

February 22, 2017

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; 1st Quarter 2017

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 “Quarterly” Form 19 parameters, all of 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 wells 1 & 5 samples where bellow MCL and SMCL with the exception of nitrate, iron, and manganese.
- Down gradient wells had similar results with wells 17 & 18 (surface Mann’s Run) showing high concentration of chlorides, TDS and nitrate-nitrogen. Wells 9 and 10 had elevated TDS and chlorides which shows surface influence of Mann’s Run. Wells 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 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,

A handwritten signature in black ink, appearing to read 'm. reider'.

Mark D. Reider
Director of Environmental Compliance

Enclosures

cc: Bob Zorbaugh; Daniel Brown; Bob Eshbach
Randy Weiss (PA DEP)



Date Prepared/Revised
02/09/2017

DEP USE ONLY

Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP007W X Well ___ Spring ___ Stream ___ Other

 Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point Latitude: 39 ° 57 ' 24.53 " Longitude: 76 ° 26 ' 33.28 "

Depth to Water Level:	7.19	ft	Measured from:	Land Surface	X	TOC
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Casing Stickup: 1.50 ft Elevation of Water Level: 446.21 ft./MSL

Sampling Depth:	33 ft	Volume of Water Column:	43.05 gal
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Total Well Depth: 36.5 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: X Yes No Well Volumes Purged: 3.7

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 1/16/2017 Sample Collection Time: 10:12

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): 2202133001 Final Lab Analysis CompletionDate: 1/23/2017

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

Comments:

I.D. No 100008

Monitoring Point No. CWMP007W

Sample Date 1/16/2017

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	11	SM18-2321
CALCIUM, TOTAL	18.6	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	70	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	67 ND	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	9.4	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	6.6	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	10.6	EPA 300.0
pH-FIELD (SU)	5.07	FIELD
pH-LAB (SU)	5.85	EPA 150.1
POTASSIUM, TOTAL	2.2	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	32.8	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	418	FIELD
SPEC. COND., LAB (umhos/cm)	347	EPA 120.1
SULFATE	15.4	EPA 300.0
ALKALINITY	11	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	246	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.68	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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

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

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP007W

Sample Date 1/16/2017

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

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

T Please indicate detection limit if analyte is not detected.

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



Date Prepared/Revised
02/09/2017

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: 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: 102.55 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: -1.37 ft Elevation of Water Level: 426.98 ft./MSL

Sampling Depth: 130 ft Volume of Water Column: 55.00 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): 1/16/2017 Sample Collection Time: 11:21

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): 2202191001 Final Lab Analysis Completion Date: 1/23/2017

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP004W

Sample Date 1/16/2017

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	24	SM18-2321
CALCIUM, TOTAL	21.1	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	44.3	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	67 ND	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	6.6	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	15	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	7.4	EPA 300.0
pH-FIELD (SU)	5.43	FIELD
pH-LAB (SU)	6.23	EPA 150.1
POTASSIUM, TOTAL	1.4	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	15	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	294	FIELD
SPEC. COND., LAB (umhos/cm)	243	EPA 120.1
SULFATE	6.1	EPA 300.0
ALKALINITY	24	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	161	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.94	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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

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

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP004W

Sample Date 1/16/2017

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

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

T Please indicate detection limit if analyte is not detected.

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



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QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

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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: 93.92 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: -1.29 ft Elevation of Water Level: 430.29 ft./MSL

Sampling Depth: 100 ft Volume of Water Column: -27.79 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): 1/16/2017 Sample Collection Time: 11:40

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): 2202191002 Final Lab Analysis Completion Date: 1/23/2017

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP003W

Sample Date 1/16/2017

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	18	SM18-2321
CALCIUM, TOTAL	29.5	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	78.7	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	67 ND	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	10.2	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	5.6 ND	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	8.9	EPA 300.0
pH-FIELD (SU)	5.46	FIELD
pH-LAB (SU)	6.07	EPA 150.1
POTASSIUM, TOTAL	1.6	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	19.8	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	425	FIELD
SPEC. COND., LAB (umhos/cm)	297	EPA 120.1
SULFATE	5.7	EPA 300.0
ALKALINITY	18	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	236	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.75	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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

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

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP003W

Sample Date 1/16/2017

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	2.8	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

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



Date Prepared/Revised
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**FORM 19
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SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: 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: 79.59 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: -1.19 ft Elevation of Water Level: 446.22 ft./MSL

Sampling Depth: 85 ft Volume of Water Column: 29.98 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): 1/16/2017 Sample Collection Time: 12:26

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): 2202191003 Final Lab Analysis Completion Date: 1/23/2017

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP002W

Sample Date 1/16/2017

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	62	SM18-2321
CALCIUM, TOTAL	50.2	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	13	EPA 410.4
CHLORIDE	110	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	67 ND	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	15.3	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	1000	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	3.6	EPA 300.0
pH-FIELD (SU)	5.52	FIELD
pH-LAB (SU)	6.12	EPA 150.1
POTASSIUM, TOTAL	2.6	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	20.9	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	595	FIELD
SPEC. COND., LAB (umhos/cm)	545	EPA 120.1
SULFATE	25.8	EPA 300.0
ALKALINITY	62	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	281	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	2.7	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.13	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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I.D. No 100008

Monitoring Point No. CWMP002W

Sample Date 1/16/2017

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ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	9.5	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	1.4	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

**COMMONWEALTH OF PENNSYLVANIA
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Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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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: 59.65 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 1.90 ft Elevation of Water Level: 323.05 ft./MSL

Sampling Depth: 59.65 ft Volume of Water Column: 62.05 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): 1/18/2017 Sample Collection Time: 12:43

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): 2202706001 Final Lab Analysis Completion Date: 1/24/2017

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP012W

Sample Date 1/18/2017

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	65	SM18-2321
CALCIUM, TOTAL	34.2	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	33.4	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	96900	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	9.2	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	620	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	11.6	EPA 300.0
pH-FIELD (SU)	6.69	FIELD
pH-LAB (SU)	6.43	EPA 150.1
POTASSIUM, TOTAL	1.4	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	12.7	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	372	FIELD
SPEC. COND., LAB (umhos/cm)	304	EPA 120.1
SULFATE	4.2	EPA 300.0
ALKALINITY	65	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	168	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	2.9	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	163	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 1/18/2017

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.



Date Prepared/Revised
02/09/2017

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

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

X 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: 45.9 ft

Measured from: Land Surface X TOC

Casing Stickup: -0.37 ft

Elevation of Water Level: 467.53 ft./MSL

Sampling Depth: 130 ft

Volume of Water Column:	138.20	gal
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Total Well Depth: 140 ft

Sampling Method: X Pumped Bailed Grab

Well Purged: X Yes No

Well Volumes Purged: 2.1

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 1/19/2017

Sample Collection Time: 11:09

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): 2203035001 Final Lab Analysis CompletionDate: 1/25/2017

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

Comments:

I.D. No 100008

Monitoring Point No. CWMP005W

Sample Date 1/19/2017

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	17	SM18-2321
CALCIUM, TOTAL	16.1	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	65	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	67 ND	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	8.7	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	56	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	10.5	EPA 300.0
pH-FIELD (SU)	4.84	FIELD
pH-LAB (SU)	5.68	EPA 150.1
POTASSIUM, TOTAL	2.2	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	31.6	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	378	FIELD
SPEC. COND., LAB (umhos/cm)	300	EPA 120.1
SULFATE	2.6	EPA 300.0
ALKALINITY	17	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	188	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.55	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.62	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 1/19/2017

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

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

T Please indicate detection limit if analyte is not detected.

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



Date Prepared/Revised
02/09/2017

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): 1/19/2017 Sample Collection Time: 12:00

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): 2203036001 Final Lab Analysis Completion Date: 1/25/2017

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP017S

Sample Date 1/19/2017

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	568	SM18-2321
CALCIUM, TOTAL	73.1	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	17	EPA 410.4
CHLORIDE	791	EPA 300.0
FLUORIDE	0.24	EPA 300.0
IRON, TOTAL (ug/l)	250	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	113	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	81	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	26.8	EPA 300.0
pH-FIELD (SU)	7.65	FIELD
pH-LAB (SU)	7.81	EPA 150.1
POTASSIUM, TOTAL	21.5	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	422	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	3681	FIELD
SPEC. COND., LAB (umhos/cm)	3260	EPA 120.1
SULFATE	39.4	EPA 300.0
ALKALINITY	568	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	1740	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	5.8	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.63	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 1/19/2017

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

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

T Please indicate detection limit if analyte is not detected.



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

Date Prepared/Revised
02/09/2017

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): 1/19/2017 Sample Collection Time: 12:21

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): 2203036002 Final Lab Analysis Completion Date: 1/25/2017

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP018S

Sample Date 1/19/2017

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	278	SM18-2321
CALCIUM, TOTAL	64.4	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	19	EPA 410.4
CHLORIDE	459	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	120	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	64.7	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	100	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	15.3	EPA 300.0
pH-FIELD (SU)	8.29	FIELD
pH-LAB (SU)	8.44	EPA 150.1
POTASSIUM, TOTAL	17.4	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	234	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	2236	FIELD
SPEC. COND., LAB (umhos/cm)	1990	EPA 120.1
SULFATE	36.2	EPA 300.0
ALKALINITY	297	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	961	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	8.1	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.98	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 1/19/2017

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

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

T Please indicate detection limit if analyte is not detected.

