

November 15, 2016

www.lcswma.org

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; 4th Quarter 2016

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 Iron, and Manganese.
- Down gradient wells had similar results with wells 17 & 18 (surface Mann's Run) showing highest concentration of chlorides 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 attributable 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

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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. D. Reider'.

Mark D. Reider
Director of Environmental Compliance

Enclosures

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



Date Prepared/Revised
11/10/2016

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:	8.88	ft	Measured from:	Land Surface	X	TOC
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Casing Stickup: 1.50 ft Elevation of Water Level: 444.52 ft./MSL

Sampling Depth:	33 ft	Volume of Water Column:	40.56 gal
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Total Well Depth: 36.5 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: X Yes No Well Volumes Purged: 2.5

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/17/2016 Sample Collection Time: 10:16

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): 2182590001 Final Lab Analysis CompletionDate: 10/26/2016

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

Comments:

I.D. No 100008

Monitoring Point No. CWMP007W

Sample Date 10/17/2016

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	12	SM18-2321
CALCIUM, TOTAL	19.8	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	73.2	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	10.3	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	6.9	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	11.3	EPA 300.0
pH-FIELD (SU)	4.82	FIELD
pH-LAB (SU)	5.8	EPA 150.1
POTASSIUM, TOTAL	2.5	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	32.9	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	291	FIELD
SPEC. COND., LAB (umhos/cm)	337	EPA 120.1
SULFATE	15.2	EPA 300.0
ALKALINITY	12	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	187	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.66	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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

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

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP007W

Sample Date 10/17/2016

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
11/10/2016

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP001W

☒ Well ☐ Spring ☐ Stream ☐ Other

☒ Upgradient/Upstream ☐ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point Latitude: 39 ° 57 ' 27.43 "

Longitude: 76 ° 26 ' 14.4 "

Depth to Water Level: 29.68 ft

Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 1.23 ft

Elevation of Water Level: 485.45 ft./MSL

Sampling Depth: 57 ft

Volume of Water Column: 53.78 gal

Total Well Depth: 66.3 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 2.2

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

Spring Flow Rate: ☐ gpm

Sample Date (mm/dd/yy): 10/17/2016

Sample Collection Time: 11:42

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): 2182590002 Final Lab Analysis CompletionDate: 10/26/2016

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

Comments:

I.D. No 100008

Monitoring Point No. CWMP001W

Sample Date 10/17/2016

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	6	SM18-2321
CALCIUM, TOTAL	17.7	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	29.4	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	990	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	12	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	60	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	21.9	EPA 300.0
pH-FIELD (SU)	4.93	FIELD
pH-LAB (SU)	5.63	EPA 150.1
POTASSIUM, TOTAL	2.6	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	14.1	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	316	FIELD
SPEC. COND., LAB (umhos/cm)	252	EPA 120.1
SULFATE	2 ND	EPA 300.0
ALKALINITY	6	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	195	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	29.7	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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

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

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP001W

Sample Date 10/17/2016

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.



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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: CWMP005W

X	Well	Spring	Stream	Other
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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: 44.51 ft

Measured from: Land Surface X TOC

Casing Stickup: -0.37 ft

Elevation of Water Level: 468.92 ft./MSL

Sampling Depth: 130 ft

Volume of Water Column: 140.24 gal

Total Well Depth: 140 ft

Sampling Method: X Pumped Bailed Grab

Well Purged: X Yes No

Well Volumes Purged: 2.2

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/18/2016

Sample Collection Time: 9:23

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): 2182922001 Final Lab Analysis CompletionDate: 10/26/2016

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

Comments:

I.D. No 100008

Monitoring Point No. CWMP005W

Sample Date 10/18/2016

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	14	SM18-2321
CALCIUM, TOTAL	16.3	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	64.5	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)	59	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	12.3	EPA 300.0
pH-FIELD (SU)	4.9	FIELD
pH-LAB (SU)	6.26	EPA 150.1
POTASSIUM, TOTAL	2.7	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	29.9	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	370	FIELD
SPEC. COND., LAB (umhos/cm)	297	EPA 120.1
SULFATE	2.4	EPA 300.0
ALKALINITY	14	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	164	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.6	SM18-5310B
TOTAL PHENOLICS (ug/l)	8	SW846 9066
TURBIDITY (N.T.U.)	0.26	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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

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

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP005W

Sample Date 10/18/2016

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

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

T Please indicate detection limit if analyte is not detected.

