total Organic Carbon (TOC)	0.52		mg/L	0.50	S5310B-00			4/25/18 13:03	PAG	G
Turbidity	0.15		NTU	0.10	S2130B-01			4/26/18 05:05	MSA	B

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742003** Date Collected: 4/24/2018 11:08 Matrix: Ground Water
Sample ID: **CWMP003W** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:58	MO	D2
Barium, Total	0.016		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Barium, Dissolved	0.015		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:58	MO	D2
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:58	MO	D2
Calcium, Total	27.2		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Calcium, Dissolved	26.9		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:58	MO	D2
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:58	MO	D2
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:58	MO	D2
Iron, Total	ND		mg/L	0.056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:58	MO	D2
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:58	MO	D2
Magnesium, Total	10.1		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Magnesium, Dissolved	9.6		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:58	MO	D2
Manganese, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Manganese, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:58	MO	D2
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	5/2/18 09:30	AXC	5/2/18 13:34	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/18 08:00	AXC	4/26/18 12:05	AXC	D1
Nickel, Total	0.010		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Potassium, Total	1.6		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Potassium, Dissolved	1.5		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:58	MO	D2
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:58	MO	D2
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:58	MO	D2
Sodium, Total	20.2		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Sodium, Dissolved	18.8		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:58	MO	D2
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1
Zinc, Total	0.0062		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:49	MO	E1

ALS Environmental Laboratory Locations Across North America

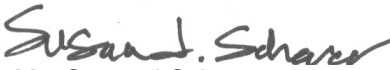
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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742003** Date Collected: 4/24/2018 11:08 Matrix: Ground Water
Sample ID: **CWMP003W** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 01:58	MO	D2
FIELD PARAMETERS										
Depth to Water Level	99.980		Feet		Field			4/24/18 11:08	BGS	F
Elev Top MW Casing above MSL	524.21		Feet		Field			4/24/18 11:08	BGS	F
Ground Water Elevation	424.230		ft/MSL		Field			4/24/18 11:08	BGS	F
pH, Field (SM4500B)	5.350		pH_Units		Field			4/24/18 11:08	BGS	F
Sample Depth	100.000		Feet		Field			4/24/18 11:08	BGS	F
Specific Conductance, Field	413		umhos/cm	1	Field			4/24/18 11:08	BGS	F
Temperature	12.67		Deg. C		Field			4/24/18 11:08	BGS	F
Total Well Depth	140.000		Feet		Field			4/24/18 11:08	BGS	F



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742004** Date Collected: 4/24/2018 11:20 Matrix: Ground Water
Sample ID: **CWMP004W** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/27/18 00:05	CJG	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/27/18 00:05	CJG	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/27/18 00:05	CJG	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/27/18 00:05	CJG	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/27/18 00:05	CJG	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
1,1-Dichloroethane	1.1		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/27/18 00:05	CJG	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/27/18 00:05	CJG	J

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742004** Date Collected: 4/24/2018 11:20 Matrix: Ground Water
Sample ID: **CWMP004W** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/27/18 00:05	CJG	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/27/18 00:05	CJG	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/27/18 00:05	CJG	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/27/18 00:05	CJG	J

Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	107		%	62 - 133	SW846 8260B			4/27/18 00:05	CJG	J
4-Bromofluorobenzene (S)	91.3		%	79 - 114	SW846 8260B			4/27/18 00:05	CJG	J
Dibromofluoromethane (S)	102		%	78 - 116	SW846 8260B			4/27/18 00:05	CJG	J
Toluene-d8 (S)	83.2		%	76 - 127	SW846 8260B			4/27/18 00:05	CJG	J

LIBRARY SEARCH - VOLATILES

No TIC's Detected . Lib Search VOC 4/27/18 00:05 JAH J

WET CHEMISTRY

Alkalinity, Bicarbonate	30		mg/L	5	S2320B-97			4/25/18 12:51	MSA	B
Alkalinity, Total	30	1	mg/L	5	S2320B-97			4/25/18 12:51	MSA	B
Ammonia-N	0.323		mg/L	0.100	D6919-09			5/1/18 17:40	CMM	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			5/1/18 15:08	AK	C
Chloride	42.4		mg/L	2.0	EPA 300.0			4/25/18 12:35	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/25/18 12:35	CHW	B
Nitrate-N	6.6		mg/L	0.20	EPA 300.0			4/25/18 12:35	CHW	B
pH	6.39	2	pH_Units		S4500HB-11			4/25/18 12:51	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	5/2/18 12:00	NJA	5/2/18 13:51	NJA	I
Specific Conductance	233		umhos/cm	1	S2510B-97			4/25/18 12:51	MSA	B
Sulfate	6.3		mg/L	2.0	EPA 300.0			4/25/18 12:35	CHW	B
Total Dissolved Solids	195		mg/L	5	S2540C-11			4/30/18 13:00	BMK	B
Total Organic Carbon (TOC)	0.70		mg/L	0.50	S5310B-00			4/25/18 13:03	PAG	G
Turbidity	1.44		NTU	0.10	S2130B-01			4/26/18 05:05	MSA	B

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742004** Date Collected: 4/24/2018 11:20 Matrix: Ground Water
Sample ID: **CWMP004W** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:02	MO	D2
Barium, Total	0.012		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Barium, Dissolved	0.011		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:02	MO	D2
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:02	MO	D2
Calcium, Total	19.7		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Calcium, Dissolved	19.5		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:02	MO	D2
Chromium, Total	0.0033		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:02	MO	D2
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:02	MO	D2
Iron, Total	0.11		mg/L	0.056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:02	MO	D2
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:02	MO	D2
Magnesium, Total	6.5		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Magnesium, Dissolved	6.2		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:02	MO	D2
Manganese, Total	0.011		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Manganese, Dissolved	0.0081		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:02	MO	D2
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	5/2/18 09:30	AXC	5/2/18 13:35	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/18 08:00	AXC	4/26/18 12:06	AXC	D1
Nickel, Total	0.0063		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Potassium, Total	1.3		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Potassium, Dissolved	1.2		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:02	MO	D2
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:02	MO	D2
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:02	MO	D2
Sodium, Total	14.7		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Sodium, Dissolved	14.2		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:02	MO	D2
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1
Zinc, Total	0.0099		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:53	MO	E1

ALS Environmental Laboratory Locations Across North America

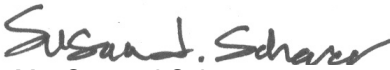
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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742004** Date Collected: 4/24/2018 11:20 Matrix: Ground Water
Sample ID: **CWMP004W** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:02	MO	D2
FIELD PARAMETERS										
Depth to Water Level	112.360		Feet		Field			4/24/18 11:20	BGS	F
Elev Top MW Casing above MSL	529.53		Feet		Field			4/24/18 11:20	BGS	F
Ground Water Elevation	417.170		ft/MSL		Field			4/24/18 11:20	BGS	F
pH, Field (SM4500B)	5.480		pH_Units		Field			4/24/18 11:20	BGS	F
Sample Depth	130.000		Feet		Field			4/24/18 11:20	BGS	F
Specific Conductance, Field	289		umhos/cm	1	Field			4/24/18 11:20	BGS	F
Temperature	12.24		Deg. C		Field			4/24/18 11:20	BGS	F
Total Well Depth	140.000		Feet		Field			4/24/18 11:20	BGS	F



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742005** Date Collected: 4/24/2018 12:26 Matrix: Water
Sample ID: **Field Blank** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/27/18 22:06	CJG	K
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/27/18 22:06	CJG	K
Benzene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Bromoform	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/27/18 22:06	CJG	K
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Chloroform	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/27/18 22:06	CJG	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/27/18 22:06	CJG	K
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/27/18 22:06	CJG	K
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/27/18 22:06	CJG	K