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



Date Prepared/Revised
02/09/2017

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: 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: 30.68 ft

Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 1.23 ft

Elevation of Water Level: 484.45 ft./MSL

Sampling Depth: 57 ft

Volume of Water Column: 52.31 gal

Total Well Depth: 66.3 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 1.8

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

Spring Flow Rate: ☐ gpm

Sample Date (mm/dd/yy): 1/20/2017

Sample Collection Time: 9:03

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): 2203360001 Final Lab Analysis Completion Date: 1/26/2017

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

Comments:

I.D. No 100008

Monitoring Point No. CWMP001W

Sample Date 1/20/2017

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	0.235	EPA 350.3
BICARBONATE	5	SM18-2321
CALCIUM, TOTAL	16.4	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	30.7	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	320	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	11.1	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	52	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	22.6	EPA 300.0
pH-FIELD (SU)	4.84	FIELD
pH-LAB (SU)	5.78	EPA 150.1
POTASSIUM, TOTAL	2.2	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	14.7	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	318	FIELD
SPEC. COND., LAB (umhos/cm)	260	EPA 120.1
SULFATE	2.1	EPA 300.0
ALKALINITY	5	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	162	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.86	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	18.3	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 1/20/2017

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

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

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised
02/09/2017

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: CWMP008W X Well ___ Spring ___ Stream ___ Other

 Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point Latitude: 39 ° 57 ' 16.97 " Longitude: 76 ° 26 ' 47.58 "

Depth to Water Level: 2.99 ft Measured from: Land Surface X TOC

Casing Stickup: 2.80 ft Elevation of Water Level: 419.31 ft./MSL

Sampling Depth:	19 ft	Volume of Water Column:	3.23 gal
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Total Well Depth: 22.8 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: X Yes No Well Volumes Purged: 5.5

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 1/20/2017 Sample Collection Time: 10:34

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): 2203360002 Final Lab Analysis CompletionDate: 1/26/2017

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

Comments:

I.D. No 100008

Monitoring Point No. CWMP008W

Sample Date 1/20/2017

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	6.35	EPA 350.3
BICARBONATE	400	SM18-2321
CALCIUM, TOTAL	63.8	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	27	EPA 410.4
CHLORIDE	42.1	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	24900	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	29.1	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	15300	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.2 ND	EPA 300.0
pH-FIELD (SU)	6.05	FIELD
pH-LAB (SU)	6.43	EPA 150.1
POTASSIUM, TOTAL	7.7	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	39.2	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	935	FIELD
SPEC. COND., LAB (umhos/cm)	823	EPA 120.1
SULFATE	8	EPA 300.0
ALKALINITY	400	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	457	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	7.9	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	24.9	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 1/20/2017

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1.1	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	3.7	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised
02/09/2017

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FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP009W X Well ___ Spring ___ Stream ___ Other

 Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point Latitude: 39 ° 57 ' 10.82 " Longitude: 76 ° 26 ' 55.8 "

Depth to Water Level:	9.23	ft	Measured from:	Land Surface	X	TOC
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Casing Stickup: 2.70 ft Elevation of Water Level: 394.97 ft./MSL

Sampling Depth:	16 ft	Volume of Water Column:	6.83 gal
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Total Well Depth: 19.7 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: 5.0

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 1/20/2017 Sample Collection Time: 11:07

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): 2203360003 Final Lab Analysis CompletionDate: 1/26/2017

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

Comments:

I.D. No 100008

Monitoring Point No. CWMP009W

Sample Date 1/20/2017

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	30.1	EPA 350.3
BICARBONATE	544	SM18-2321
CALCIUM, TOTAL	155	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	99	EPA 410.4
CHLORIDE	565	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	36600	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	76.1	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	13400	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.2 ND	EPA 300.0
pH-FIELD (SU)	6.1	FIELD
pH-LAB (SU)	6.42	EPA 150.1
POTASSIUM, TOTAL	33.8	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	160	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	2851	FIELD
SPEC. COND., LAB (umhos/cm)	2580	EPA 120.1
SULFATE	5	EPA 300.0
ALKALINITY	544	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	1370	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	30	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	39.9	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 1/20/2017

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1.8	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	2.7	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised
02/09/2017

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FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP010W X Well ___ Spring ___ Stream ___ Other

 Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point Latitude: 39 ° 57 ' 2.38 " Longitude: 76 ° 26 ' 57.92 "

Depth to Water Level:	8.87	ft	Measured from:	Land Surface	X	TOC
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Casing Stickup: 2.10 ft Elevation of Water Level: 352.03 ft./MSL

Sampling Depth:	17 ft	Volume of Water Column:	7.00 gal
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Total Well Depth: 19.6 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: X Yes No Well Volumes Purged: 1.4

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 1/20/2017 Sample Collection Time: 11:28

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): 2203360004 Final Lab Analysis CompletionDate: 1/26/2017

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

Comments:

I.D. No 100008

Monitoring Point No. CWMP010W

Sample Date 1/20/2017

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	0.171	EPA 350.3
BICARBONATE	146	SM18-2321
CALCIUM, TOTAL	37.8	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	17	EPA 410.4
CHLORIDE	61.1	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	210	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	31.4	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	78	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	3.6	EPA 300.0
pH-FIELD (SU)	6.7	FIELD
pH-LAB (SU)	7.17	EPA 150.1
POTASSIUM, TOTAL	6.8	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	166	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	1502	FIELD
SPEC. COND., LAB (umhos/cm)	1290	EPA 120.1
SULFATE	30.1	EPA 300.0
ALKALINITY	146	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	637	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	5.2	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.89	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 1/20/2017

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

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

T Please indicate detection limit if analyte is not detected.



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

Date Prepared/Revised
02/09/2017

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Date Received

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

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Site Name: Creswell Landfill

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SECTION B. FACILITY INFORMATION

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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: 12.34 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 2.53 ft Elevation of Water Level: 299.63 ft./MSL

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

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

Well Purged: ☒ Yes ☐ No Well Volumes Purged: 2.4

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 1/20/2017 Sample Collection Time: 13:09

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): 2203360005 Final Lab Analysis Completion Date: 1/26/2017

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP016W

Sample Date 1/20/2017

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	0.188	EPA 350.3
BICARBONATE	9	SM18-2321
CALCIUM, TOTAL	5.2	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	2.7	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	630	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	1.2	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	5.7	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.6	EPA 300.0
pH-FIELD (SU)	5.05	FIELD
pH-LAB (SU)	6.45	EPA 150.1
POTASSIUM, TOTAL	0.56 ND	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	3.5	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	80	FIELD
SPEC. COND., LAB (umhos/cm)	54	EPA 120.1
SULFATE	10.4	EPA 300.0
ALKALINITY	9	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	35	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.83	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	6.41	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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

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I.D. No 100008

Monitoring Point No. CWMP016W

Sample Date 1/20/2017

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.

January 30, 2017

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

Certificate of Analysis

Project Name: 2017-CRESWELL	Workorder: 2202191
Purchase Order:	Workorder ID: QUARTERLY CWMP-FORM 19Q-RR

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Monday, January 16, 2017.

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.

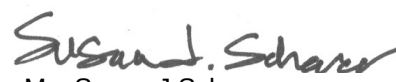
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications 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: 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

ALS Environmental Laboratory Locations Across North America

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SAMPLE SUMMARY

Workorder: 2202191 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2202191001	CWMP004W	Ground Water	1/16/2017 11:21	1/16/2017 15:59	Mr. Brian G Shade
2202191002	CWMP003W	Ground Water	1/16/2017 11:40	1/16/2017 15:59	Mr. Brian G Shade
2202191003	CWMP002W	Ground Water	1/16/2017 12:26	1/16/2017 15:59	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2202191 QUARTERLY CWMP-FORM 19Q-RR VOC

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: 2202191 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2202191001**
Sample ID: **CWMP004W**

Date Collected: 1/16/2017 11:21 Matrix: Ground Water
Date Received: 1/16/2017 15:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Bromoform	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Bromomethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Chloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Chloroform	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Chloromethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			1/18/17 16:36	TMP	E
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Styrene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Toluene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/18/17 16:36	TMP	E
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			1/18/17 16:36	TMP	E
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			1/18/17 16:36	TMP	E
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/18/17 16:36	TMP	E
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr

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ANALYTICAL RESULTS

Workorder: 2202191 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2202191001**
Sample ID: **CWMP004W**

Date Collected: 1/16/2017 11:21 Matrix: Ground Water
Date Received: 1/16/2017 15:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	87.4		%	62 - 133	SW846 8260B			1/18/17 16:36	TMP	E
4-Bromofluorobenzene (S)	99.1		%	79 - 114	SW846 8260B			1/18/17 16:36	TMP	E
Dibromofluoromethane (S)	94.4		%	78 - 116	SW846 8260B			1/18/17 16:36	TMP	E
Toluene-d8 (S)	95.7		%	76 - 127	SW846 8260B			1/18/17 16:36	TMP	E
WET CHEMISTRY										
Alkalinity, Bicarbonate	24		mg/L	5	S2320B-97			1/17/17 03:08	MSA	C
Alkalinity, Total	24	1	mg/L	5	S2320B-97			1/17/17 03:08	MSA	C
Ammonia-N	ND		mg/L	0.100	D6919-09			1/19/17 16:11	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			1/18/17 15:13	AK	A
Chloride	44.3		mg/L	2.0	EPA 300.0			1/17/17 08:37	MBW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			1/17/17 08:37	MBW	C
Nitrate-N	7.4		mg/L	0.20	EPA 300.0			1/17/17 08:37	MBW	C
pH	6.23	2	pH_Units		S4500HB-00			1/17/17 03:08	MSA	C
Phenolics	ND		mg/L	0.005	SW846 9066	1/19/17 00:00	JLG	1/23/17 11:33	JLG	I
Specific Conductance	243		umhos/cm	1	S2510B-97			1/17/17 03:08	MSA	C
Sulfate	6.1		mg/L	2.0	EPA 300.0			1/17/17 08:37	MBW	C
Total Dissolved Solids	161		mg/L	5	S2540C-11			1/23/17 02:39	KAM	C
Total Organic Carbon (TOC)	0.94		mg/L	0.50	S5310B-00			1/17/17 11:48	PAG	G
Turbidity	ND		NTU	0.10	S2130B-01			1/16/17 23:37	MSA	C
METALS										
Calcium, Total	21.1		mg/L	0.11	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:35	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:35	SRT	J1
Magnesium, Total	6.6		mg/L	0.11	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:35	SRT	J1
Manganese, Total	0.015		mg/L	0.0056	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:35	SRT	J1
Potassium, Total	1.4		mg/L	0.56	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:35	SRT	J1
Sodium, Total	15.0		mg/L	0.56	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:35	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	102.550		Feet		Field			1/16/17 11:21	BGS	B
Elev Top MW Casing above MSL	529.53		Feet		Field			1/16/17 11:21	BGS	B
Ground Water Elevation	426.980		ft/MSL		Field			1/16/17 11:21	BGS	B
pH, Field (SM4500B)	5.430		pH_Units		Field			1/16/17 11:21	BGS	B
Sample Depth	130.000		Feet		Field			1/16/17 11:21	BGS	B
Specific Conductance, Field	294		umhos/cm	1	Field			1/16/17 11:21	BGS	B
Temperature	12.37		Deg. C		Field			1/16/17 11:21	BGS	B
Total Well Depth	140.000		Feet		Field			1/16/17 11:21	BGS	B

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ANALYTICAL RESULTS

Workorder: 2202191 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2202191001**
Sample ID: **CWMP004W**

Date Collected: 1/16/2017 11:21 Matrix: Ground Water
Date Received: 1/16/2017 15:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
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Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2202191 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2202191002**
Sample ID: **CWMP003W**

Date Collected: 1/16/2017 11:40 Matrix: Ground Water
Date Received: 1/16/2017 15:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Bromoform	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Bromomethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Chloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Chloroform	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Chloromethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
1,1-Dichloroethane	2.8		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			1/18/17 16:53	TMP	E
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Styrene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Toluene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/18/17 16:53	TMP	E
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			1/18/17 16:53	TMP	E
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			1/18/17 16:53	TMP	E
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/18/17 16:53	TMP	E
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr

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ANALYTICAL RESULTS

Workorder: 2202191 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2202191002**
Sample ID: **CWMP003W**