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



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SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: 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: 14 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 2.53 ft Elevation of Water Level: 297.97 ft./MSL

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

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

Well Purged: ☒ Yes ☐ No Well Volumes Purged: 1.8

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/19/2016 Sample Collection Time: 12:45

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): 2183283001 Final Lab Analysis Completion Date: 10/27/2016

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP016W

Sample Date 10/19/2016

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	8	SM18-2321
CALCIUM, TOTAL	5.3	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	2.9	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	690	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	1.3	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	7	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.7	EPA 300.0
pH-FIELD (SU)	4.9	FIELD
pH-LAB (SU)	6.44	EPA 150.1
POTASSIUM, TOTAL	0.85	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	3.6	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	65	FIELD
SPEC. COND., LAB (umhos/cm)	53	EPA 120.1
SULFATE	11.5	EPA 300.0
ALKALINITY	8	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	47	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	6.51	SM 2130B

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I.D. No 100008

Monitoring Point No. CWMP016W

Sample Date 10/19/2016

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.



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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:	8.9	ft	Measured from:	Land Surface	X	TOC
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Casing Stickup: 2.10 ft Elevation of Water Level: 352 ft./MSL

Sampling Depth:	17 ft	Volume of Water Column:	6.98 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): 10/19/2016 Sample Collection Time: 13:31

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): 2183283002 Final Lab Analysis CompletionDate: 10/26/2016

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

Comments:

I.D. No 100008

Monitoring Point No. CWMP010W

Sample Date 10/19/2016

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	2.4	EPA 350.3
BICARBONATE	435	SM18-2321
CALCIUM, TOTAL	122	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	66	EPA 410.4
CHLORIDE	727	EPA 300.0
FLUORIDE	0.5 ND	EPA 300.0
IRON, TOTAL (ug/l)	340	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	77.4	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	4400	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	3.8	EPA 300.0
pH-FIELD (SU)	6.45	FIELD
pH-LAB (SU)	7.01	EPA 150.1
POTASSIUM, TOTAL	33	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	292	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	1332	FIELD
SPEC. COND., LAB (umhos/cm)	2810	EPA 120.1
SULFATE	29.6	EPA 300.0
ALKALINITY	435	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	1610	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	26.5	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.74	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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

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

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP010W

Sample Date 10/19/2016

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
11/10/2016

DEP USE ONLY

Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP009W 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:	9.52	ft	Measured from:	Land Surface	X	TOC
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Casing Stickup: 2.70 ft Elevation of Water Level: 394.68 ft./MSL

Sampling Depth:	16 ft	Volume of Water Column:	6.64 gal
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Total Well Depth: 19.7 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: 4.1

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/19/2016 Sample Collection Time: 13:58

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): 2183283003 Final Lab Analysis CompletionDate: 11/1/2016

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

Comments:

I.D. No 100008

Monitoring Point No. CWMP009W

Sample Date 10/19/2016

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	31.4	EPA 350.3
BICARBONATE	545	SM18-2321
CALCIUM, TOTAL	159	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	93	EPA 410.4
CHLORIDE	660	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	38400	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	75.2	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	12600	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.2 ND	EPA 300.0
pH-FIELD (SU)	6.07	FIELD
pH-LAB (SU)	6.53	EPA 150.1
POTASSIUM, TOTAL	37.9	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	150	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	2783	FIELD
SPEC. COND., LAB (umhos/cm)	2490	EPA 120.1
SULFATE	4.7	EPA 300.0
ALKALINITY	545	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	1340	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	32	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	50.2	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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