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: 2310742005 **Date Collected:** 4/24/2018 12:26 **Matrix:** Water
Sample ID: Field Blank **Date Received:** 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Styrene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Toluene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/27/18 22:06	CJG	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/27/18 22:06	CJG	K
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/27/18 22:06	CJG	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/27/18 22:06	CJG	K
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	96.6		%	62 - 133	SW846 8260B			4/27/18 22:06	CJG	K
4-Bromofluorobenzene (S)	98.4		%	79 - 114	SW846 8260B			4/27/18 22:06	CJG	K
Dibromofluoromethane (S)	95		%	78 - 116	SW846 8260B			4/27/18 22:06	CJG	K
Toluene-d8 (S)	90.8		%	76 - 127	SW846 8260B			4/27/18 22:06	CJG	K

LIBRARY SEARCH - VOLATILES

No TIC's Detected Lib Search VOC 4/27/18 22:06 CPK J

METALS

Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:06	MO	D2
Barium, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Barium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:06	MO	D2
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:06	MO	D2
Calcium, Total	ND		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Calcium, Dissolved	ND		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:06	MO	D2
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:06	MO	D2
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:06	MO	D2

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742005** Date Collected: 4/24/2018 12:26 Matrix: Water
Sample ID: **Field Blank** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Iron, Total	ND		mg/L	0.056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:06	MO	D2
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:06	MO	D2
Magnesium, Total	ND		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Magnesium, Dissolved	ND		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:06	MO	D2
Manganese, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Manganese, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:06	MO	D2
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	5/2/18 09:30	AXC	5/2/18 13:36	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/18 08:00	AXC	4/26/18 12:07	AXC	D1
Nickel, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Potassium, Total	ND		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Potassium, Dissolved	ND		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:06	MO	D2
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:06	MO	D2
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:06	MO	D2
Sodium, Total	ND		mg/L	0.11	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Sodium, Dissolved	ND		mg/L	0.11	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:06	MO	D2
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/26/18 10:15	DXC	4/30/18 11:56	MO	E1
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/18 12:35	AHI	4/30/18 02:06	MO	D2
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	S2320B-97			4/25/18 13:00	MSA	B
Alkalinity, Total	ND	1	mg/L	5	S2320B-97			4/25/18 13:00	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			5/8/18 13:18	CMM	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			5/1/18 15:08	AK	C
Chloride	ND		mg/L	1.0	EPA 300.0			4/25/18 12:23	CHW	B
Fluoride	ND		mg/L	0.10	EPA 300.0			4/25/18 12:23	CHW	B
Nitrate-N	ND		mg/L	0.10	EPA 300.0			4/25/18 12:23	CHW	B
pH	6.16	2	pH_Units		S4500HB-11			4/25/18 13:00	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	5/2/18 12:00	NJA	5/2/18 13:51	NJA	I
Specific Conductance	1		umhos/cm	1	S2510B-97			4/27/18 01:30	MSA	B
Sulfate	ND		mg/L	1.0	EPA 300.0			4/25/18 12:23	CHW	B
Total Dissolved Solids	16		mg/L	5	S2540C-11			4/30/18 13:00	BMK	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	S5310B-00			4/25/18 13:03	PAG	G

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742005**

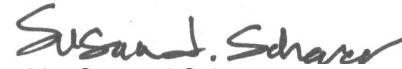
Date Collected: 4/24/2018 12:26

Matrix: Water

Sample ID: **Field Blank**

Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Turbidity	ND		NTU	0.10	S2130B-01			4/26/18 05:05	MSA	B



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 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742006** Date Collected: 4/24/2018 16:05 Matrix: Water
Sample ID: **Trip Blank** Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/26/18 22:37	CJG	A
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/26/18 22:37	CJG	A
Benzene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Bromoform	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/26/18 22:37	CJG	A
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Chloroform	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/26/18 22:37	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/26/18 22:37	CJG	A
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/26/18 22:37	CJG	A
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/26/18 22:37	CJG	A

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310742006**

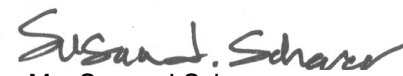
Date Collected: 4/24/2018 16:05

Matrix: Water

Sample ID: **Trip Blank**

Date Received: 4/24/2018 16:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Styrene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Toluene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/26/18 22:37	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/26/18 22:37	CJG	A
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/26/18 22:37	CJG	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/26/18 22:37	CJG	A
<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)	102		%	62 - 133	SW846 8260B			4/26/18 22:37	CJG	A
4-Bromofluorobenzene (S)	91.2		%	79 - 114	SW846 8260B			4/26/18 22:37	CJG	A
Dibromofluoromethane (S)	98.3		%	78 - 116	SW846 8260B			4/26/18 22:37	CJG	A
Toluene-d8 (S)	80.9		%	76 - 127	SW846 8260B			4/26/18 22:37	CJG	A
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/26/18 22:37	JAH	A



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Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2310742001	1	CWMP012W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2310742001	2	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.				
2310742002	1	CWMP002W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2310742002	2	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.				
2310742003	1	CWMP003W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2310742003	2	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.				
2310742004	1	CWMP004W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2310742004	2	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.				
2310742005	1	Field Blank	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2310742005	2	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.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID	Sample ID	Analysis Method	Prep Method
2310742001	CWMP012W	D6919-09	
2310742001	CWMP012W	EPA 300.0	
2310742001	CWMP012W	EPA 410.4	
2310742001	CWMP012W	Field	
2310742001	CWMP012W	Lib Search VOC	
2310742001	CWMP012W	S2130B-01	
2310742001	CWMP012W	S2320B-97	
2310742001	CWMP012W	S2510B-97	
2310742001	CWMP012W	S2540C-11	
2310742001	CWMP012W	S4500HB-11	
2310742001	CWMP012W	S5310B-00	
2310742001	CWMP012W	SW846 6020A	SW846 3015
2310742001	CWMP012W	SW846 7470A	SW846 7470A
2310742001	CWMP012W	SW846 8260B	
2310742001	CWMP012W	SW846 9066	420.4/9066
2310742002	CWMP002W	D6919-09	
2310742002	CWMP002W	EPA 300.0	
2310742002	CWMP002W	EPA 410.4	
2310742002	CWMP002W	Field	
2310742002	CWMP002W	Lib Search VOC	
2310742002	CWMP002W	S2130B-01	
2310742002	CWMP002W	S2320B-97	
2310742002	CWMP002W	S2510B-97	
2310742002	CWMP002W	S2540C-11	
2310742002	CWMP002W	S4500HB-11	
2310742002	CWMP002W	S5310B-00	
2310742002	CWMP002W	SW846 6020A	SW846 3015
2310742002	CWMP002W	SW846 7470A	SW846 7470A
2310742002	CWMP002W	SW846 8260B	
2310742002	CWMP002W	SW846 9066	420.4/9066
2310742003	CWMP003W	D6919-09	
2310742003	CWMP003W	EPA 300.0	
2310742003	CWMP003W	EPA 410.4	
2310742003	CWMP003W	Field	
2310742003	CWMP003W	Lib Search VOC	
2310742003	CWMP003W	S2130B-01	
2310742003	CWMP003W	S2320B-97	
2310742003	CWMP003W	S2510B-97	
2310742003	CWMP003W	S2540C-11	
2310742003	CWMP003W	S4500HB-11	
2310742003	CWMP003W	S5310B-00	
2310742003	CWMP003W	SW846 6020A	SW846 3015
2310742003	CWMP003W	SW846 7470A	SW846 7470A
2310742003	CWMP003W	SW846 8260B	
2310742003	CWMP003W	SW846 9066	420.4/9066
2310742004	CWMP004W	D6919-09	

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 2310742 2ND QTR 2018 CWMP-FORM 19A