Date Collected: 1/16/2017 11:40 Matrix: Ground Water
Date Received: 1/16/2017 15:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	89.9		%	62 - 133	SW846 8260B			1/18/17 16:53	TMP	E
4-Bromofluorobenzene (S)	99.5		%	79 - 114	SW846 8260B			1/18/17 16:53	TMP	E
Dibromofluoromethane (S)	96.4		%	78 - 116	SW846 8260B			1/18/17 16:53	TMP	E
Toluene-d8 (S)	98.7		%	76 - 127	SW846 8260B			1/18/17 16:53	TMP	E
WET CHEMISTRY										
Alkalinity, Bicarbonate	18		mg/L	5	S2320B-97			1/17/17 03:17	MSA	C
Alkalinity, Total	18	1	mg/L	5	S2320B-97			1/17/17 03:17	MSA	C
Ammonia-N	ND		mg/L	0.100	D6919-09			1/19/17 16:30	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			1/18/17 15:13	AK	A
Chloride	78.7		mg/L	2.0	EPA 300.0			1/17/17 08:50	MBW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			1/17/17 08:50	MBW	C
Nitrate-N	8.9		mg/L	0.20	EPA 300.0			1/17/17 08:50	MBW	C
pH	6.07	2	pH_Units		S4500HB-00			1/17/17 03:17	MSA	C
Phenolics	ND		mg/L	0.005	SW846 9066	1/19/17 00:00	JLG	1/23/17 11:33	JLG	I
Specific Conductance	297		umhos/cm	1	S2510B-97			1/17/17 03:17	MSA	C
Sulfate	5.7		mg/L	2.0	EPA 300.0			1/17/17 08:50	MBW	C
Total Dissolved Solids	236		mg/L	5	S2540C-11			1/23/17 02:39	KAM	C
Total Organic Carbon (TOC)	0.75		mg/L	0.50	S5310B-00			1/17/17 11:48	PAG	G
Turbidity	ND		NTU	0.10	S2130B-01			1/16/17 23:37	MSA	C
METALS										
Calcium, Total	29.5		mg/L	0.11	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:39	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:39	SRT	J1
Magnesium, Total	10.2		mg/L	0.11	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:39	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:39	SRT	J1
Potassium, Total	1.6		mg/L	0.56	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:39	SRT	J1
Sodium, Total	19.8		mg/L	0.56	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:39	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	93.920		Feet		Field			1/16/17 11:40	BGS	B
Elev Top MW Casing above MSL	524.21		Feet		Field			1/16/17 11:40	BGS	B
Ground Water Elevation	430.290		ft/MSL		Field			1/16/17 11:40	BGS	B
pH, Field (SM4500B)	5.460		pH_Units		Field			1/16/17 11:40	BGS	B
Sample Depth	100.000		Feet		Field			1/16/17 11:40	BGS	B
Specific Conductance, Field	425		umhos/cm	1	Field			1/16/17 11:40	BGS	B
Temperature	12.69		Deg. C		Field			1/16/17 11:40	BGS	B
Total Well Depth	140.000		Feet		Field			1/16/17 11:40	BGS	B

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ALS Environmental



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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2202191 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2202191002**
Sample ID: **CWMP003W**

Date Collected: 1/16/2017 11:40 Matrix: Ground Water
Date Received: 1/16/2017 15:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
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Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2202191 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2202191003**
Sample ID: **CWMP002W**

Date Collected: 1/16/2017 12:26 Matrix: Ground Water
Date Received: 1/16/2017 15:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Bromoform	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Bromomethane	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Chloroethane	4.3		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Chloroform	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Chloromethane	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
1,1-Dichloroethane	9.5		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			1/18/17 17:10	TMP	E
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Styrene	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Toluene	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/18/17 17:10	TMP	E
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			1/18/17 17:10	TMP	E
1,1,1-Trichloroethane	1.4		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			1/18/17 17:10	TMP	E
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/18/17 17:10	TMP	E
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr

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ANALYTICAL RESULTS

Workorder: 2202191 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2202191003**
Sample ID: **CWMP002W**

Date Collected: 1/16/2017 12:26 Matrix: Ground Water
Date Received: 1/16/2017 15:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	90.8		%	62 - 133	SW846 8260B			1/18/17 17:10	TMP	E
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			1/18/17 17:10	TMP	E
Dibromofluoromethane (S)	96.3		%	78 - 116	SW846 8260B			1/18/17 17:10	TMP	E
Toluene-d8 (S)	97.1		%	76 - 127	SW846 8260B			1/18/17 17:10	TMP	E
WET CHEMISTRY										
Alkalinity, Bicarbonate	62		mg/L	5	S2320B-97			1/17/17 04:15	MSA	C
Alkalinity, Total	62	1	mg/L	5	S2320B-97			1/17/17 04:15	MSA	C
Ammonia-N	ND		mg/L	0.100	D6919-09			1/19/17 16:49	AK	A
Chemical Oxygen Demand (COD)	13		mg/L	7	EPA 410.4			1/18/17 15:13	AK	A
Chloride	110		mg/L	2.0	EPA 300.0			1/17/17 09:03	MBW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			1/17/17 09:03	MBW	C
Nitrate-N	3.6		mg/L	0.20	EPA 300.0			1/17/17 09:03	MBW	C
pH	6.12	2	pH_Units		S4500HB-00			1/17/17 04:15	MSA	C
Phenolics	ND		mg/L	0.005	SW846 9066	1/19/17 00:00	JLG	1/23/17 11:33	JLG	I
Specific Conductance	545		umhos/cm	1	S2510B-97			1/17/17 04:15	MSA	C
Sulfate	25.8		mg/L	2.0	EPA 300.0			1/17/17 09:03	MBW	C
Total Dissolved Solids	281		mg/L	5	S2540C-11			1/23/17 02:39	KAM	C
Total Organic Carbon (TOC)	2.7		mg/L	0.50	S5310B-00			1/17/17 11:48	PAG	G
Turbidity	0.13		NTU	0.10	S2130B-01			1/16/17 23:37	MSA	C
METALS										
Calcium, Total	50.2		mg/L	0.11	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:43	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:43	SRT	J1
Magnesium, Total	15.3		mg/L	0.11	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:43	SRT	J1
Manganese, Total	1.0		mg/L	0.0056	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:43	SRT	J1
Potassium, Total	2.6		mg/L	0.56	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:43	SRT	J1
Sodium, Total	20.9		mg/L	0.56	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:43	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	79.590		Feet		Field			1/16/17 12:26	BGS	B
Elev Top MW Casing above MSL	525.81		Feet		Field			1/16/17 12:26	BGS	B
Ground Water Elevation	446.220		ft/MSL		Field			1/16/17 12:26	BGS	B
pH, Field (SM4500B)	5.520		pH_Units		Field			1/16/17 12:26	BGS	B
Sample Depth	85.000		Feet		Field			1/16/17 12:26	BGS	B
Specific Conductance, Field	595		umhos/cm	1	Field			1/16/17 12:26	BGS	B
Temperature	12.17		Deg. C		Field			1/16/17 12:26	BGS	B
Total Well Depth	100.000		Feet		Field			1/16/17 12:26	BGS	B

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2202191 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2202191003**
Sample ID: **CWMP002W**

Date Collected: 1/16/2017 12:26 Matrix: Ground Water
Date Received: 1/16/2017 15:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
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Ms. Susan J Scherer
Project Coordinator

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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2202191001	1	CWMP004W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2202191001	2	CWMP004W	S4500HB-00	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.				
2202191002	1	CWMP003W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2202191002	2	CWMP003W	S4500HB-00	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.				
2202191003	1	CWMP002W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2202191003	2	CWMP002W	S4500HB-00	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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January 30, 2017

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

Certificate of Analysis

Project Name: 2017-CRESWELL	Workorder: 2202133
Purchase Order:	Workorder ID: QUARTERLY CWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Monday, January 16, 2017.

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.

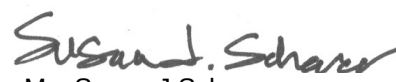
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

CC: 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: 2202133 QUARTERLY CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2202133001	CWMP007W	Ground Water	1/16/2017 10:12	1/16/2017 15:59	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2202133 QUARTERLY CWMP-FORM 19Q

Notes

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

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: 2202133 QUARTERLY CWMP-FORM 19Q

Lab ID: **2202133001**
Sample ID: **CWMP007W**

Date Collected: 1/16/2017 10:12 Matrix: Ground Water
Date Received: 1/16/2017 15:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:19	TMP	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:19	TMP	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:19	TMP	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:19	TMP	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:19	TMP	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:19	TMP	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:19	TMP	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:19	TMP	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/18/17 16:19	TMP	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:19	TMP	H
Toluene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:19	TMP	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/18/17 16:19	TMP	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/17 16:19	TMP	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/17 16:19	TMP	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/18/17 16:19	TMP	H
<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)	87.7		%	62 - 133	SW846 8260B			1/18/17 16:19	TMP	H
4-Bromofluorobenzene (S)	99.7		%	79 - 114	SW846 8260B			1/18/17 16:19	TMP	H
Dibromofluoromethane (S)	92.9		%	78 - 116	SW846 8260B			1/18/17 16:19	TMP	H
Toluene-d8 (S)	95.5		%	76 - 127	SW846 8260B			1/18/17 16:19	TMP	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	11		mg/L	5	S2320B-97			1/17/17 02:18	MSA	B
Alkalinity, Total	11	2	mg/L	5	S2320B-97			1/17/17 02:18	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			1/19/17 15:34	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			1/18/17 15:13	AK	A
Chloride	70.0		mg/L	2.0	EPA 300.0			1/18/17 00:53	MBW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/18/17 00:53	MBW	B
Nitrate-N	10.6		mg/L	0.20	EPA 300.0			1/18/17 00:53	MBW	B
pH	5.85	1	pH_Units		SM4500B			1/17/17 02:18	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/19/17 00:00	JLG	1/23/17 11:33	JLG	G
Specific Conductance	347		umhos/cm	1	SW846 9050A			1/17/17 02:18	MSA	B
Sulfate	15.4		mg/L	2.0	EPA 300.0			1/18/17 00:53	MBW	B
Total Dissolved Solids	246		mg/L	5	S2540C-11			1/23/17 02:39	KAM	J
Total Organic Carbon (TOC)	0.68		mg/L	0.50	SW846 9060A			1/17/17 11:48	PAG	E
Turbidity	ND		NTU	0.10	S2130B-01			1/16/17 23:37	MSA	B

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ANALYTICAL RESULTS

Workorder: 2202133 QUARTERLY CWMP-FORM 19Q

Lab ID: **2202133001**
Sample ID: **CWMP007W**

Date Collected: 1/16/2017 10:12 Matrix: Ground Water
Date Received: 1/16/2017 15:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	18.6		mg/L	0.11	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:28	SRT	C1
Iron, Total	ND		mg/L	0.067	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:28	SRT	C1
Magnesium, Total	9.4		mg/L	0.11	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:28	SRT	C1
Manganese, Total	0.0066		mg/L	0.0056	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:28	SRT	C1
Potassium, Total	2.2		mg/L	0.56	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:28	SRT	C1
Sodium, Total	32.8		mg/L	0.56	SW846 6010C	1/18/17 14:50	TRR	1/19/17 15:28	SRT	C1
FIELD PARAMETERS										
Depth to Water Level	7.190		Feet		Field			1/16/17 10:12	BGS	D
Elev Top MW Casing above MSL	453.40		Feet		Field			1/16/17 10:12	BGS	D
Flow Rate	1.79		gal/min		Field			1/16/17 10:12	BGS	D
Ground Water Elevation	446.210		ft/MSL		Field			1/16/17 10:12	BGS	D
pH, Field (SM4500B)	5.070		pH_Units		Field			1/16/17 10:12	BGS	D
Sample Depth	33.000		Feet		Field			1/16/17 10:12	BGS	D
Specific Conductance, Field	418		umhos/cm	1	Field			1/16/17 10:12	BGS	D
Temperature	11.67		Deg. C		Field			1/16/17 10:12	BGS	D
Total Well Depth	36.500		Feet		Field			1/16/17 10:12	BGS	D
Volume in Water Column	43.086		Gallons		Field			1/16/17 10:12	BGS	D
Water Level After Purge	7.960		Feet		Field			1/16/17 10:12	BGS	D
Well Volumes Purged	3.73		Vol		Field			1/16/17 10:12	BGS	D



Ms. Susan J Scherer
Project Coordinator

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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
--------	---	-----------	-------------------	---------

2202133001	1	CWMP007W	SM4500B	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.