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

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP009W

Sample Date 10/19/2016

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	2.3	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	2.3	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised
11/10/2016

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: 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:	4.47	ft	Measured from:	Land Surface	X	TOC
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Casing Stickup: 2.80 ft Elevation of Water Level: 417.83 ft./MSL

Sampling Depth:	19 ft	Volume of Water Column:	2.99 gal
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Total Well Depth: 22.8 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: X Yes No Well Volumes Purged: 7.4

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/19/2016 Sample Collection Time: 14:46

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2183283004 Final Lab Analysis CompletionDate: 10/26/2016

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

Comments:

I.D. No 100008

Monitoring Point No. CWMP008W

Sample Date 10/19/2016

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	8.68	EPA 350.3
BICARBONATE	491	SM18-2321
CALCIUM, TOTAL	85.5	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	40	EPA 410.4
CHLORIDE	82.4	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	31700	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	40.7	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	16300	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.2 ND	EPA 300.0
pH-FIELD (SU)	6.09	FIELD
pH-LAB (SU)	6.47	EPA 150.1
POTASSIUM, TOTAL	11.3	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	65.8	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	1259	FIELD
SPEC. COND., LAB (umhos/cm)	1130	EPA 120.1
SULFATE	6	EPA 300.0
ALKALINITY	491	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	609	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	15.4	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	35.8	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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

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

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP008W

Sample Date 10/19/2016

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1.4	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	3.5	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 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
11/10/2016

DEP USE ONLY

Date Received

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

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP017S ☒ Well ☐ Spring ☐ Stream ☐ Other
☐ Upgradient/Upstream ☒ Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point Latitude: 39 ° 57 ' 20.41 " Longitude: 76 ° 26 ' 45.1 "

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

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

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

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

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

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/19/2016 Sample Collection Time: 10:17

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): 2183300001 Final Lab Analysis Completion Date: 10/31/2016

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP017S

Sample Date 10/19/2016

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	646	SM18-2321
CALCIUM, TOTAL	100	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	23	EPA 410.4
CHLORIDE	1220	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	100	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	134	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	16	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	33.3	EPA 300.0
pH-FIELD (SU)	7.89	FIELD
pH-LAB (SU)	8.18	EPA 150.1
POTASSIUM, TOTAL	29.8	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	461	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	5113	FIELD
SPEC. COND., LAB (umhos/cm)	4520	EPA 120.1
SULFATE	100	EPA 300.0
ALKALINITY	646	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	2460	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	5.4	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.51	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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

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

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP017S

Sample Date 10/19/2016

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
11/10/2016

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

Location (County): Lancaster County

Municipality: Manor

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

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

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

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

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

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

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/19/2016 Sample Collection Time: 9:40

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): 2183300002 Final Lab Analysis Completion Date: 10/28/2016

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP018S

Sample Date 10/19/2016

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	442	SM18-2321
CALCIUM, TOTAL	89.6	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	24	EPA 410.4
CHLORIDE	862	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	105	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	5.6 ND	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	24.1	EPA 300.0
pH-FIELD (SU)	8.08	FIELD
pH-LAB (SU)	8.51	EPA 150.1
POTASSIUM, TOTAL	24.4	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	359	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	3721	FIELD
SPEC. COND., LAB (umhos/cm)	3360	EPA 120.1
SULFATE	58.9	EPA 300.0
ALKALINITY	485	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	1920	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	8.5	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.34	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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

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

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP018S

Sample Date 10/19/2016

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
11/10/2016

DEP USE ONLY

Date Received

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

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

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

Location (County): Lancaster County

Municipality: Manor Township

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

Depth to Water Level: 82.89 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: -1.19 ft Elevation of Water Level: 442.92 ft./MSL