Lab ID	Sample ID	Analysis Method	Prep Method
2310742004	CWMP004W	EPA 300.0	
2310742004	CWMP004W	EPA 410.4	
2310742004	CWMP004W	Field	
2310742004	CWMP004W	Lib Search VOC	
2310742004	CWMP004W	S2130B-01	
2310742004	CWMP004W	S2320B-97	
2310742004	CWMP004W	S2510B-97	
2310742004	CWMP004W	S2540C-11	
2310742004	CWMP004W	S4500HB-11	
2310742004	CWMP004W	S5310B-00	
2310742004	CWMP004W	SW846 6020A	SW846 3015
2310742004	CWMP004W	SW846 7470A	SW846 7470A
2310742004	CWMP004W	SW846 8260B	
2310742004	CWMP004W	SW846 9066	420.4/9066
2310742005	Field Blank	D6919-09	
2310742005	Field Blank	EPA 300.0	
2310742005	Field Blank	EPA 410.4	
2310742005	Field Blank	Lib Search VOC	
2310742005	Field Blank	S2130B-01	
2310742005	Field Blank	S2320B-97	
2310742005	Field Blank	S2510B-97	
2310742005	Field Blank	S2540C-11	
2310742005	Field Blank	S4500HB-11	
2310742005	Field Blank	S5310B-00	
2310742005	Field Blank	SW846 6020A	SW846 3015
2310742005	Field Blank	SW846 7470A	SW846 7470A
2310742005	Field Blank	SW846 8260B	
2310742005	Field Blank	SW846 9066	420.4/9066
2310742006	Trip Blank	Lib Search VOC	
2310742006	Trip Blank	SW846 8260B	

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**CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS**
**ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT /
SAMPLER. INSTRUCTIONS ON THE BACK.**



1 of 2
* 2 3 1 0 7 4 2 *

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Client Name: Lancaster County Solid Waste MA
Address: 1299 Harrisburg Pike, P.O. Box 4424
Lancaster, PA 17604

Contact: Mark Reider
Phone#: (717) 735-0193
Project Name#: Creswell/GWMP Form 19A
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 **mreider@LCSWMA.org**
Fax? Y N **No.: (717) 397-9973**

Container Type	AG	AN	CG	CG	CG	PL	PL	PL
40 ml	40 ml	40 ml	40 ml	40 ml	500 ml	500 ml	500 ml	500 ml
HCl	HCl	HCl	HCl	HCl	H2SO4	H2SO4	HNO3	HNO3

Receipt Information (completed by Receiving Lab)
Cooler Temp: 6 Therm ID: 38
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?

Sample Description/Location (as it will appear on the lab report)	Sample Date		Time		Enter Number of Containers Per Sample or Field Results Below.										Sample/COC Comments			
	Sample Date	Time	Sample Date	Time	G	GC	Matrix	TOC	O-H	8260 VOCs - Form 19A + Subtitle D	TIC	TIC	F-M	Sample Depth for AUX Data		NH3-N, COD	Diss Metals Form 19A (Field Filtered)	Total Metals Form 19A + Subtitle D
1. CWMP002W	4/24/18	0955	4/24/18	1057	2	1	2	2	1	2	2	2	X	X	1	1	1	1
2. CWMP002W		1057		1108														
3. CWMP003W		1108		1120														
4. CWMP004W		1120		1226														
5. Field Blank		1226		1605														
6. Trip Blank		1605																
7.																		
8.																		
9.																		
10.																		

Project Comments: _____
LOGGED BY (signature): _____
REVIEWED BY (signature): _____
Relinquished By / Company Name: _____
Date: 4-24-18 **Time:** 1605
Received By / Company Name: _____
Date: 4-24-18 **Time:** 1605
Standard: Standard CLP-like USACE
Deliverables: USACE Navy
ALS Field Services: Pickup Labor Composite_Sampling Rental_Equipment Other:
State Samples Collected In: NY NJ PA NC
Special Processing: USACE Navy
Sample Disposal: Lab Special
Reportable to PADEP? Yes No
PWSID #: _____
EDDS: Format Type: _____

* G=Grab, C=Composite **Matrix - Air=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





34 Dogwood Lane • Middletown, PA 17057 • 717.944.5541 • Fax: 717.944.1430

**CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS**
ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT /
SAMPLER. INSTRUCTIONS ON THE BACK.

COC #: 231074 of 2
ALS Quote #:

Client Name: Lancaster County Solid Waste MA
Address: 1299 Harrisburg Pike, P.O. Box 4424
Lancaster, PA 17604

Contact: Mark Reider
Phone#: (717) 735-0193

Project Name#: Creswell/GWMP Form 19A
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 mreider@LCSWMA.org
Fax? Y N No.: (717) 397-9973

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	Matrix	Container Type	PL	PL	PL	Container Size	Preservative	ANALYSES/METHOD REQUESTED	Enter Number of Containers Per Sample or Field Results Below.	Sample/COC Comments
1. CWMR012W	4-24-10	0935	G GW	1 L	500 ml	None	None	None	None	PH, Cl, Spc, F, SO4, NO3, TB, TDS	1	Alkalinity, HCO3
2. CWMR002W	1057											
3. CWMR003W	1108											
4. CWMR004W	1120											
5. Field Blank	1226											
6. Trip Blank	1605											
7												
8												
9												
10												

Receipt Information (completed by Receiving Lab)
Cooler Temp: 6 Therm ID: 315
No. of Coolers: _____ Y _____ N _____ Initial MR

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 #:

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

Special Processing: USACE Navy
Standard CLP-like USACE
Reportable to PADEP? Yes No
Sample Disposal: Lab Special
PWSID # _____ EDDS: Formal Type: _____

Project Comments: _____
LOGGED BY (signature): _____ DATE: _____
REVIEWED BY (signature): _____ DATE: _____
Relinquished By / Company Name: RESOLUTION ALS Date: 4-24-10 Time: 1605
Received By / Company Name: MARK REIDER ALS Date: 4-24-10 Time: 1605

* G=Grab; C=Composite * Matrix - AL=Air; DW=Drinking Water; GW=Groundwater; O=Oil; OL=Other Liquid; SL=Sludge; WP=Wipe; WW=Wastewater
ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057



May 1, 2018

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

Certificate of Analysis

Project Name:	2018-CRESWELL	Workorder:	2310027
Purchase Order:	PO1000127	Workorder ID:	2ND QTR 2018 CWMP-FORM 19A

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, April 19, 2018.

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.

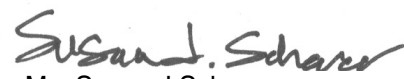
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications 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. Jordan Gallagher , Mr. Mark Reider , 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: 2310027 2ND QTR 2018 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2310027001	CWMP008W	Ground Water	4/19/2018 13:47	4/19/2018 16:02	Mr. Brian G Shade
2310027002	CWMP009W	Ground Water	4/19/2018 14:21	4/19/2018 16:02	Mr. Brian G Shade
2310027003	CWMP010W	Ground Water	4/19/2018 14:44	4/19/2018 16:02	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2310027 2ND QTR 2018 CWMP-FORM 19A

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.