2202133001	2	CWMP007W	S2320B-97	Alkalinity, Total
-------------------	---	----------	-----------	-------------------

The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO₃/L.

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January 30, 2017

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

Certificate of Analysis

Project Name: 2017-CRESWELL	Workorder: 2202706
Purchase Order:	Workorder ID: QUARTERLY CWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, January 18, 2017.

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.

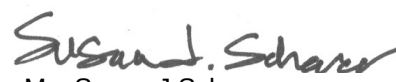
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

CC: 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: 2202706 QUARTERLY CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2202706001	CWMP012W	Ground Water	1/18/2017 12:43	1/18/2017 15:05	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2202706 QUARTERLY CWMP-FORM 19Q

Notes

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

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: 2202706 QUARTERLY CWMP-FORM 19Q

Lab ID: **2202706001**
Sample ID: **CWMP012W**

Date Collected: 1/18/2017 12:43 Matrix: Ground Water
Date Received: 1/18/2017 15:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/19/17 14:45	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/19/17 14:45	TMP	G
1,1-Dichloroethane	1.4		ug/L	1.0	SW846 8260B			1/19/17 14:45	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/19/17 14:45	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/19/17 14:45	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/19/17 14:45	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/19/17 14:45	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/19/17 14:45	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/19/17 14:45	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/19/17 14:45	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			1/19/17 14:45	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/19/17 14:45	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/19/17 14:45	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/19/17 14:45	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/19/17 14:45	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	90.1		%	62 - 133	SW846 8260B			1/19/17 14:45	TMP	G
4-Bromofluorobenzene (S)	98.4		%	79 - 114	SW846 8260B			1/19/17 14:45	TMP	G
Dibromofluoromethane (S)	96.6		%	78 - 116	SW846 8260B			1/19/17 14:45	TMP	G
Toluene-d8 (S)	97.2		%	76 - 127	SW846 8260B			1/19/17 14:45	TMP	G
METALS										
Calcium, Total	34.2		mg/L	0.11	SW846 6010C	1/20/17 14:30	TRR	1/23/17 15:27	SRT	J1
Iron, Total	96.9		mg/L	0.067	SW846 6010C	1/20/17 14:30	TRR	1/23/17 15:27	SRT	J1
Magnesium, Total	9.2		mg/L	0.11	SW846 6010C	1/20/17 14:30	TRR	1/23/17 15:27	SRT	J1
Manganese, Total	0.62		mg/L	0.0056	SW846 6010C	1/20/17 14:30	TRR	1/23/17 15:27	SRT	J1
Potassium, Total	1.4		mg/L	0.56	SW846 6010C	1/20/17 14:30	TRR	1/23/17 15:27	SRT	J1
Sodium, Total	12.7		mg/L	0.56	SW846 6010C	1/20/17 14:30	TRR	1/23/17 15:27	SRT	J1
WET CHEMISTRY										
Alkalinity, Bicarbonate	65		mg/L	5	S2320B-97			1/19/17 03:29	MSA	B
Alkalinity, Total	65	2	mg/L	5	S2320B-97			1/19/17 03:29	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			1/20/17 07:55	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			1/19/17 11:16	AK	A
Chloride	33.4		mg/L	2.0	EPA 300.0			1/19/17 11:26	MBW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/19/17 11:26	MBW	B
Nitrate-N	11.6		mg/L	0.20	EPA 300.0			1/19/17 11:26	MBW	B

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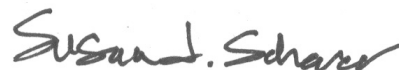
ANALYTICAL RESULTS

Workorder: 2202706 QUARTERLY CWMP-FORM 19Q

Lab ID: **2202706001**
Sample ID: **CWMP012W**

Date Collected: 1/18/2017 12:43 Matrix: Ground Water
Date Received: 1/18/2017 15:05

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
pH	6.43	1	pH_Units		SM4500B			1/19/17 03:29	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/19/17 00:00	JLG	1/22/17 11:44	JLG	F
Specific Conductance	304		umhos/cm	1	SW846 9050A			1/19/17 03:29	MSA	B
Sulfate	4.2		mg/L	2.0	EPA 300.0			1/19/17 11:26	MBW	B
Total Dissolved Solids	168		mg/L	5	S2540C-11			1/24/17 19:05	KAM	B
Total Organic Carbon (TOC)	2.9		mg/L	0.50	SW846 9060A			1/23/17 12:15	PAG	D
Turbidity	163		NTU	0.10	S2130B-01			1/18/17 23:36	MSA	B
FIELD PARAMETERS										
Depth to Water Level	59.650		Feet		Field			1/18/17 12:43	BGS	C
pH, Field (SM4500B)	6.690		pH_Units		Field			1/18/17 12:43	BGS	C
Specific Conductance, Field	372		umhos/cm	1	Field			1/18/17 12:43	BGS	C
Temperature	10.56		Deg. C		Field			1/18/17 12:43	BGS	C


Ms. Susan J Scherer
Project Coordinator

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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
--------	---	-----------	-------------------	---------

2202706001	1	CWMP012W	SM4500B	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.

2202706001	2	CWMP012W	S2320B-97	Alkalinity, Total
-------------------	---	----------	-----------	-------------------

The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO₃/L.

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 www.alsenv.com

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CHAIN OF CUSTODY/

REQUEST FOR ANALYSIS

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

Client Name: Lancaster County Solid Waste MA

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

Lancaster, PA 17604

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/ID: Creswell Form 19Q Wells

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

Email? ☒ -Y mreider@LCSWMA.com

Fax? ☒ -Y No.: (717) 397-9973

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

Sample Date Time

1. CWMF012W 1-18-17 12:43

2

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Project Comments:

LOGGED BY (signature): _____ DATE: 1-16-17 TIME: 1724

REVIEWED BY (signature): _____ DATE: _____ TIME: _____

Relinquished By / Company Name

Date Time

1-18-17 12:43

Received By / Company Name

Date Time

1-18-17 12:43

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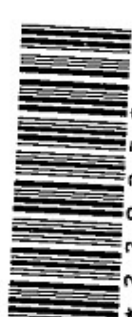
7

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* 2 2 0 2 7 0 6 *

Cooler Temp: _____ Thermistor: _____

No. of Coolers: _____ Y N Initial

Custody Seals Present? _____

(If present) Seals Intact? _____

Received on ice? _____

COCILabels Complete/Accurate? _____

Cont. in Good Cond.? _____

Correct Containers? _____

Correct Sample Volumes? _____

Correct Preservation? _____

Headspace/Volatiles? _____

Courier/Tracking #: _____

Sample/COC Comments

Enter Number of Containers Per Sample or Field Results Below.

PH, NO3, Cl, F, SPC, SO4, Turb.

TDS

Alkalinity, HCO3

Total Metals: Ca, Fe, Mn, Mg, K, Na

NH3-N, COD

Sample Depth for AUX Data

Field Measurements

8260 - Form 19Q

O-OH

TOC

**Matrix

G or C

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January 30, 2017

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

Certificate of Analysis

Project Name: 2017-CRESWELL	Workorder: 2203035
Purchase Order:	Workorder ID: QUARTERLY CWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, January 19, 2017.

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.

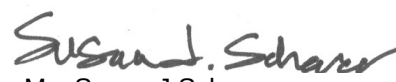
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

CC: Mr. Mark Reider , Mr. Jeff Musser

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Ms. Susan J Scherer
Project Coordinator

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**SAMPLE SUMMARY**

Workorder: 2203035 QUARTERLY CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2203035001	CWMP005W	Ground Water	1/19/2017 11:09	1/19/2017 15:39	Mr. Brian G Shade
2203035002	Field Blank	Water	1/19/2017 14:00	1/19/2017 15:39	Mr. Brian G Shade
2203035003	Trip Blank	Water	1/19/2017 15:39	1/19/2017 15:39	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2203035 QUARTERLY CWMP-FORM 19Q

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
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- 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: 2203035 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203035001**
Sample ID: **CWMP005W**

Date Collected: 1/19/2017 11:09 Matrix: Ground Water
Date Received: 1/19/2017 15:39

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/21/17 03:32	SYB	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/21/17 03:32	SYB	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/17 03:32	SYB	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/17 03:32	SYB	G
1,1-Dichloroethene	ND	2,3	ug/L	1.0	SW846 8260B			1/21/17 03:32	SYB	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 03:32	SYB	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 03:32	SYB	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/21/17 03:32	SYB	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/21/17 03:32	SYB	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 03:32	SYB	G
Toluene	ND		ug/L	1.0	SW846 8260B			1/21/17 03:32	SYB	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/21/17 03:32	SYB	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/17 03:32	SYB	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 03:32	SYB	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/21/17 03:32	SYB	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	86.6		%	62 - 133	SW846 8260B			1/21/17 03:32	SYB	G
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			1/21/17 03:32	SYB	G
Dibromofluoromethane (S)	95.7		%	78 - 116	SW846 8260B			1/21/17 03:32	SYB	G
Toluene-d8 (S)	99.7		%	76 - 127	SW846 8260B			1/21/17 03:32	SYB	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	17		mg/L	5	S2320B-97			1/19/17 23:31	MSA	B
Alkalinity, Total	17	4	mg/L	5	S2320B-97			1/19/17 23:31	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			1/20/17 14:31	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			1/20/17 12:13	AK	A
Chloride	65.0		mg/L	2.0	EPA 300.0			1/20/17 11:44	MBW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/20/17 11:44	MBW	B
Nitrate-N	10.5		mg/L	0.20	EPA 300.0			1/20/17 11:44	MBW	B
pH	5.68	1	pH_Units		SM4500B			1/19/17 23:31	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/22/17 00:00	JLG	1/22/17 11:44	JLG	F
Specific Conductance	300		umhos/cm	1	SW846 9050A			1/19/17 23:31	MSA	B
Sulfate	2.6		mg/L	2.0	EPA 300.0			1/20/17 11:44	MBW	B
Total Dissolved Solids	188		mg/L	5	S2540C-11			1/25/17 22:02	KAM	B
Total Organic Carbon (TOC)	0.55		mg/L	0.50	SW846 9060A			1/23/17 12:15	PAG	D
Turbidity	0.62		NTU	0.10	S2130B-01			1/19/17 23:06	MSA	B