Sampling Depth: 85 ft Volume of Water Column: 25.13 gal

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

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

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/20/2016 Sample Collection Time: 12:18

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): 2183692001 Final Lab Analysis Completion Date: 10/31/2016

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP002W

Sample Date 10/20/2016

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	57	SM18-2321
CALCIUM, TOTAL	53.1	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	13	EPA 410.4
CHLORIDE	117	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	72	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	15.8	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	1100	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	3.6	EPA 300.0
pH-FIELD (SU)	5.64	FIELD
pH-LAB (SU)	6.26	EPA 150.1
POTASSIUM, TOTAL	2.8	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	21.7	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	520	FIELD
SPEC. COND., LAB (umhos/cm)	550	EPA 120.1
SULFATE	25.7	EPA 300.0
ALKALINITY	57	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	302	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	3.3	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. CWMP002W

Sample Date 10/20/2016

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	8.4	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	1.2	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
11/10/2016

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

Location (County): Lancaster County

Municipality: Manor Township

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

Depth to Water Level: 99.21 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: -1.29 ft Elevation of Water Level: 425.00 ft./MSL

Sampling Depth: 100 ft Volume of Water Column: -35.56 gal

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

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

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/20/2016 Sample Collection Time: 13:02

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2183692002 Final Lab Analysis Completion Date: 10/31/2016

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP003W

Sample Date 10/20/2016

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	16	SM18-2321
CALCIUM, TOTAL	29.8	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	89	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	10.3	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	5.6 ND	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	9.4	EPA 300.0
pH-FIELD (SU)	5.49	FIELD
pH-LAB (SU)	6.37	EPA 150.1
POTASSIUM, TOTAL	1.7	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	20.4	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	377	FIELD
SPEC. COND., LAB (umhos/cm)	400	EPA 120.1
SULFATE	6	EPA 300.0
ALKALINITY	16	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	235	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.87	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.93	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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

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

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP003W

Sample Date 10/20/2016

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	2.3	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

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

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



Date Prepared/Revised
11/10/2016

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: 119.48 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: -1.37 ft Elevation of Water Level: 410.05 ft./MSL

Sampling Depth: 130 ft Volume of Water Column: 30.14 gal

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

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

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/20/2016 Sample Collection Time: 13:14

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): 2183692003 Final Lab Analysis Completion Date: 10/31/2016

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP004W

Sample Date 10/20/2016

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	20.6	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	48	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	6.4	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	7.4	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	7.7	EPA 300.0
pH-FIELD (SU)	5.6	FIELD
pH-LAB (SU)	6.57	EPA 150.1
POTASSIUM, TOTAL	1.3	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	15	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	253	FIELD
SPEC. COND., LAB (umhos/cm)	243	EPA 120.1
SULFATE	6	EPA 300.0
ALKALINITY	24	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	152	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.78	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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

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

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP004W

Sample Date 10/20/2016

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
11/10/2016

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Date Received

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

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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: 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: 65.21 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 1.90 ft Elevation of Water Level: 317.49 ft./MSL

Sampling Depth: 65.21 ft Volume of Water Column: 53.88 gal

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

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

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 10/20/2016 Sample Collection Time: 9:31

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): 2183693001 Final Lab Analysis Completion Date: 10/31/2016

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP012W

Sample Date 10/20/2016

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	63	SM18-2321
CALCIUM, TOTAL	32.2	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	36.4	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	49700	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	9.2	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	250	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	12	EPA 300.0
pH-FIELD (SU)	5.54	FIELD
pH-LAB (SU)	6.61	EPA 150.1
POTASSIUM, TOTAL	1.4	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	12.9	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	304	FIELD
SPEC. COND., LAB (umhos/cm)	300	EPA 120.1
SULFATE	5.8	EPA 300.0
ALKALINITY	63	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	205	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	4.1	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1330	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

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

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

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP012W

Sample Date 10/20/2016

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	1.2	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.