Standard Acronyms/Flags

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

ANALYTICAL RESULTS

Workorder: 2310027 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310027001** Date Collected: 4/19/2018 13:47 Matrix: Ground Water
Sample ID: **CWMP008W** Date Received: 4/19/2018 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/24/18 22:21	CJG	D
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/24/18 22:21	CJG	D
Benzene	2.1		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Bromoform	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/24/18 22:21	CJG	D
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Chlorobenzene	9.8		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Chloroethane	5.3		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Chloroform	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/24/18 22:21	CJG	D
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
trans-1,4-Dichloro-2-butene	ND	1,2	ug/L	3.0	SW846 8260B			4/24/18 22:21	CJG	D
1,2-Dichlorobenzene	2.0		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
1,4-Dichlorobenzene	14.1		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Dichlorodifluoromethane	1.1		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
1,1-Dichloroethane	3.3		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
cis-1,3-Dichloropropene	ND	3,4	ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/24/18 22:21	CJG	D
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/24/18 22:21	CJG	D

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ANALYTICAL RESULTS

Workorder: 2310027 2ND QTR 2018 CWMP-FORM 19A

Lab ID: 2310027001 **Date Collected:** 4/19/2018 13:47 **Matrix:** Ground Water
Sample ID: CWMP008W **Date Received:** 4/19/2018 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Styrene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Toluene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/24/18 22:21	CJG	D
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/24/18 22:21	CJG	D
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/24/18 22:21	CJG	D
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/24/18 22:21	CJG	D

Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	93.6		%	62 - 133	SW846 8260B			4/24/18 22:21	CJG	D
4-Bromofluorobenzene (S)	95.7		%	79 - 114	SW846 8260B			4/24/18 22:21	CJG	D
Dibromofluoromethane (S)	91.9		%	78 - 116	SW846 8260B			4/24/18 22:21	CJG	D
Toluene-d8 (S)	81.9		%	76 - 127	SW846 8260B			4/24/18 22:21	CJG	D

LIBRARY SEARCH - VOLATILES

No TIC's Detected Lib Search VOC 4/24/18 22:21 CPK D

WET CHEMISTRY

Alkalinity, Bicarbonate	429		mg/L	5	S2320B-97			4/24/18 00:47	MSA	I
Alkalinity, Total	429	6	mg/L	5	S2320B-97			4/24/18 00:47	MSA	I
Ammonia-N	4.69		mg/L	0.100	D6919-09			4/28/18 09:57	CMM	F
Chemical Oxygen Demand (COD)	17		mg/L	7	EPA 410.4			4/28/18 15:45	AK	F
Chloride	33.4		mg/L	2.0	EPA 300.0			4/20/18 13:21	CHW	I
Fluoride	ND		mg/L	0.20	EPA 300.0			4/20/18 13:21	CHW	I
Nitrate-N	ND		mg/L	0.20	EPA 300.0			4/20/18 13:21	CHW	I
pH	6.32	5	pH_Units		S4500HB-11			4/24/18 00:47	MSA	I
Phenolics	ND		mg/L	0.005	SW846 9066	4/24/18 14:04	NJA	4/25/18 14:45	NJA	C
Specific Conductance	732		umhos/cm	1	S2510B-97			4/24/18 00:47	MSA	I
Sulfate	7.9		mg/L	2.0	EPA 300.0			4/20/18 13:21	CHW	I
Total Dissolved Solids	444		mg/L	5	S2540C-11			4/25/18 12:00	BMK	I
Total Organic Carbon (TOC)	8.5		mg/L	0.50	S5310B-00			4/23/18 12:03	PAG	A
Turbidity	4.29		NTU	0.10	S2130B-01			4/20/18 02:01	MSA	I

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ANALYTICAL RESULTS

Workorder: 2310027 2ND QTR 2018 CWMP-FORM 19A

Lab ID: 2310027001 **Date Collected:** 4/19/2018 13:47 **Matrix:** Ground Water
Sample ID: CWMP008W **Date Received:** 4/19/2018 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:53	MO	G1
Barium, Total	0.12		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Barium, Dissolved	0.12		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:53	MO	G1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:53	MO	G1
Calcium, Total	61.3		mg/L	0.11	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Calcium, Dissolved	60.9		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:53	MO	G1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:53	MO	G1
Cobalt, Total	0.033		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:53	MO	G1
Iron, Total	24.2		mg/L	0.056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Iron, Dissolved	23.1		mg/L	0.056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:53	MO	G1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:53	MO	G1
Magnesium, Total	28.8		mg/L	0.11	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Magnesium, Dissolved	28.7		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:53	MO	G1
Manganese, Total	14.4		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Manganese, Dissolved	14.4		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:53	MO	G1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/27/18 11:30	AXC	4/30/18 12:21	AXC	H3
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/18 08:00	AXC	4/26/18 11:51	AXC	G2
Nickel, Total	0.018		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Potassium, Total	7.2		mg/L	0.11	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Potassium, Dissolved	7.1		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:53	MO	G1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:53	MO	G1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:53	MO	G1
Sodium, Total	29.7		mg/L	0.11	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Sodium, Dissolved	29.7		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:53	MO	G1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:17	MO	H2

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ANALYTICAL RESULTS

Workorder: 2310027 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310027001** Date Collected: 4/19/2018 13:47 Matrix: Ground Water
Sample ID: **CWMP008W** Date Received: 4/19/2018 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Cntr
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30 DXC	4/25/18 01:53 MO	G1
FIELD PARAMETERS								
Depth to Water Level	2.540		Feet		Field		4/19/18 13:47 BGS	K
Elev Top MW Casing above MSL	422.30		Feet		Field		4/19/18 13:47 BGS	K
Flow Rate	1.04		gal/min		Field		4/19/18 13:47 BGS	K
Ground Water Elevation	419.760		ft/MSL		Field		4/19/18 13:47 BGS	K
pH, Field (SM4500B)	5.710		pH_Units		Field		4/19/18 13:47 BGS	K
Sample Depth	19.000		Feet		Field		4/19/18 13:47 BGS	K
Specific Conductance, Field	864		umhos/cm	1	Field		4/19/18 13:47 BGS	K
Temperature	9.79		Deg. C		Field		4/19/18 13:47 BGS	K
Total Well Depth	22.800		Feet		Field		4/19/18 13:47 BGS	K
Volume in Water Column	3.242		Gallons		Field		4/19/18 13:47 BGS	K
Water Level After Purge	15.610		Feet		Field		4/19/18 13:47 BGS	K
Well Volumes Purged	6.71		Vol		Field		4/19/18 13:47 BGS	K



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2310027 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310027002** Date Collected: 4/19/2018 14:21 Matrix: Ground Water
Sample ID: **CWMP009W** Date Received: 4/19/2018 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	11.9		ug/L	10.0	SW846 8260B			4/24/18 22:43	CJG	D
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/24/18 22:43	CJG	D
Benzene	1.7		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Bromoform	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/24/18 22:43	CJG	D
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Chlorobenzene	12.5		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Chloroethane	9.3		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Chloroform	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/24/18 22:43	CJG	D
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/24/18 22:43	CJG	D
1,2-Dichlorobenzene	1.7		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
1,4-Dichlorobenzene	10.9		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
1,1-Dichloroethane	2.6		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/24/18 22:43	CJG	D
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/24/18 22:43	CJG	D

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ANALYTICAL RESULTS

Workorder: 2310027 2ND QTR 2018 CWMP-FORM 19A

 Lab ID: **2310027002** Date Collected: 4/19/2018 14:21 Matrix: Ground Water
 Sample ID: **CWMP009W** Date Received: 4/19/2018 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Styrene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Toluene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/24/18 22:43	CJG	D
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/24/18 22:43	CJG	D
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/24/18 22:43	CJG	D
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/24/18 22:43	CJG	D
<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)	91.1		%	62 - 133	SW846 8260B			4/24/18 22:43	CJG	D
4-Bromofluorobenzene (S)	93.4		%	79 - 114	SW846 8260B			4/24/18 22:43	CJG	D
Dibromofluoromethane (S)	90.1		%	78 - 116	SW846 8260B			4/24/18 22:43	CJG	D
Toluene-d8 (S)	82.2		%	76 - 127	SW846 8260B			4/24/18 22:43	CJG	D
Library Search - Volatiles										
Isobutane	16.9	J N	ug/L		SW846 8260B			4/24/18 22:43	CJG	D
WET CHEMISTRY										
Alkalinity, Bicarbonate	602		mg/L	5	S2320B-97			4/24/18 01:24	MSA	I
Alkalinity, Total	602	2	mg/L	5	S2320B-97			4/24/18 01:24	MSA	I
Ammonia-N	25.4		mg/L	0.100	D6919-09			4/28/18 10:11	CMM	F
Chemical Oxygen Demand (COD)	92		mg/L	7	EPA 410.4			4/28/18 15:45	AK	F
Chloride	685		mg/L	10.0	EPA 300.0			4/20/18 13:49	CHW	I
Fluoride	ND		mg/L	0.20	EPA 300.0			4/20/18 13:35	CHW	I
Nitrate-N	ND		mg/L	0.20	EPA 300.0			4/20/18 13:35	CHW	I
pH	6.39	1	pH_Units		S4500HB-11			4/24/18 01:24	MSA	I
Phenolics	ND		mg/L	0.005	SW846 9066	4/24/18 14:04	NJA	4/25/18 14:45	NJA	C
Specific Conductance	2570		umhos/cm	1	S2510B-97			4/24/18 01:24	MSA	I
Sulfate	7.3		mg/L	2.0	EPA 300.0			4/20/18 13:35	CHW	I
Total Dissolved Solids	1580		mg/L	5	S2540C-11			4/25/18 12:00	BMK	I
Total Organic Carbon (TOC)	28.9		mg/L	2.5	S5310B-00			4/24/18 12:03	PAG	A
Turbidity	6.33		NTU	0.10	S2130B-01			4/20/18 02:01	MSA	I