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ANALYTICAL RESULTS

Workorder: 2203035 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203035001**
Sample ID: **CWMP005W**

Date Collected: 1/19/2017 11:09 Matrix: Ground Water
Date Received: 1/19/2017 15:39

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	16.1		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 15:50	TSS	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	1/23/17 12:33	TRR	1/25/17 15:50	TSS	J1
Magnesium, Total	8.7		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 15:50	TSS	J1
Manganese, Total	0.056		mg/L	0.0056	SW846 6010C	1/23/17 12:33	TRR	1/25/17 15:50	TSS	J1
Potassium, Total	2.2		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 15:50	TSS	J1
Sodium, Total	31.6		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 15:50	TSS	J1
FIELD PARAMETERS										
Depth to Water Level	45.900		Feet		Field			1/19/17 11:09	BGS	C
Elev Top MW Casing above MSL	513.43		Feet		Field			1/19/17 11:09	BGS	C
Flow Rate	4.00		gal/min		Field			1/19/17 11:09	BGS	C
Ground Water Elevation	467.530		ft/MSL		Field			1/19/17 11:09	BGS	C
pH, Field (SM4500B)	4.840		pH_Units		Field			1/19/17 11:09	BGS	C
Sample Depth	130.000		Feet		Field			1/19/17 11:09	BGS	C
Specific Conductance, Field	378		umhos/cm	1	Field			1/19/17 11:09	BGS	C
Temperature	11.16		Deg. C		Field			1/19/17 11:09	BGS	C
Total Well Depth	138.920		Feet		Field			1/19/17 11:09	BGS	C
Volume in Water Column	136.739		Gallons		Field			1/19/17 11:09	BGS	C
Water Level After Purge	50.520		Feet		Field			1/19/17 11:09	BGS	C
Well Volumes Purged	2.14		Vol		Field			1/19/17 11:09	BGS	C



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2203035 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203035002**

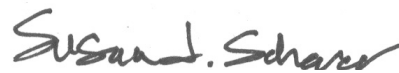
Date Collected: 1/19/2017 14:00

Matrix: Water

Sample ID: **Field Blank**

Date Received: 1/19/2017 15:39

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/21/17 01:39	SYB	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/21/17 01:39	SYB	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/17 01:39	SYB	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/17 01:39	SYB	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 01:39	SYB	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 01:39	SYB	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 01:39	SYB	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/21/17 01:39	SYB	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/21/17 01:39	SYB	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 01:39	SYB	A
Toluene	ND		ug/L	1.0	SW846 8260B			1/21/17 01:39	SYB	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/21/17 01:39	SYB	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/17 01:39	SYB	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 01:39	SYB	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/21/17 01:39	SYB	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)	87.2		%	62 - 133	SW846 8260B			1/21/17 01:39	SYB	A
4-Bromofluorobenzene (S)	97.4		%	79 - 114	SW846 8260B			1/21/17 01:39	SYB	A
Dibromofluoromethane (S)	95.1		%	78 - 116	SW846 8260B			1/21/17 01:39	SYB	A
Toluene-d8 (S)	95.3		%	76 - 127	SW846 8260B			1/21/17 01:39	SYB	A



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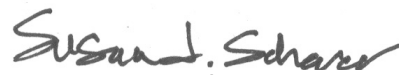
ANALYTICAL RESULTS

Workorder: 2203035 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203035003**
Sample ID: **Trip Blank**

Date Collected: 1/19/2017 15:39 Matrix: Water
Date Received: 1/19/2017 15:39

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/21/17 02:07	SYB	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/21/17 02:07	SYB	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/17 02:07	SYB	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/17 02:07	SYB	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 02:07	SYB	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 02:07	SYB	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 02:07	SYB	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/21/17 02:07	SYB	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/21/17 02:07	SYB	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 02:07	SYB	A
Toluene	ND		ug/L	1.0	SW846 8260B			1/21/17 02:07	SYB	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/21/17 02:07	SYB	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/17 02:07	SYB	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 02:07	SYB	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/21/17 02:07	SYB	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)	86.1		%	62 - 133	SW846 8260B			1/21/17 02:07	SYB	A
4-Bromofluorobenzene (S)	96.1		%	79 - 114	SW846 8260B			1/21/17 02:07	SYB	A
Dibromofluoromethane (S)	93.5		%	78 - 116	SW846 8260B			1/21/17 02:07	SYB	A
Toluene-d8 (S)	96.5		%	76 - 127	SW846 8260B			1/21/17 02:07	SYB	A



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Project Coordinator

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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2203035001	1	CWMP005W	SM4500B	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.				
2203035001	2	CWMP005W	SW846 8260B	1,1-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 129 and the control limits were 63 to 128.				
2203035001	3	CWMP005W	SW846 8260B	1,1-Dichloroethene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 132 and the control limits were 63 to 128.				
2203035001	4	CWMP005W	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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**CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS**

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

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 Form 190 Wells

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

E-mail? X-Y mreider@LCSWMA.com

Fax? ☐ X -Y No.: (717) 397-9973

Sample Description/Location (as it will appear on the lab report)
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Sample Description/Location (as it will appear on the lab report)	Sample Date	Time
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1-19-17 if 201	1-19-17 if 201
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[illegible]

Five to Four	1460
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Friday
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[illegible]

Project Comments:

REVIEWED

Date	Disinfectant By / Company Name
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1219.1

2.1 *James A. Smith*

[illegible][illegible]

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* G=Grab; C=Composite

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January 31, 2017

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

Certificate of Analysis

Project Name: 2017-CRESWELL	Workorder: 2203036
Purchase Order:	Workorder ID: QUARTERLY CWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, January 19, 2017.

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.

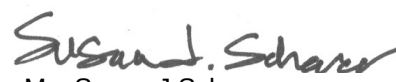
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications 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: 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: 2203036 QUARTERLY CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2203036001	CWMP017S	Ground Water	1/19/2017 12:00	1/19/2017 15:39	Mr. Brian G Shade
2203036002	CWMP018S	Ground Water	1/19/2017 12:21	1/19/2017 15:39	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2203036 QUARTERLY CWMP-FORM 19Q

Notes

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

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: 2203036 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203036001**
Sample ID: **CWMP017S**

Date Collected: 1/19/2017 12:00 Matrix: Ground Water
Date Received: 1/19/2017 15:39

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/21/17 03:49	SYB	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/21/17 03:49	SYB	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/17 03:49	SYB	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/17 03:49	SYB	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 03:49	SYB	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 03:49	SYB	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 03:49	SYB	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/21/17 03:49	SYB	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/21/17 03:49	SYB	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 03:49	SYB	G
Toluene	ND		ug/L	1.0	SW846 8260B			1/21/17 03:49	SYB	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/21/17 03:49	SYB	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/17 03:49	SYB	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 03:49	SYB	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/21/17 03:49	SYB	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	87.2		%	62 - 133	SW846 8260B			1/21/17 03:49	SYB	G
4-Bromofluorobenzene (S)	98.8		%	79 - 114	SW846 8260B			1/21/17 03:49	SYB	G
Dibromofluoromethane (S)	96.3		%	78 - 116	SW846 8260B			1/21/17 03:49	SYB	G
Toluene-d8 (S)	101		%	76 - 127	SW846 8260B			1/21/17 03:49	SYB	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	568		mg/L	5	S2320B-97			1/19/17 23:45	MSA	B
Alkalinity, Total	568	2	mg/L	5	S2320B-97			1/19/17 23:45	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			1/20/17 14:50	AK	A
Chemical Oxygen Demand (COD)	17		mg/L	7	EPA 410.4			1/20/17 12:13	AK	A
Chloride	791		mg/L	25.0	EPA 300.0			1/20/17 07:43	MBW	B
Fluoride	0.24		mg/L	0.20	EPA 300.0			1/20/17 07:28	MBW	B
Nitrate-N	26.8		mg/L	2.5	EPA 300.0			1/20/17 07:43	MBW	B
pH	7.81	1	pH_Units		SM4500B			1/19/17 23:45	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/22/17 00:00	JLG	1/22/17 11:44	JLG	F
Specific Conductance	3260		umhos/cm	1	SW846 9050A			1/19/17 23:45	MSA	B
Sulfate	39.4		mg/L	2.0	EPA 300.0			1/20/17 07:28	MBW	B
Total Dissolved Solids	1740		mg/L	5	S2540C-11			1/25/17 22:02	KAM	B
Total Organic Carbon (TOC)	5.8		mg/L	0.50	SW846 9060A			1/23/17 12:15	PAG	D
Turbidity	1.63		NTU	0.10	S2130B-01			1/19/17 23:06	MSA	B

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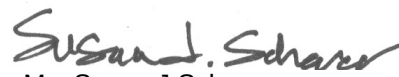
ANALYTICAL RESULTS

Workorder: 2203036 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203036001**
Sample ID: **CWMP017S**

Date Collected: 1/19/2017 12:00 Matrix: Ground Water
Date Received: 1/19/2017 15:39

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	73.1		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:01	TSS	J1
Iron, Total	0.25		mg/L	0.067	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:01	TSS	J1
Magnesium, Total	113		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:01	TSS	J1
Manganese, Total	0.081		mg/L	0.0056	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:01	TSS	J1
Potassium, Total	21.5		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:01	TSS	J1
Sodium, Total	422		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:01	TSS	J1
FIELD PARAMETERS										
Dissolved Oxygen	10.690		mg/L	0.010	Field			1/19/17 12:00	BGS	C
Flow Rate	266.30		gal/min		Field			1/19/17 12:00	BGS	C
pH, Field (SM4500B)	7.650		pH_Units		Field			1/19/17 12:00	BGS	C
Specific Conductance, Field	3681		umhos/cm	1	Field			1/19/17 12:00	BGS	C
Temperature	14.03		Deg. C		Field			1/19/17 12:00	BGS	C


Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2203036 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203036002**
Sample ID: **CWMP018S**

Date Collected: 1/19/2017 12:21 Matrix: Ground Water
Date Received: 1/19/2017 15:39