October 28, 2016

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

Certificate of Analysis

Project Name: 2016-CRESWELL	Workorder: 2182590
Purchase Order:	Workorder ID: QUARTERLY CWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Monday, October 17, 2016.

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.

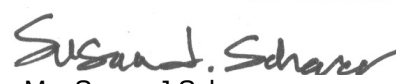
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

**SAMPLE SUMMARY**

Workorder: 2182590 QUARTERLY CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2182590001	CWMP007W	Ground Water	10/17/2016 10:16	10/17/2016 16:00	Mr. Brian G Shade
2182590002	CWMP001W	Ground Water	10/17/2016 11:42	10/17/2016 16:00	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2182590 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: 2182590 QUARTERLY CWMP-FORM 19Q

Lab ID: **2182590001**
Sample ID: **CWMP007W**

Date Collected: 10/17/2016 10:16 Matrix: Ground Water
Date Received: 10/17/2016 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:13	SYB	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/25/16 03:13	SYB	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/25/16 03:13	SYB	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/25/16 03:13	SYB	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:13	SYB	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:13	SYB	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:13	SYB	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:13	SYB	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/25/16 03:13	SYB	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:13	SYB	H
Toluene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:13	SYB	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/25/16 03:13	SYB	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/25/16 03:13	SYB	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:13	SYB	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/25/16 03:13	SYB	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)	92.4		%	62 - 133	SW846 8260B			10/25/16 03:13	SYB	H
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			10/25/16 03:13	SYB	H
Dibromofluoromethane (S)	86.5		%	78 - 116	SW846 8260B			10/25/16 03:13	SYB	H
Toluene-d8 (S)	99.9		%	76 - 127	SW846 8260B			10/25/16 03:13	SYB	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	12		mg/L	5	S2320B-97			10/18/16 07:07	MSA	B
Alkalinity, Total	12	2	mg/L	5	S2320B-97			10/18/16 07:07	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			10/20/16 11:04	CMM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			10/26/16 12:43	AK	A
Chloride	73.2		mg/L	2.0	EPA 300.0			10/18/16 10:59	BSL	B
Fluoride	ND		mg/L	0.20	EPA 300.0			10/18/16 10:59	BSL	B
Nitrate-N	11.3		mg/L	0.20	EPA 300.0			10/18/16 10:59	BSL	B
pH	5.80	1	pH_Units		SM4500B			10/18/16 07:07	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	10/19/16 00:00	JLG	10/19/16 10:00	JLG	G
Specific Conductance	337		umhos/cm	1	SW846 9050A			10/21/16 10:25	MSA	B
Sulfate	15.2		mg/L	2.0	EPA 300.0			10/18/16 10:59	BSL	B
Total Dissolved Solids	187		mg/L	5	S2540C-11			10/20/16 11:25	ML	B
Total Organic Carbon (TOC)	0.66		mg/L	0.50	SW846 9060A			10/19/16 13:02	PAG	E
Turbidity	ND		NTU	0.10	S2130B-01			10/18/16 02:15	MSA	B

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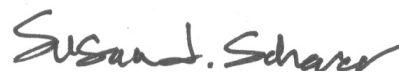
ANALYTICAL RESULTS