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ANALYTICAL RESULTS

Workorder: 2310027 2ND QTR 2018 CWMP-FORM 19A

Lab ID: 2310027002 **Date Collected:** 4/19/2018 14:21 **Matrix:** Ground Water
Sample ID: CWMP009W **Date Received:** 4/19/2018 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Arsenic, Total	0.0036		mg/L	0.0033	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:57	MO	G1
Barium, Total	0.81		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Barium, Dissolved	0.79		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:57	MO	G1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:57	MO	G1
Calcium, Total	157		mg/L	0.11	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Calcium, Dissolved	156		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:57	MO	G1
Chromium, Total	0.0025		mg/L	0.0022	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Chromium, Dissolved	0.0022		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:57	MO	G1
Cobalt, Total	0.057		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:57	MO	G1
Iron, Total	39.1		mg/L	0.056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Iron, Dissolved	37.4		mg/L	0.056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:57	MO	G1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:57	MO	G1
Magnesium, Total	81.9		mg/L	0.11	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Magnesium, Dissolved	82.0		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:57	MO	G1
Manganese, Total	12.5		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Manganese, Dissolved	12.3		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:57	MO	G1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/27/18 11:30	AXC	4/30/18 12:22	AXC	H3
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/18 08:00	AXC	4/26/18 11:52	AXC	G2
Nickel, Total	0.069		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Potassium, Total	33.1		mg/L	0.11	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Potassium, Dissolved	33.0		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:57	MO	G1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:57	MO	G1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:57	MO	G1
Sodium, Total	155		mg/L	0.11	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Sodium, Dissolved	155		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 01:57	MO	G1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:21	MO	H2

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ANALYTICAL RESULTS

Workorder: 2310027 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310027002** Date Collected: 4/19/2018 14:21 Matrix: Ground Water
Sample ID: **CWMP009W** Date Received: 4/19/2018 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Cntr
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30 DXC	4/25/18 01:57 MO	G1
FIELD PARAMETERS								
Depth to Water Level	8.950		Feet		Field		4/19/18 14:21 BGS	K
Elev Top MW Casing above MSL	404.20		Feet		Field		4/19/18 14:21 BGS	K
Flow Rate	1.65		gal/min		Field		4/19/18 14:21 BGS	K
Ground Water Elevation	395.250		ft/MSL		Field		4/19/18 14:21 BGS	K
pH, Field (SM4500B)	5.710		pH_Units		Field		4/19/18 14:21 BGS	K
Sample Depth	16.000		Feet		Field		4/19/18 14:21 BGS	K
Specific Conductance, Field	3004		umhos/cm	1	Field		4/19/18 14:21 BGS	K
Temperature	8.48		Deg. C		Field		4/19/18 14:21 BGS	K
Total Well Depth	19.700		Feet		Field		4/19/18 14:21 BGS	K
Volume in Water Column	6.988		Gallons		Field		4/19/18 14:21 BGS	K
Water Level After Purge	11.600		Feet		Field		4/19/18 14:21 BGS	K
Well Volumes Purged	4.95		Vol		Field		4/19/18 14:21 BGS	K



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2310027 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310027003** Date Collected: 4/19/2018 14:44 Matrix: Ground Water
Sample ID: **CWMP010W** Date Received: 4/19/2018 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/24/18 23:05	CJG	D
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/24/18 23:05	CJG	D
Benzene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Bromoform	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/24/18 23:05	CJG	D
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Chloroform	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/24/18 23:05	CJG	D
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/24/18 23:05	CJG	D
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/24/18 23:05	CJG	D
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/24/18 23:05	CJG	D

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ANALYTICAL RESULTS

Workorder: 2310027 2ND QTR 2018 CWMP-FORM 19A

Lab ID: 2310027003 **Date Collected:** 4/19/2018 14:44 **Matrix:** Ground Water
Sample ID: CWMP010W **Date Received:** 4/19/2018 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Styrene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Toluene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/24/18 23:05	CJG	D
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/24/18 23:05	CJG	D
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/24/18 23:05	CJG	D
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/24/18 23:05	CJG	D
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	93.9		%	62 - 133	SW846 8260B			4/24/18 23:05	CJG	D
4-Bromofluorobenzene (S)	92.7		%	79 - 114	SW846 8260B			4/24/18 23:05	CJG	D
Dibromofluoromethane (S)	93.1		%	78 - 116	SW846 8260B			4/24/18 23:05	CJG	D
Toluene-d8 (S)	81.7		%	76 - 127	SW846 8260B			4/24/18 23:05	CJG	D

LIBRARY SEARCH - VOLATILES

No TIC's Detected Lib Search VOC 4/24/18 23:05 CPK D

WET CHEMISTRY

Alkalinity, Bicarbonate	126		mg/L	5	S2320B-97			4/24/18 01:32	MSA	I
Alkalinity, Total	126	2	mg/L	5	S2320B-97			4/24/18 01:32	MSA	I
Ammonia-N	0.477		mg/L	0.100	D6919-09			4/28/18 11:06	CMM	F
Chemical Oxygen Demand (COD)	7		mg/L	7	EPA 410.4			4/30/18 13:28	AK	F
Chloride	105		mg/L	2.0	EPA 300.0			4/20/18 14:02	CHW	I
Fluoride	ND		mg/L	0.20	EPA 300.0			4/20/18 14:02	CHW	I
Nitrate-N	2.4		mg/L	0.20	EPA 300.0			4/20/18 14:02	CHW	I
pH	7.19	1	pH_Units		S4500HB-11			4/24/18 01:32	MSA	I
Phenolics	ND		mg/L	0.005	SW846 9066	4/24/18 14:04	NJA	4/25/18 14:45	NJA	C
Specific Conductance	562		umhos/cm	1	S2510B-97			4/24/18 01:32	MSA	I
Sulfate	26.1		mg/L	2.0	EPA 300.0			4/20/18 14:02	CHW	I
Total Dissolved Solids	348		mg/L	5	S2540C-11			4/25/18 12:00	BMK	I
Total Organic Carbon (TOC)	2.9		mg/L	1.0	S5310B-00			4/30/18 17:21	PAG	A
Turbidity	1.87		NTU	0.10	S2130B-01			4/20/18 02:01	MSA	I