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/21/17 04:06	SYB	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/21/17 04:06	SYB	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/17 04:06	SYB	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/17 04:06	SYB	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 04:06	SYB	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 04:06	SYB	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 04:06	SYB	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/21/17 04:06	SYB	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/21/17 04:06	SYB	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 04:06	SYB	G
Toluene	ND		ug/L	1.0	SW846 8260B			1/21/17 04:06	SYB	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/21/17 04:06	SYB	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/17 04:06	SYB	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/17 04:06	SYB	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/21/17 04:06	SYB	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	87.4		%	62 - 133	SW846 8260B			1/21/17 04:06	SYB	G
4-Bromofluorobenzene (S)	100		%	79 - 114	SW846 8260B			1/21/17 04:06	SYB	G
Dibromofluoromethane (S)	98.4		%	78 - 116	SW846 8260B			1/21/17 04:06	SYB	G
Toluene-d8 (S)	98.4		%	76 - 127	SW846 8260B			1/21/17 04:06	SYB	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	278		mg/L	5	S2320B-97			1/19/17 23:58	MSA	B
Alkalinity, Total	297	3	mg/L	5	S2320B-97			1/19/17 23:58	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			1/20/17 15:09	AK	A
Chemical Oxygen Demand (COD)	19		mg/L	7	EPA 410.4			1/20/17 12:13	AK	A
Chloride	459		mg/L	25.0	EPA 300.0			1/20/17 08:12	MBW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/20/17 07:57	MBW	B
Nitrate-N	15.3		mg/L	0.20	EPA 300.0			1/20/17 07:57	MBW	B
pH	8.44	1	pH_Units		SM4500B			1/19/17 23:58	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/22/17 00:00	JLG	1/22/17 11:44	JLG	F
Specific Conductance	1990		umhos/cm	1	SW846 9050A			1/19/17 23:58	MSA	B
Sulfate	36.2		mg/L	2.0	EPA 300.0			1/20/17 07:57	MBW	B
Total Dissolved Solids	961		mg/L	5	S2540C-11			1/25/17 22:02	KAM	B
Total Organic Carbon (TOC)	8.1	2	mg/L	0.50	SW846 9060A			1/23/17 12:15	PAG	D
Turbidity	0.98		NTU	0.10	S2130B-01			1/19/17 23:06	MSA	B

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ANALYTICAL RESULTS

Workorder: 2203036 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203036002**
Sample ID: **CWMP018S**

Date Collected: 1/19/2017 12:21 Matrix: Ground Water
Date Received: 1/19/2017 15:39

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	64.4		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:06	TSS	J1
Iron, Total	0.12		mg/L	0.067	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:06	TSS	J1
Magnesium, Total	64.7		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:06	TSS	J1
Manganese, Total	0.10		mg/L	0.0056	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:06	TSS	J1
Potassium, Total	17.4		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:06	TSS	J1
Sodium, Total	234		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:06	TSS	J1
FIELD PARAMETERS										
Dissolved Oxygen	13.540		mg/L	0.010	Field			1/19/17 12:21	BGS	C
Flow Rate	397.10		gal/min		Field			1/19/17 12:21	BGS	C
pH, Field (SM4500B)	8.290		pH_Units		Field			1/19/17 12:21	BGS	C
Specific Conductance, Field	2236		umhos/cm	1	Field			1/19/17 12:21	BGS	C
Temperature	7.11		Deg. C		Field			1/19/17 12:21	BGS	C


Ms. Susan J Scherer
Project Coordinator

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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2203036001	1	CWMP017S	SM4500B	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.				
2203036001	2	CWMP017S	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2203036002	1	CWMP018S	SM4500B	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.				
2203036002	2	CWMP018S	SW846 9060A	Total Organic Carbon (TOC)
The recovery of the Matrix Spike (MS) associated to this analyte was outside of the control limits. The LCS was within established control limits. The failed recovery of the MS may be due to sample matrix interferences.				
2203036002	3	CWMP018S	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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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

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

Client Name: Lancaster County Solid Waste MA

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

Lancaster, PA 17604

Contact: Breake Morris Waste Transfer

Phone#: (717) 397-9968

Project Name#: Manns Run Quarterly (Streams)

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: 1/19/17 Approved By: [Signature]

Email: ☒ breake@lcswwma.com

Fax: ☒ (717) 397-9973

Sample Description/Location 1 CWMIP017S

Sample Date 1-19-17 Time 12:00

Sample Date 1-19-17 Time 12:21

Sample Date 1-19-17 Time 12:21

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January 31, 2017

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

Certificate of Analysis

Project Name: 2017-CRESWELL	Workorder: 2203360
Purchase Order:	Workorder ID: QUARTERLY CWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Friday, January 20, 2017.

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.

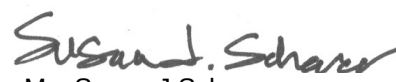
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications 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: 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: 2203360 QUARTERLY CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2203360001	CWMP001W	Ground Water	1/20/2017 09:03	1/20/2017 15:30	Mr. Brian G Shade
2203360002	CWMP008W	Ground Water	1/20/2017 10:34	1/20/2017 15:30	Mr. Brian G Shade
2203360003	CWMP009W	Ground Water	1/20/2017 11:07	1/20/2017 15:30	Mr. Brian G Shade
2203360004	CWMP010W	Ground Water	1/20/2017 11:28	1/20/2017 15:30	Mr. Brian G Shade
2203360005	CWMP016W	Ground Water	1/20/2017 13:09	1/20/2017 15:30	Mr. Brian G Shade
2203360006	Field Blank	Ground Water	1/20/2017 13:49	1/20/2017 15:30	Mr. Brian G Shade
2203360007	Trip Blank	Water	1/20/2017 15:30	1/20/2017 15:30	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2203360 QUARTERLY CWMP-FORM 19Q

Notes

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

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: 2203360 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203360001**
Sample ID: **CWMP001W**

Date Collected: 1/20/2017 09:03 Matrix: Ground Water
Date Received: 1/20/2017 15:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/23/17 23:40	CJG	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/23/17 23:40	CJG	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/23/17 23:40	CJG	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/23/17 23:40	CJG	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/23/17 23:40	CJG	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/23/17 23:40	CJG	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/23/17 23:40	CJG	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/23/17 23:40	CJG	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/23/17 23:40	CJG	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/23/17 23:40	CJG	H
Toluene	ND		ug/L	1.0	SW846 8260B			1/23/17 23:40	CJG	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/23/17 23:40	CJG	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/23/17 23:40	CJG	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/23/17 23:40	CJG	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/23/17 23:40	CJG	H
<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)	89.2		%	62 - 133	SW846 8260B			1/23/17 23:40	CJG	H
4-Bromofluorobenzene (S)	99.6		%	79 - 114	SW846 8260B			1/23/17 23:40	CJG	H
Dibromofluoromethane (S)	97.5		%	78 - 116	SW846 8260B			1/23/17 23:40	CJG	H
Toluene-d8 (S)	104		%	76 - 127	SW846 8260B			1/23/17 23:40	CJG	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	5		mg/L	5	S2320B-97			1/23/17 03:17	MSA	B
Alkalinity, Total	5	2	mg/L	5	S2320B-97			1/23/17 03:17	MSA	B
Ammonia-N	0.235		mg/L	0.100	D6919-09			1/25/17 18:10	CMM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			1/24/17 12:01	AK	A
Chloride	30.7		mg/L	2.0	EPA 300.0			1/21/17 08:38	MBW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/21/17 08:38	MBW	B
Nitrate-N	22.6		mg/L	1.0	EPA 300.0			1/21/17 08:52	MBW	B
pH	5.78	1	pH_Units		SM4500B			1/23/17 03:17	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/22/17 00:00	JLG	1/22/17 11:44	JLG	F
Specific Conductance	260		umhos/cm	1	SW846 9050A			1/23/17 03:17	MSA	B
Sulfate	2.1		mg/L	2.0	EPA 300.0			1/21/17 08:38	MBW	B
Total Dissolved Solids	162		mg/L	5	S2540C-11			1/26/17 19:51	KAM	B
Total Organic Carbon (TOC)	0.86		mg/L	0.50	SW846 9060A			1/24/17 11:20	PAG	D
Turbidity	18.3		NTU	0.10	S2130B-01			1/21/17 06:30	MBW	B

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ANALYTICAL RESULTS

Workorder: 2203360 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203360001**
Sample ID: **CWMP001W**

Date Collected: 1/20/2017 09:03 Matrix: Ground Water
Date Received: 1/20/2017 15:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	16.4		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:18	TSS	J
Iron, Total	0.32		mg/L	0.067	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:18	TSS	J
Magnesium, Total	11.1		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:18	TSS	J
Manganese, Total	0.052		mg/L	0.0056	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:18	TSS	J
Potassium, Total	2.2		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:18	TSS	J
Sodium, Total	14.7		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:18	TSS	J
FIELD PARAMETERS										
Depth to Water Level	30.680		Feet		Field			1/20/17 09:03	BGS	C
Elev Top MW Casing above MSL	515.13		Feet		Field			1/20/17 09:03	BGS	C
Flow Rate	1.92		gal/min		Field			1/20/17 09:03	BGS	C
Ground Water Elevation	484.450		ft/MSL		Field			1/20/17 09:03	BGS	C
pH, Field (SM4500B)	4.840		pH_Units		Field			1/20/17 09:03	BGS	C
Sample Depth	57.000		Feet		Field			1/20/17 09:03	BGS	C
Specific Conductance, Field	318		umhos/cm	1	Field			1/20/17 09:03	BGS	C
Temperature	11.57		Deg. C		Field			1/20/17 09:03	BGS	C
Total Well Depth	66.300		Feet		Field			1/20/17 09:03	BGS	C
Volume in Water Column	52.361		Gallons		Field			1/20/17 09:03	BGS	C
Water Level After Purge	52.450		Feet		Field			1/20/17 09:03	BGS	C
Well Volumes Purged	1.83		Vol		Field			1/20/17 09:03	BGS	C



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ANALYTICAL RESULTS

Workorder: 2203360 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203360002**
Sample ID: **CWMP008W**