Workorder: 2182590 QUARTERLY CWMP-FORM 19Q

Lab ID: **2182590001**
Sample ID: **CWMP007W**

Date Collected: 10/17/2016 10:16 Matrix: Ground Water
Date Received: 10/17/2016 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	19.8		mg/L	0.11	SW846 6010C	10/20/16 14:30	TRR	10/26/16 13:03	TSS	C1
Iron, Total	ND		mg/L	0.067	SW846 6010C	10/20/16 14:30	TRR	10/26/16 13:03	TSS	C1
Magnesium, Total	10.3		mg/L	0.11	SW846 6010C	10/20/16 14:30	TRR	10/26/16 13:03	TSS	C1
Manganese, Total	0.0069		mg/L	0.0056	SW846 6010C	10/20/16 14:30	TRR	10/26/16 13:03	TSS	C1
Potassium, Total	2.5		mg/L	0.56	SW846 6010C	10/20/16 14:30	TRR	10/26/16 13:03	TSS	C1
Sodium, Total	32.9		mg/L	0.56	SW846 6010C	10/20/16 14:30	TRR	10/26/16 13:03	TSS	C1
FIELD PARAMETERS										
Depth to Water Level	8.880		Feet		Field			10/17/16 10:16	BGS	D
Elev Top MW Casing above MSL	453.40		Feet		Field			10/17/16 10:16	BGS	D
Flow Rate	1.70		gal/min		Field			10/17/16 10:16	BGS	D
Ground Water Elevation	444.520		ft/MSL		Field			10/17/16 10:16	BGS	D
pH, Field (SM4500B)	4.820		pH_Units		Field			10/17/16 10:16	BGS	D
Sample Depth	33.000		Feet		Field			10/17/16 10:16	BGS	D
Specific Conductance, Field	291		umhos/cm	1	Field			10/17/16 10:16	BGS	D
Temperature	11.96		Deg. C		Field			10/17/16 10:16	BGS	D
Total Well Depth	36.500		Feet		Field			10/17/16 10:16	BGS	D
Volume in Water Column	40.601		Gallons		Field			10/17/16 10:16	BGS	D
Water Level After Purge	9.650		Feet		Field			10/17/16 10:16	BGS	D
Well Volumes Purged	2.51		Vol		Field			10/17/16 10:16	BGS	D



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2182590 QUARTERLY CWMP-FORM 19Q

Lab ID: **2182590002**
Sample ID: **CWMP001W**

Date Collected: 10/17/2016 11:42 Matrix: Ground Water
Date Received: 10/17/2016 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:30	SYB	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/25/16 03:30	SYB	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/25/16 03:30	SYB	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/25/16 03:30	SYB	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:30	SYB	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:30	SYB	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:30	SYB	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:30	SYB	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/25/16 03:30	SYB	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:30	SYB	H
Toluene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:30	SYB	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/25/16 03:30	SYB	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/25/16 03:30	SYB	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/25/16 03:30	SYB	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/25/16 03:30	SYB	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)	93.5		%	62 - 133	SW846 8260B			10/25/16 03:30	SYB	H
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			10/25/16 03:30	SYB	H
Dibromofluoromethane (S)	88		%	78 - 116	SW846 8260B			10/25/16 03:30	SYB	H
Toluene-d8 (S)	102		%	76 - 127	SW846 8260B			10/25/16 03:30	SYB	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	6		mg/L	5	S2320B-97			10/18/16 07:15	MSA	B
Alkalinity, Total	6	2	mg/L	5	S2320B-97			10/18/16 07:15	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			10/20/16 12:01	CMM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			10/26/16 12:43	AK	A
Chloride	29.4		mg/L	2.0	EPA 300.0			10/18/16 12:44	BSL	B
Fluoride	ND		mg/L	0.20	EPA 300.0			10/18/16 12:44	BSL	B
Nitrate-N	21.9		mg/L	1.0	EPA 300.0			10/18/16 12:59	BSL	B
pH	5.63	1	pH_Units		SM4500B			10/18/16 07:15	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	10/19/16 00:00	JLG	10/19/16 10:00	JLG	G
Specific Conductance	252		umhos/cm	1	SW846 9050A			10/21/16 10:27	MSA	B
Sulfate	ND		mg/L	2.0	EPA 300.0			10/18/16 12:44	BSL	B
Total Dissolved Solids	195		mg/L	5	S2540C-11			10/20/16 11:25	ML	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			10/19/16 13:02	PAG	E
Turbidity	29.7		NTU	0.10	S2130B-01			10/18/16 02:15	MSA	B