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ANALYTICAL RESULTS

Workorder: 2310027 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310027003** Date Collected: 4/19/2018 14:44 Matrix: Ground Water
Sample ID: **CWMP010W** Date Received: 4/19/2018 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:01	MO	G1
Barium, Total	0.022		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Barium, Dissolved	0.050		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:01	MO	G1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:01	MO	G1
Calcium, Total	20.9		mg/L	0.11	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Calcium, Dissolved	44.9		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:01	MO	G1
Chromium, Total	0.012		mg/L	0.0022	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Chromium, Dissolved	0.012		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:01	MO	G1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Copper, Total	0.0063		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Copper, Dissolved	0.0088		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:01	MO	G1
Iron, Total	0.40		mg/L	0.056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Iron, Dissolved	0.19		mg/L	0.056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:01	MO	G1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:01	MO	G1
Magnesium, Total	17.2		mg/L	0.11	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Magnesium, Dissolved	26.6		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:01	MO	G1
Manganese, Total	0.26		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Manganese, Dissolved	0.74		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:01	MO	G1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/27/18 11:30	AXC	4/30/18 12:23	AXC	H3
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/18 08:00	AXC	4/26/18 11:53	AXC	G2
Nickel, Total	0.017		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Potassium, Total	4.9		mg/L	0.11	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Potassium, Dissolved	8.8		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:01	MO	G1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:01	MO	G1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:01	MO	G1
Sodium, Total	75.5		mg/L	0.11	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Sodium, Dissolved	103		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:01	MO	G1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 02:30	LXC	4/25/18 03:25	MO	H2

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ANALYTICAL RESULTS

Workorder: 2310027 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310027003** Date Collected: 4/19/2018 14:44 Matrix: Ground Water
Sample ID: **CWMP010W** Date Received: 4/19/2018 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Cntr	
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30 DXC	4/25/18 02:01 MO	G1	
FIELD PARAMETERS									
Depth to Water Level	8.830		Feet		Field		4/19/18 14:44 BGS	K	
Elev Top MW Casing above MSL	360.90		Feet		Field		4/19/18 14:44 BGS	K	
Flow Rate	1.24		gal/min		Field		4/19/18 14:44 BGS	K	
Ground Water Elevation	352.070		ft/MSL		Field		4/19/18 14:44 BGS	K	
pH, Field (SM4500B)	6.050		pH_Units		Field		4/19/18 14:44 BGS	K	
Sample Depth	17.000		Feet		Field		4/19/18 14:44 BGS	K	
Specific Conductance, Field	642		umhos/cm	1	Field		4/19/18 14:44 BGS	K	
Temperature	6.75		Deg. C		Field		4/19/18 14:44 BGS	K	
Total Well Depth	19.600		Feet		Field		4/19/18 14:44 BGS	K	
Volume in Water Column	7.001		Gallons		Field		4/19/18 14:44 BGS	K	
Water Level After Purge	16.920		Feet		Field		4/19/18 14:44 BGS	K	
Well Volumes Purged	1.24		Vol		Field		4/19/18 14:44 BGS	K	



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2310027 2ND QTR 2018 CWMP-FORM 19A

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2310027001	1	CWMP008W	SW846 8260B	trans-1,4-Dichloro-2-butene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte trans-1,4-Dichloro-2-butene. The % Recovery was reported as 48.9 and the control limits were 60 to 141.				
2310027001	2	CWMP008W	SW846 8260B	trans-1,4-Dichloro-2-butene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte trans-1,4-Dichloro-2-butene. The % Recovery was reported as 41.9 and the control limits were 60 to 141.				
2310027001	3	CWMP008W	SW846 8260B	cis-1,3-Dichloropropene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte cis-1,3-Dichloropropene. The % Recovery was reported as 79.4 and the control limits were 81 to 121.				
2310027001	4	CWMP008W	SW846 8260B	cis-1,3-Dichloropropene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte cis-1,3-Dichloropropene. The % Recovery was reported as 80.6 and the control limits were 81 to 121.				
2310027001	5	CWMP008W	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.				
2310027001	6	CWMP008W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2310027002	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.				
2310027002	2	CWMP009W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2310027003	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.				
2310027003	2	CWMP010W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				

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Generated by ALS
 CO
 AL

1 of 1

2310027*

Receipt information (completed by Receiving Lab)

Cooler Temp: 1 Therm ID: 318

No. of Coolers: Y N Initial

Custody Seals Present? (if present) Seals Intact?

Received on Ice?

COGLabels Complete/Accurate?

Cont. in Good Cond.?

Correct Containers?

Correct Sample Volumes?

Correct Preservation?

Headspace/Volatiles?

Courier/Tracking #:

Sample/COC Comments

ALS Field Services: Pickup Labor

Composite_Sampling Rental_Equipment

Other:

Special Processing

State Samples Collected In

Container Type	AG	AN	CG	PL	PL	PL	PL	PL	PL
40 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml
H2SO4	H2SO4	H2SO4	H2SO4	HNO3	HNO3	HNO3	HNO3	HNO3	HNO3
HCl	HCl	HCl	HCl	HCl	HCl	HCl	HCl	HCl	HCl

Matrix	G	OR	C	Matrix	Sample Depth for AUX Data	FM	VOC (Form 19A) + LS	Substituted	Dis: Fe, Mn, Na, Ba, Cr, Cu, Pb, Mg, K, Zn, As, Cd, Se, Ag, Hg, Ca	Metals: Fe, Mn, Na, Ba, Cr, Cu, Pb, Mg, K, Zn, As, Cd, Se, Ag, Hg, Ca	PH, Cl, SPC, F, SO4, NO3, TP, TDS	Alkalinity, HCO3
G	GW	2	1	1	1	1	1	1	1	1	1	1
G	GW	2	1	1	1	1	1	1	1	1	1	1
G	GW	2	1	1	1	1	1	1	1	1	1	1

Enter Number of Containers Per Sample or Field Results Below.

LOGGED BY (signature):
 REVIEWED BY (signature):

Relinquished By / Company Name: *ALS*
 Date: 4-19-18
 Time: 1347

Received By / Company Name: *David N...*
 Date: 4/19/18
 Time: 1602

Reportable to PADEP? Yes No
 PWSID #

EDDS: Format Type

Standard CLP-like USACE
 USACE Navy

ALS Field Services: Pickup Labor
 Composite_Sampling Rental_Equipment

State Samples Collected In: NY NJ PA NC

Special Processing: USACE Navy
 Sample Disposal: Lab Special

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider
 Phone#: (717) 735-0193

Project Name#: Annual CWMP Sampling

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.org

Fax? Y No.: (717) 397-9973

Sample Description/Location

Sample Date

Time

1. CWMP008W 4-19-18 1347

2. CWMP009W

3. CWMP010W

4.

5.

6.

7.

8.

9.

10.

May 3, 2018

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

Certificate of Analysis

Project Name:	2018-CRESWELL	Workorder:	2310465
Purchase Order:	PO1000127	Workorder ID:	2ND QTR 2018 CWMP-FORM 19A

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Monday, April 23, 2018.

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.

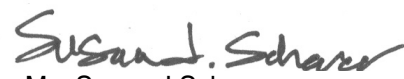
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications 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. Jordan Gallagher , Mr. Mark Reider , 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: 2310465 2ND QTR 2018 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2310465001	CWMP018S	Ground Water	4/23/2018 10:46	4/23/2018 15:49	Mr. Brian G Shade
2310465002	CWMP017S	Ground Water	4/23/2018 11:02	4/23/2018 15:49	Mr. Brian G Shade
2310465003	CWMP016W	Ground Water	4/23/2018 13:29	4/23/2018 15:49	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2310465 2ND QTR 2018 CWMP-FORM 19A

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.