Date Collected: 1/20/2017 10:34 Matrix: Ground Water
Date Received: 1/20/2017 15:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	1.1		ug/L	1.0	SW846 8260B			1/24/17 00:48	CJG	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/24/17 00:48	CJG	H
1,1-Dichloroethane	3.7		ug/L	1.0	SW846 8260B			1/24/17 00:48	CJG	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 00:48	CJG	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 00:48	CJG	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 00:48	CJG	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 00:48	CJG	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/24/17 00:48	CJG	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/24/17 00:48	CJG	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 00:48	CJG	H
Toluene	ND		ug/L	1.0	SW846 8260B			1/24/17 00:48	CJG	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/24/17 00:48	CJG	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 00:48	CJG	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 00:48	CJG	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/24/17 00:48	CJG	H
<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)	86.8		%	62 - 133	SW846 8260B			1/24/17 00:48	CJG	H
4-Bromofluorobenzene (S)	99.7		%	79 - 114	SW846 8260B			1/24/17 00:48	CJG	H
Dibromofluoromethane (S)	97.6		%	78 - 116	SW846 8260B			1/24/17 00:48	CJG	H
Toluene-d8 (S)	101		%	76 - 127	SW846 8260B			1/24/17 00:48	CJG	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	400		mg/L	5	S2320B-97			1/23/17 03:28	MSA	B
Alkalinity, Total	400	2	mg/L	5	S2320B-97			1/23/17 03:28	MSA	B
Ammonia-N	6.35		mg/L	0.100	D6919-09			1/25/17 18:29	CMM	A
Chemical Oxygen Demand (COD)	27		mg/L	7	EPA 410.4			1/24/17 12:01	AK	A
Chloride	42.1		mg/L	2.0	EPA 300.0			1/21/17 09:05	MBW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/21/17 09:05	MBW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			1/21/17 09:05	MBW	B
pH	6.43	1	pH_Units		SM4500B			1/23/17 03:28	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/22/17 00:00	JLG	1/22/17 11:44	JLG	F
Specific Conductance	823		umhos/cm	1	SW846 9050A			1/23/17 03:28	MSA	B
Sulfate	8.0		mg/L	2.0	EPA 300.0			1/21/17 09:05	MBW	B
Total Dissolved Solids	457		mg/L	5	S2540C-11			1/26/17 19:51	KAM	B
Total Organic Carbon (TOC)	7.9		mg/L	0.50	SW846 9060A			1/24/17 11:20	PAG	D
Turbidity	24.9		NTU	0.10	S2130B-01			1/21/17 06:30	MBW	B

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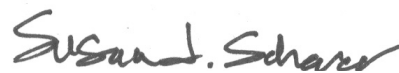
ANALYTICAL RESULTS

Workorder: 2203360 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203360002**
Sample ID: **CWMP008W**

Date Collected: 1/20/2017 10:34 Matrix: Ground Water
Date Received: 1/20/2017 15:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	63.8		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:30	TSS	J
Iron, Total	24.9		mg/L	0.067	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:30	TSS	J
Magnesium, Total	29.1		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:30	TSS	J
Manganese, Total	15.3		mg/L	0.0056	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:30	TSS	J
Potassium, Total	7.7		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:30	TSS	J
Sodium, Total	39.2		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:30	TSS	J
FIELD PARAMETERS										
Depth to Water Level	2.990		Feet		Field			1/20/17 10:34	BGS	C
Elev Top MW Casing above MSL	422.30		Feet		Field			1/20/17 10:34	BGS	C
Flow Rate	0.87		gal/min		Field			1/20/17 10:34	BGS	C
Ground Water Elevation	419.310		ft/MSL		Field			1/20/17 10:34	BGS	C
pH, Field (SM4500B)	6.050		pH_Units		Field			1/20/17 10:34	BGS	C
Sample Depth	19.000		Feet		Field			1/20/17 10:34	BGS	C
Specific Conductance, Field	935		umhos/cm	1	Field			1/20/17 10:34	BGS	C
Temperature	11.80		Deg. C		Field			1/20/17 10:34	BGS	C
Total Well Depth	22.800		Feet		Field			1/20/17 10:34	BGS	C
Volume in Water Column	3.170		Gallons		Field			1/20/17 10:34	BGS	C
Water Level After Purge	15.890		Feet		Field			1/20/17 10:34	BGS	C
Well Volumes Purged	5.50		Vol		Field			1/20/17 10:34	BGS	C



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ANALYTICAL RESULTS

Workorder: 2203360 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203360003**
Sample ID: **CWMP009W**

Date Collected: 1/20/2017 11:07 Matrix: Ground Water
Date Received: 1/20/2017 15:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	1.8		ug/L	1.0	SW846 8260B			1/24/17 01:05	CJG	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/24/17 01:05	CJG	H
1,1-Dichloroethane	2.7		ug/L	1.0	SW846 8260B			1/24/17 01:05	CJG	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 01:05	CJG	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:05	CJG	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:05	CJG	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:05	CJG	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:05	CJG	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/24/17 01:05	CJG	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:05	CJG	H
Toluene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:05	CJG	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/24/17 01:05	CJG	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 01:05	CJG	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:05	CJG	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/24/17 01:05	CJG	H
<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)	87.8		%	62 - 133	SW846 8260B			1/24/17 01:05	CJG	H
4-Bromofluorobenzene (S)	98.8		%	79 - 114	SW846 8260B			1/24/17 01:05	CJG	H
Dibromofluoromethane (S)	97.3		%	78 - 116	SW846 8260B			1/24/17 01:05	CJG	H
Toluene-d8 (S)	102		%	76 - 127	SW846 8260B			1/24/17 01:05	CJG	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	544		mg/L	5	S2320B-97			1/23/17 03:40	MSA	B
Alkalinity, Total	544	2	mg/L	5	S2320B-97			1/23/17 03:40	MSA	B
Ammonia-N	30.1		mg/L	0.100	D6919-09			1/25/17 18:48	CMM	A
Chemical Oxygen Demand (COD)	99		mg/L	7	EPA 410.4			1/24/17 12:01	AK	A
Chloride	565		mg/L	10.0	EPA 300.0			1/21/17 09:31	MBW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/21/17 09:18	MBW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			1/21/17 09:18	MBW	B
pH	6.42	1	pH_Units		SM4500B			1/23/17 03:40	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/22/17 00:00	JLG	1/22/17 11:44	JLG	F
Specific Conductance	2580		umhos/cm	1	SW846 9050A			1/23/17 03:40	MSA	B
Sulfate	5.0		mg/L	2.0	EPA 300.0			1/21/17 09:18	MBW	B
Total Dissolved Solids	1370		mg/L	5	S2540C-11			1/26/17 19:51	KAM	B
Total Organic Carbon (TOC)	30.0		mg/L	2.5	SW846 9060A			1/25/17 11:01	PAG	D
Turbidity	39.9		NTU	0.10	S2130B-01			1/21/17 06:30	MBW	B

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ANALYTICAL RESULTS

Workorder: 2203360 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203360003**
Sample ID: **CWMP009W**

Date Collected: 1/20/2017 11:07 Matrix: Ground Water
Date Received: 1/20/2017 15:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	155		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:34	TSS	J
Iron, Total	36.6		mg/L	0.067	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:34	TSS	J
Magnesium, Total	76.1		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:34	TSS	J
Manganese, Total	13.4		mg/L	0.0056	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:34	TSS	J
Potassium, Total	33.8		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:34	TSS	J
Sodium, Total	160		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:34	TSS	J
FIELD PARAMETERS										
Depth to Water Level	9.230		Feet		Field			1/20/17 11:07	BGS	C
Elev Top MW Casing above MSL	404.20		Feet		Field			1/20/17 11:07	BGS	C
Flow Rate	1.71		gal/min		Field			1/20/17 11:07	BGS	C
Ground Water Elevation	394.970		ft/MSL		Field			1/20/17 11:07	BGS	C
pH, Field (SM4500B)	6.100		pH_Units		Field			1/20/17 11:07	BGS	C
Sample Depth	16.000		Feet		Field			1/20/17 11:07	BGS	C
Specific Conductance, Field	2851		umhos/cm	1	Field			1/20/17 11:07	BGS	C
Temperature	9.75		Deg. C		Field			1/20/17 11:07	BGS	C
Total Well Depth	19.700		Feet		Field			1/20/17 11:07	BGS	C
Volume in Water Column	6.806		Gallons		Field			1/20/17 11:07	BGS	C
Water Level After Purge	11.550		Feet		Field			1/20/17 11:07	BGS	C
Well Volumes Purged	5.02		Vol		Field			1/20/17 11:07	BGS	C



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ANALYTICAL RESULTS

Workorder: 2203360 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203360004**
Sample ID: **CWMP010W**

Date Collected: 1/20/2017 11:28 Matrix: Ground Water
Date Received: 1/20/2017 15:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:22	CJG	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/24/17 01:22	CJG	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 01:22	CJG	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 01:22	CJG	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:22	CJG	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:22	CJG	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:22	CJG	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:22	CJG	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/24/17 01:22	CJG	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:22	CJG	H
Toluene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:22	CJG	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/24/17 01:22	CJG	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 01:22	CJG	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:22	CJG	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/24/17 01:22	CJG	H
<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)	86		%	62 - 133	SW846 8260B			1/24/17 01:22	CJG	H
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			1/24/17 01:22	CJG	H
Dibromofluoromethane (S)	95.1		%	78 - 116	SW846 8260B			1/24/17 01:22	CJG	H
Toluene-d8 (S)	104		%	76 - 127	SW846 8260B			1/24/17 01:22	CJG	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	146		mg/L	5	S2320B-97			1/23/17 03:50	MSA	B
Alkalinity, Total	146	2	mg/L	5	S2320B-97			1/23/17 03:50	MSA	B
Ammonia-N	0.171		mg/L	0.100	D6919-09			1/25/17 19:07	CMM	A
Chemical Oxygen Demand (COD)	17		mg/L	7	EPA 410.4			1/24/17 12:01	AK	A
Chloride	61.1		mg/L	2.0	EPA 300.0			1/21/17 09:58	MBW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/21/17 09:45	MBW	B
Nitrate-N	3.6		mg/L	0.20	EPA 300.0			1/21/17 09:45	MBW	B
pH	7.17	1	pH_Units		SM4500B			1/23/17 03:50	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/22/17 00:00	JLG	1/22/17 11:44	JLG	F
Specific Conductance	1290		umhos/cm	1	SW846 9050A			1/23/17 03:50	MSA	B
Sulfate	30.1		mg/L	2.0	EPA 300.0			1/21/17 09:45	MBW	B
Total Dissolved Solids	637		mg/L	5	S2540C-11			1/26/17 19:51	KAM	B
Total Organic Carbon (TOC)	5.2		mg/L	0.50	SW846 9060A			1/24/17 11:20	PAG	D
Turbidity	1.89		NTU	0.10	S2130B-01			1/21/17 06:30	MBW	B

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ANALYTICAL RESULTS

Workorder: 2203360 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203360004**
Sample ID: **CWMP010W**

Date Collected: 1/20/2017 11:28 Matrix: Ground Water
Date Received: 1/20/2017 15:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	37.8		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:37	TSS	J
Iron, Total	0.21		mg/L	0.067	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:37	TSS	J
Magnesium, Total	31.4		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:37	TSS	J
Manganese, Total	0.078		mg/L	0.0056	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:37	TSS	J
Potassium, Total	6.8		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:37	TSS	J
Sodium, Total	166		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:37	TSS	J
FIELD PARAMETERS										
Depth to Water Level	8.870		Feet		Field			1/20/17 11:28	BGS	C
Elev Top MW Casing above MSL	360.90		Feet		Field			1/20/17 11:28	BGS	C
Flow Rate	1.40		gal/min		Field			1/20/17 11:28	BGS	C
Ground Water Elevation	352.030		ft/MSL		Field			1/20/17 11:28	BGS	C
pH, Field (SM4500B)	6.700		pH_Units		Field			1/20/17 11:28	BGS	C
Sample Depth	17.000		Feet		Field			1/20/17 11:28	BGS	C
Specific Conductance, Field	1502		umhos/cm	1	Field			1/20/17 11:28	BGS	C
Temperature	8.76		Deg. C		Field			1/20/17 11:28	BGS	C
Total Well Depth	19.600		Feet		Field			1/20/17 11:28	BGS	C
Volume in Water Column	6.975		Gallons		Field			1/20/17 11:28	BGS	C
Water Level After Purge	16.660		Feet		Field			1/20/17 11:28	BGS	C
Well Volumes Purged	1.41		Vol		Field			1/20/17 11:28	BGS	C