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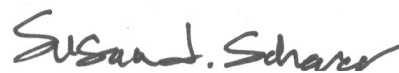
ANALYTICAL RESULTS

Workorder: 2182590 QUARTERLY CWMP-FORM 19Q

Lab ID: **2182590002**
Sample ID: **CWMP001W**

Date Collected: 10/17/2016 11:42 Matrix: Ground Water
Date Received: 10/17/2016 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	17.7		mg/L	0.11	SW846 6010C	10/20/16 14:30	TRR	10/26/16 13:07	TSS	C1
Iron, Total	0.99		mg/L	0.067	SW846 6010C	10/20/16 14:30	TRR	10/26/16 13:07	TSS	C1
Magnesium, Total	12.0		mg/L	0.11	SW846 6010C	10/20/16 14:30	TRR	10/26/16 13:07	TSS	C1
Manganese, Total	0.060		mg/L	0.0056	SW846 6010C	10/20/16 14:30	TRR	10/26/16 13:07	TSS	C1
Potassium, Total	2.6		mg/L	0.56	SW846 6010C	10/20/16 14:30	TRR	10/26/16 13:07	TSS	C1
Sodium, Total	14.1		mg/L	0.56	SW846 6010C	10/20/16 14:30	TRR	10/26/16 13:07	TSS	C1
FIELD PARAMETERS										
Depth to Water Level	29.680		Feet		Field			10/17/16 11:42	BGS	D
Elev Top MW Casing above MSL	515.13		Feet		Field			10/17/16 11:42	BGS	D
Flow Rate	2.00		gal/min		Field			10/17/16 11:42	BGS	D
Ground Water Elevation	485.450		ft/MSL		Field			10/17/16 11:42	BGS	D
pH, Field (SM4500B)	4.930		pH_Units		Field			10/17/16 11:42	BGS	D
Sample Depth	57.000		Feet		Field			10/17/16 11:42	BGS	D
Specific Conductance, Field	316		umhos/cm	1	Field			10/17/16 11:42	BGS	D
Temperature	11.94		Deg. C		Field			10/17/16 11:42	BGS	D
Total Well Depth	66.300		Feet		Field			10/17/16 11:42	BGS	D
Volume in Water Column	53.831		Gallons		Field			10/17/16 11:42	BGS	D
Water Level After Purge	52.520		Feet		Field			10/17/16 11:42	BGS	D
Well Volumes Purged	2.23		Vol		Field			10/17/16 11:42	BGS	D



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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2182590001	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.				
2182590001	2	CWMP007W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2182590002	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.				
2182590002	2	CWMP001W	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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34 Dogwood Lane • Middletown, PA 17057 • Phone: 717-944-5541 • Fax: 717-944-1430

Generated by ALS

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 Quarterly Wells
Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

Email? ☒ Y ☐ N mreider@LCSWMA.com

Fax? ☒ Y ☐ N No: (717) 397-9973

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

Sample Date Time

1. CWNMP007W 10-17-16 1016

2. CWNMP001W 10-17-16 1142

3

4

5

6

7

8

9

10

Project Comments:

LOGGED BY (signature): _____

REVIEWED BY (signature): _____

Date Time Received By / Company Name

10-17-16 1600 2 CWNMP007W

3

4

5

6

7

8

9

10

Relinquished By / Company Name

10-17-16 1600 2 CWNMP007W

3

4

5

6

7

8

9

10

Reportable to PADEP?

Yes ☐ No ☒

PWSID #

EDDS: Format Type

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

* G=Grab; C=Composite

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

Rev 8/04

1 of 1



* 2 1 8 2 5 9 0 *

d by Receiving Lab)

Cooler Temp: 35.2

No. of Coolers: Y N Initial

Custody Seals Present?

(if present) Seals Intact?