Standard Acronyms/Flags

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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ANALYTICAL RESULTS

Workorder: 2310465 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310465001** Date Collected: 4/23/2018 10:46 Matrix: Ground Water
Sample ID: **CWMP018S** Date Received: 4/23/2018 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/26/18 07:45	CJG	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/26/18 07:45	CJG	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/26/18 07:45	CJG	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/26/18 07:45	CJG	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/26/18 07:45	CJG	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/26/18 07:45	CJG	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/26/18 07:45	CJG	J

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ANALYTICAL RESULTS

Workorder: 2310465 2ND QTR 2018 CWMP-FORM 19A

Lab ID: 2310465001 **Date Collected:** 4/23/2018 10:46 **Matrix:** Ground Water
Sample ID: CWMP018S **Date Received:** 4/23/2018 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/26/18 07:45	CJG	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/26/18 07:45	CJG	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/26/18 07:45	CJG	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/26/18 07:45	CJG	J
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	113		%	62 - 133	SW846 8260B			4/26/18 07:45	CJG	J
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			4/26/18 07:45	CJG	J
Dibromofluoromethane (S)	102		%	78 - 116	SW846 8260B			4/26/18 07:45	CJG	J
Toluene-d8 (S)	103		%	76 - 127	SW846 8260B			4/26/18 07:45	CJG	J

LIBRARY SEARCH - VOLATILES

No TIC's Detected Lib Search VOC 4/26/18 07:45 JAH J

WET CHEMISTRY

Alkalinity, Bicarbonate	340		mg/L	5	S2320B-97			4/24/18 17:27	MSA	B
Alkalinity, Total	385	1	mg/L	5	S2320B-97			4/24/18 17:27	MSA	B
Ammonia-N	0.118		mg/L	0.100	D6919-09			4/30/18 23:18	CMM	C
Chemical Oxygen Demand (COD)	24		mg/L	7	EPA 410.4			4/30/18 13:28	AK	C
Chloride	347		mg/L	10.0	EPA 300.0			4/24/18 07:00	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/24/18 06:46	CHW	B
Nitrate-N	12.1		mg/L	0.20	EPA 300.0			4/24/18 06:46	CHW	B
pH	8.57	2	pH_Units		S4500HB-11			4/24/18 17:27	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	5/2/18 12:00	NJA	5/2/18 13:51	NJA	I
Specific Conductance	1730		umhos/cm	1	S2510B-97			4/24/18 17:27	MSA	B
Sulfate	36.3		mg/L	2.0	EPA 300.0			4/24/18 06:46	CHW	B
Total Dissolved Solids	957		mg/L	5	S2540C-11			4/27/18 10:20	LLJ	B
Total Organic Carbon (TOC)	7.1		mg/L	0.50	S5310B-00			4/24/18 12:03	PAG	G
Turbidity	0.95		NTU	0.10	S2130B-01			4/25/18 02:42	MSA	B

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ANALYTICAL RESULTS

Workorder: 2310465 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310465001** Date Collected: 4/23/2018 10:46 Matrix: Ground Water
Sample ID: **CWMP018S** Date Received: 4/23/2018 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:20	MO	D1
Barium, Total	0.035		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Barium, Dissolved	0.033		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:20	MO	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:20	MO	D1
Calcium, Total	62.4		mg/L	0.11	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Calcium, Dissolved	59.3		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:20	MO	D1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:20	MO	D1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Copper, Total	0.0060		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:20	MO	D1
Iron, Total	0.076		mg/L	0.056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:20	MO	D1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:20	MO	D1
Magnesium, Total	77.5		mg/L	0.11	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Magnesium, Dissolved	74.8		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:20	MO	D1
Manganese, Total	0.021		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Manganese, Dissolved	0.017		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:20	MO	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	5/2/18 09:30	AXC	5/2/18 12:53	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/18 08:00	AXC	4/26/18 11:55	AXC	D2
Nickel, Total	0.013		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Potassium, Total	15.4		mg/L	0.11	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Potassium, Dissolved	14.7		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:20	MO	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:20	MO	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:20	MO	D1
Sodium, Total	195		mg/L	0.11	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Sodium, Dissolved	188		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:20	MO	D1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1
Zinc, Total	0.0074		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:34	MO	E1

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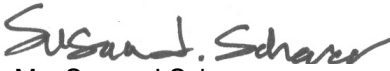
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ANALYTICAL RESULTS

Workorder: 2310465 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310465001** Date Collected: 4/23/2018 10:46 Matrix: Ground Water
Sample ID: **CWMP018S** Date Received: 4/23/2018 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	0.0075		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:20	MO	D1
FIELD PARAMETERS										
Dissolved Oxygen	10.380		mg/L	0.010	Field			4/23/18 10:46	BGS	F
pH, Field (SM4500B)	7.710		pH_Units		Field			4/23/18 10:46	BGS	F
Specific Conductance, Field	1947		umhos/cm	1	Field			4/23/18 10:46	BGS	F
Temperature	11.04		Deg. C		Field			4/23/18 10:46	BGS	F



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2310465 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310465002** Date Collected: 4/23/2018 11:02 Matrix: Ground Water
Sample ID: **CWMP017S** Date Received: 4/23/2018 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/26/18 07:23	CJG	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/26/18 07:23	CJG	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/26/18 07:23	CJG	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/26/18 07:23	CJG	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/26/18 07:23	CJG	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/26/18 07:23	CJG	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/26/18 07:23	CJG	J

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ANALYTICAL RESULTS

Workorder: 2310465 2ND QTR 2018 CWMP-FORM 19A

Lab ID: 2310465002 **Date Collected:** 4/23/2018 11:02 **Matrix:** Ground Water
Sample ID: CWMP017S **Date Received:** 4/23/2018 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/26/18 07:23	CJG	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/26/18 07:23	CJG	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/26/18 07:23	CJG	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/26/18 07:23	CJG	J

Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	116		%	62 - 133	SW846 8260B			4/26/18 07:23	CJG	J
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			4/26/18 07:23	CJG	J
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			4/26/18 07:23	CJG	J
Toluene-d8 (S)	104		%	76 - 127	SW846 8260B			4/26/18 07:23	CJG	J

LIBRARY SEARCH - VOLATILES

No TIC's Detected Lib Search VOC 4/26/18 07:23 JAH J

WET CHEMISTRY

Alkalinity, Bicarbonate	544		mg/L	5	S2320B-97			4/24/18 17:38	MSA	B
Alkalinity, Total	552	1	mg/L	5	S2320B-97			4/24/18 17:38	MSA	B
Ammonia-N	0.133		mg/L	0.100	D6919-09			4/30/18 23:31	CMM	C
Chemical Oxygen Demand (COD)	17		mg/L	7	EPA 410.4			4/30/18 13:28	AK	C
Chloride	474		mg/L	10.0	EPA 300.0			4/24/18 08:51	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/24/18 08:37	CHW	B
Nitrate-N	12.2		mg/L	0.20	EPA 300.0			4/24/18 08:37	CHW	B
pH	8.33	2	pH_Units		S4500HB-11			4/24/18 17:38	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	5/2/18 12:00	NJA	5/2/18 13:51	NJA	I
Specific Conductance	2280		umhos/cm	1	S2510B-97			4/24/18 17:38	MSA	B
Sulfate	50.6		mg/L	2.0	EPA 300.0			4/24/18 08:37	CHW	B
Total Dissolved Solids	1190		mg/L	5	S2540C-11			4/27/18 10:20	LLJ	B
Total Organic Carbon (TOC)	4.5		mg/L	0.50	S5310B-00			4/24/18 12:03	PAG	G
Turbidity	1.45		NTU	0.10	S2130B-01			4/25/18 02:42	MSA	B

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ANALYTICAL RESULTS

Workorder: 2310465 2ND QTR 2018 CWMP-FORM 19A

Lab ID: 2310465002 **Date Collected:** 4/23/2018 11:02 **Matrix:** Ground Water
Sample ID: CWMP017S **Date Received:** 4/23/2018 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:32	MO	D1
Barium, Total	0.032		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Barium, Dissolved	0.031		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:32	MO	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:32	MO	D1
Calcium, Total	65.9		mg/L	0.11	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Calcium, Dissolved	64.9		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:32	MO	D1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:32	MO	D1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Copper, Total	0.0070		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Copper, Dissolved	0.0064		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:32	MO	D1
Iron, Total	0.14		mg/L	0.056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:32	MO	D1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:32	MO	D1
Magnesium, Total	114		mg/L	0.11	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Magnesium, Dissolved	113		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:32	MO	D1
Manganese, Total	0.060		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Manganese, Dissolved	0.056		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:32	MO	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	5/2/18 09:30	AXC	5/2/18 12:54	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/18 08:00	AXC	4/26/18 11:56	AXC	D2
Nickel, Total	0.0090		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Potassium, Total	16.1		mg/L	0.11	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Potassium, Dissolved	15.8		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:32	MO	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:32	MO	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:32	MO	D1
Sodium, Total	297		mg/L	1.1	SW846 6020A	4/24/18 03:20	LXC	4/25/18 16:58	MO	E1
Sodium, Dissolved	286		mg/L	1.1	SW846 6020A	4/24/18 10:30	DXC	4/25/18 17:21	MO	D1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1
Zinc, Total	0.056		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:38	MO	E1