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2203360 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203360005**
Sample ID: **CWMP016W**

Date Collected: 1/20/2017 13:09 Matrix: Ground Water
Date Received: 1/20/2017 15:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:39	CJG	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/24/17 01:39	CJG	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 01:39	CJG	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 01:39	CJG	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:39	CJG	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:39	CJG	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:39	CJG	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:39	CJG	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/24/17 01:39	CJG	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:39	CJG	H
Toluene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:39	CJG	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/24/17 01:39	CJG	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 01:39	CJG	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 01:39	CJG	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/24/17 01:39	CJG	H
<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)	86.3		%	62 - 133	SW846 8260B			1/24/17 01:39	CJG	H
4-Bromofluorobenzene (S)	96.8		%	79 - 114	SW846 8260B			1/24/17 01:39	CJG	H
Dibromofluoromethane (S)	95.6		%	78 - 116	SW846 8260B			1/24/17 01:39	CJG	H
Toluene-d8 (S)	101		%	76 - 127	SW846 8260B			1/24/17 01:39	CJG	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	9		mg/L	5	S2320B-97			1/23/17 03:59	MSA	I
Alkalinity, Total	9	2	mg/L	5	S2320B-97			1/23/17 03:59	MSA	I
Ammonia-N	0.188		mg/L	0.100	D6919-09			1/25/17 19:26	CMM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			1/24/17 12:01	AK	A
Chloride	2.7		mg/L	2.0	EPA 300.0			1/21/17 10:11	MBW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/21/17 10:11	MBW	B
Nitrate-N	0.60		mg/L	0.20	EPA 300.0			1/21/17 10:11	MBW	B
pH	6.45	1	pH_Units		SM4500B			1/23/17 03:59	MSA	I
Phenolics	ND		mg/L	0.005	SW846 9066	1/22/17 00:00	JLG	1/22/17 11:44	JLG	F
Specific Conductance	54		umhos/cm	1	SW846 9050A			1/23/17 03:59	MSA	I
Sulfate	10.4		mg/L	2.0	EPA 300.0			1/21/17 10:11	MBW	B
Total Dissolved Solids	35		mg/L	5	S2540C-11			1/26/17 19:51	KAM	B
Total Organic Carbon (TOC)	0.83		mg/L	0.50	SW846 9060A			1/24/17 11:20	PAG	D
Turbidity	6.41		NTU	0.10	S2130B-01			1/21/17 06:30	MBW	B

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ANALYTICAL RESULTS

Workorder: 2203360 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203360005**
Sample ID: **CWMP016W**

Date Collected: 1/20/2017 13:09 Matrix: Ground Water
Date Received: 1/20/2017 15:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	5.2		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:41	TSS	J
Iron, Total	0.63		mg/L	0.067	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:41	TSS	J
Magnesium, Total	1.2		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:41	TSS	J
Manganese, Total	0.0057		mg/L	0.0056	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:41	TSS	J
Potassium, Total	ND		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:41	TSS	J
Sodium, Total	3.5		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:41	TSS	J
FIELD PARAMETERS										
Depth to Water Level	12.340		Feet		Field			1/20/17 13:09	BGS	C
Elev Top MW Casing above MSL	311.97		Feet		Field			1/20/17 13:09	BGS	C
Flow Rate	2.42		gal/min		Field			1/20/17 13:09	BGS	C
Ground Water Elevation	299.630		ft/MSL		Field			1/20/17 13:09	BGS	C
pH, Field (SM4500B)	5.050		pH_Units		Field			1/20/17 13:09	BGS	C
Sample Depth	71.000		Feet		Field			1/20/17 13:09	BGS	C
Specific Conductance, Field	80		umhos/cm	1	Field			1/20/17 13:09	BGS	C
Temperature	10.68		Deg. C		Field			1/20/17 13:09	BGS	C
Total Well Depth	73.520		Feet		Field			1/20/17 13:09	BGS	C
Volume in Water Column	89.935		Gallons		Field			1/20/17 13:09	BGS	C
Water Level After Purge	22.540		Feet		Field			1/20/17 13:09	BGS	C
Well Volumes Purged	2.42		Vol		Field			1/20/17 13:09	BGS	C



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ANALYTICAL RESULTS

Workorder: 2203360 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203360006**

Date Collected: 1/20/2017 13:49

Matrix: Ground Water

Sample ID: **Field Blank**

Date Received: 1/20/2017 15:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:13	CJG	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/24/17 02:13	CJG	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 02:13	CJG	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 02:13	CJG	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:13	CJG	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:13	CJG	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:13	CJG	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:13	CJG	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/24/17 02:13	CJG	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:13	CJG	H
Toluene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:13	CJG	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/24/17 02:13	CJG	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 02:13	CJG	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:13	CJG	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/24/17 02:13	CJG	H
<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)	89.4		%	62 - 133	SW846 8260B			1/24/17 02:13	CJG	H
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			1/24/17 02:13	CJG	H
Dibromofluoromethane (S)	98.5		%	78 - 116	SW846 8260B			1/24/17 02:13	CJG	H
Toluene-d8 (S)	99.5		%	76 - 127	SW846 8260B			1/24/17 02:13	CJG	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	S2320B-97			1/23/17 04:07	MSA	B
Alkalinity, Total	ND	2	mg/L	5	S2320B-97			1/23/17 04:07	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			1/29/17 23:41	CMM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			1/24/17 12:01	AK	A
Chloride	ND		mg/L	1.0	EPA 300.0			1/21/17 11:45	MBW	B
Fluoride	ND		mg/L	0.10	EPA 300.0			1/21/17 11:45	MBW	B
Nitrate-N	ND		mg/L	0.10	EPA 300.0			1/21/17 11:45	MBW	B
pH	6.14	1	pH_Units		SM4500B			1/23/17 04:07	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/22/17 00:00	JLG	1/22/17 11:44	JLG	F
Specific Conductance	ND		umhos/cm	1	SW846 9050A			1/23/17 04:07	MSA	B
Sulfate	ND		mg/L	1.0	EPA 300.0			1/21/17 11:45	MBW	B
Total Dissolved Solids	13		mg/L	5	S2540C-11			1/26/17 19:51	KAM	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			1/24/17 11:20	PAG	D
Turbidity	ND		NTU	0.10	S2130B-01			1/21/17 06:30	MBW	B

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**ANALYTICAL RESULTS**

Workorder: 2203360 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203360006**
Sample ID: **Field Blank**Date Collected: 1/20/2017 13:49 Matrix: Ground Water
Date Received: 1/20/2017 15:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	0.15		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:45	TSS	J
Iron, Total	ND		mg/L	0.067	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:45	TSS	J
Magnesium, Total	ND		mg/L	0.11	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:45	TSS	J
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:45	TSS	J
Potassium, Total	ND		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:45	TSS	J
Sodium, Total	ND		mg/L	0.56	SW846 6010C	1/23/17 12:33	TRR	1/25/17 16:45	TSS	J

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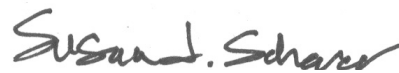
ANALYTICAL RESULTS

Workorder: 2203360 QUARTERLY CWMP-FORM 19Q

Lab ID: **2203360007**
Sample ID: **Trip Blank**

Date Collected: 1/20/2017 15:30 Matrix: Water
Date Received: 1/20/2017 15:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:30	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/24/17 02:30	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 02:30	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 02:30	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:30	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:30	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:30	CJG	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:30	CJG	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/24/17 02:30	CJG	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:30	CJG	A
Toluene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:30	CJG	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/24/17 02:30	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/24/17 02:30	CJG	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/24/17 02:30	CJG	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/24/17 02:30	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)	88.1		%	62 - 133	SW846 8260B			1/24/17 02:30	CJG	A
4-Bromofluorobenzene (S)	99.3		%	79 - 114	SW846 8260B			1/24/17 02:30	CJG	A
Dibromofluoromethane (S)	99.4		%	78 - 116	SW846 8260B			1/24/17 02:30	CJG	A
Toluene-d8 (S)	98.6		%	76 - 127	SW846 8260B			1/24/17 02:30	CJG	A



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Project Coordinator

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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2203360001	1	CWMP001W	SM4500B	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.				
2203360001	2	CWMP001W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2203360002	1	CWMP008W	SM4500B	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.				
2203360002	2	CWMP008W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2203360003	1	CWMP009W	SM4500B	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.				
2203360003	2	CWMP009W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2203360004	1	CWMP010W	SM4500B	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.				
2203360004	2	CWMP010W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2203360005	1	CWMP016W	SM4500B	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.				
2203360005	2	CWMP016W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2203360006	1	Field Blank	SM4500B	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.				
2203360006	2	Field Blank	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				

ALS Environmental Laboratory Locations Across North America

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

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

Client Name: Lancaster County Solid Waste MA

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

Lancaster, PA 17604

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name#: Creswell Farm 19Q Wells

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

Email? ☒ Y mreider@LCSWMA.com

Fax? ☒ Y No.: (717) 397-9973

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

Sample Date

Time

1. CWMPE001W 1-26-17 0903

2. CWMPE008W 1-26-17 1034

3. CWMPE009W 1-26-17 1107

4. CWMPE010W 1-26-17 1128

5. CWMPE016W 1-26-17 1304

6. Field Blank 1-26-17 1349

7. Trip Blank 1-26-17 1530

8. _____

9. _____

10. _____

Project Comments:

LOGGED BY (signature):

DATE: 1-26-17

TIME: 1439

REVIEWED BY (signature):

DATE: 1-26-17

TIME: 1439

Relinquished By / Company Name

Date

Time

Received By / Company Name

Date

Time

1. *Robert* 1-26-17 1435

3. _____

5. _____

7. _____

9. _____

State Samples Collected In

USACE ☐ Navy ☐ PA ☒ NC ☐

Special Processing

Standard ☐ CLP-like ☐ USACE ☐

Reportable to PADEP? Yes ☐ No ☒

Sample Disposal

Lab ☒ Special ☐

EDDS: Format Type

**Matrix: A=Air; DW=Drinking Water; GW=Groundwater; OL=Oil; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

* G=Grab; C=Composite

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

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Tuesday, January 31, 2017 7:27:55 PM

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