ALS Environmental Laboratory Locations Across North America

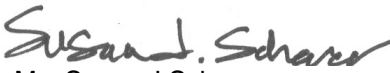
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ANALYTICAL RESULTS

Workorder: 2310465 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310465002** Date Collected: 4/23/2018 11:02 Matrix: Ground Water
Sample ID: **CWMP017S** Date Received: 4/23/2018 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	0.051		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:32	MO	D1
FIELD PARAMETERS										
Dissolved Oxygen	8.720		mg/L	0.010	Field			4/23/18 11:02	BGS	F
pH, Field (SM4500B)	7.610		pH_Units		Field			4/23/18 11:02	BGS	F
Specific Conductance, Field	2561		umhos/cm	1	Field			4/23/18 11:02	BGS	F
Temperature	14.83		Deg. C		Field			4/23/18 11:02	BGS	F



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2310465 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310465003** Date Collected: 4/23/2018 13:29 Matrix: Ground Water
Sample ID: **CWMP016W** Date Received: 4/23/2018 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/26/18 06:37	CJG	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/26/18 06:37	CJG	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/26/18 06:37	CJG	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/26/18 06:37	CJG	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/26/18 06:37	CJG	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/26/18 06:37	CJG	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/26/18 06:37	CJG	J

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ANALYTICAL RESULTS

Workorder: 2310465 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310465003** Date Collected: 4/23/2018 13:29 Matrix: Ground Water
Sample ID: **CWMP016W** Date Received: 4/23/2018 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/26/18 06:37	CJG	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/26/18 06:37	CJG	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/26/18 06:37	CJG	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/26/18 06:37	CJG	J

Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	117		%	62 - 133	SW846 8260B			4/26/18 06:37	CJG	J
4-Bromofluorobenzene (S)	108		%	79 - 114	SW846 8260B			4/26/18 06:37	CJG	J
Dibromofluoromethane (S)	103		%	78 - 116	SW846 8260B			4/26/18 06:37	CJG	J
Toluene-d8 (S)	105		%	76 - 127	SW846 8260B			4/26/18 06:37	CJG	J

LIBRARY SEARCH - VOLATILES

No TIC's Detected . Lib Search VOC 4/26/18 06:37 JAH J

WET CHEMISTRY

Alkalinity, Bicarbonate	12		mg/L	5	S2320B-97			4/24/18 17:47	MSA	B
Alkalinity, Total	12	1	mg/L	5	S2320B-97			4/24/18 17:47	MSA	B
Ammonia-N	0.196		mg/L	0.100	D6919-09			4/30/18 23:45	CMM	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			4/30/18 13:28	AK	C
Chloride	2.5		mg/L	2.0	EPA 300.0			4/24/18 07:14	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/24/18 07:14	CHW	B
Nitrate-N	0.54		mg/L	0.20	EPA 300.0			4/24/18 07:14	CHW	B
pH	7.04	2	pH_Units		S4500HB-11			4/24/18 17:47	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	5/2/18 12:00	NJA	5/2/18 13:51	NJA	I
Specific Conductance	52		umhos/cm	1	S2510B-97			4/24/18 17:47	MSA	B
Sulfate	12.1		mg/L	2.0	EPA 300.0			4/24/18 07:14	CHW	B
Total Dissolved Solids	16		mg/L	5	S2540C-11			4/27/18 10:20	LLJ	B
Total Organic Carbon (TOC)	0.61		mg/L	0.50	S5310B-00			4/24/18 12:03	PAG	G
Turbidity	0.60		NTU	0.10	S2130B-01			4/25/18 02:42	MSA	B

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ANALYTICAL RESULTS

Workorder: 2310465 2ND QTR 2018 CWMP-FORM 19A

Lab ID: **2310465003** Date Collected: 4/23/2018 13:29 Matrix: Ground Water
Sample ID: **CWMP016W** Date Received: 4/23/2018 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:35	MO	D1
Barium, Total	0.0084		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Barium, Dissolved	0.0083		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:35	MO	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:35	MO	D1
Calcium, Total	5.0		mg/L	0.11	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Calcium, Dissolved	4.9		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:35	MO	D1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:35	MO	D1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:35	MO	D1
Iron, Total	0.12		mg/L	0.056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:35	MO	D1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:35	MO	D1
Magnesium, Total	1.1		mg/L	0.11	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Magnesium, Dissolved	1.1		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:35	MO	D1
Manganese, Total	0.0065		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Manganese, Dissolved	0.0059		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:35	MO	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	5/2/18 09:30	AXC	5/2/18 12:55	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/18 08:00	AXC	4/26/18 11:59	AXC	D2
Nickel, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Potassium, Total	0.43		mg/L	0.11	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Potassium, Dissolved	0.42		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:35	MO	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:35	MO	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:35	MO	D1
Sodium, Total	3.0		mg/L	0.11	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Sodium, Dissolved	3.1		mg/L	0.11	SW846 6020A	4/24/18 10:30	DXC	4/25/18 02:35	MO	D1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/24/18 03:20	LXC	4/25/18 07:42	MO	E1

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

ANALYTICAL RESULTS

Workorder: 2310465 2ND QTR 2018 CWMP-FORM 19A

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2310465001	1	CWMP018S	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2310465001	2	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.				
2310465002	1	CWMP017S	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2310465002	2	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.				
2310465003	1	CWMP016W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2310465003	2	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.				

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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

**CHAIN OF CUSTODY/
 REQUEST FOR ANALYSIS**
**ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT /
 SAMPLER. INSTRUCTIONS ON THE BACK.**

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 1 of 2
 * 2 3 1 0 4 6 5 *

Client Name: Lancaster County Solid Waste MA
 Address: 1299 Harrisburg Pike, P.O. Box 4424
 Lancaster, PA 17604
 Contact: Mark Reider
 Phone#: (717) 735-0193
 Project Name#: Creswell/GWMP Form 19A
 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 mreider@LCSWMA.org
 Fax? Y N No.: (717) 397-9973

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	Container Type	Container Size	Preservative	AG	AN	CG	CG	CG	PL	PL
1. CWMPO18S	4-23-18	1040	G	40 ml	HCl	40 ml	125 ml	40 ml	40 ml	40 ml	500 ml	500 ml
2. CWMPO17S	1102		G	40 ml	HCl	40 ml	40 ml	40 ml	40 ml	40 ml	500 ml	500 ml
3. CWMPO16W	1329		G	40 ml	HCl	40 ml	40 ml	40 ml	40 ml	40 ml	500 ml	500 ml

Matrix	8260 VOCs - Form 19A + Subtitle D	Field Blank	FM	Sample Depth for AUX Data	NH3-N, COD	Diss Metals Form 19A (Field Filtered)	Total Metals Form 19A + Subtitle D
G	2	2	X	X	1	1	1
GW	1	1			1	1	1

Enter Number of Containers Per Sample or Field Results Below.

ALS Field Services: Pickup Labor
 Composite_Sampling Rental_Equipment
 Other:

Project Comments:
 LOGGED BY (signature): [Signature] DATE: 4/23/18 TIME: 1549
 REVIEWED BY (signature): [Signature] DATE: 4/23/18 TIME: 1549

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
[Signature] AS	4-23-18	1549	[Signature] AS	4/23/18	1549

Special Processing: USACE Navy State Samples Collected In: NY NJ PA NC

Reportable to PADEP? Yes No
 PWSID # _____ EDDS: Format Type: _____