Received on Ice?

COC Labels Complete/Accurate?

Cont. in Good Cond.?

Correct Containers?

Correct Sample Volumes?

Correct Preservation?

Headspace/Volatiles?

Courier Tracking #:

Sample/COC Comments

ALS Field Services: ☐ Pickup ☐ Labor

☐ Composite Sampling ☐ Rental Equipment

☐ Other:

State Samples Collected In

USACE ☐ Navy ☐ PA ☒ NC ☐

Sample Disposal

Lab ☒ Special ☐

Standard ☐ CLP-like ☐ USACE ☐

Deliverables

Reportable to PADEP?

Yes ☐ No ☒

PWSID #

EDDS: Format Type

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

* G=Grab; C=Composite

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

Rev 8/04

October 28, 2016

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

Certificate of Analysis

Project Name: 2016-CRESWELL	Workorder: 2182922
Purchase Order:	Workorder ID: QUARTERLY CWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, October 18, 2016.

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.

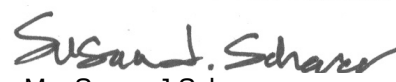
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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Ms. Susan J Scherer
Project Coordinator

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**SAMPLE SUMMARY**

Workorder: 2182922 QUARTERLY CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2182922001	CWMP005W	Ground Water	10/18/2016 09:23	10/18/2016 16:09	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2182922 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: 2182922 QUARTERLY CWMP-FORM 19Q

Lab ID: **2182922001**
Sample ID: **CWMP005W**

Date Collected: 10/18/2016 09:23 Matrix: Ground Water
Date Received: 10/18/2016 16:09

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			10/25/16 17:50	TMP	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/25/16 17:50	TMP	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/25/16 17:50	TMP	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/25/16 17:50	TMP	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/25/16 17:50	TMP	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/25/16 17:50	TMP	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/25/16 17:50	TMP	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/25/16 17:50	TMP	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/25/16 17:50	TMP	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/25/16 17:50	TMP	H
Toluene	ND		ug/L	1.0	SW846 8260B			10/25/16 17:50	TMP	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/25/16 17:50	TMP	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/25/16 17:50	TMP	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/25/16 17:50	TMP	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/25/16 17:50	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)	90.4		%	62 - 133	SW846 8260B			10/25/16 17:50	TMP	H
4-Bromofluorobenzene (S)	96.6		%	79 - 114	SW846 8260B			10/25/16 17:50	TMP	H
Dibromofluoromethane (S)	85.1		%	78 - 116	SW846 8260B			10/25/16 17:50	TMP	H
Toluene-d8 (S)	96.9		%	76 - 127	SW846 8260B			10/25/16 17:50	TMP	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	14		mg/L	5	S2320B-97			10/19/16 02:18	MSA	B
Alkalinity, Total	14	3	mg/L	5	S2320B-97			10/19/16 02:18	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			10/20/16 22:43	CMM	A
Chemical Oxygen Demand (COD)	ND	1	mg/L	7	EPA 410.4			10/26/16 12:43	AK	A
Chloride	64.5		mg/L	2.0	EPA 300.0			10/19/16 05:17	MBW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			10/19/16 05:17	MBW	B
Nitrate-N	12.3		mg/L	0.20	EPA 300.0			10/19/16 05:17	MBW	B
pH	6.26	2	pH_Units		SM4500B			10/19/16 02:18	MSA	B
Phenolics	0.008		mg/L	0.005	SW846 9066	10/20/16 00:00	JLG	10/20/16 10:00	JLG	G
Specific Conductance	297		umhos/cm	1	SW846 9050A			10/21/16 11:39	MSA	B
Sulfate	2.4		mg/L	2.0	EPA 300.0			10/19/16 05:17	MBW	B
Total Dissolved Solids	164		mg/L	5	S2540C-11			10/23/16 15:08	ML	B
Total Organic Carbon (TOC)	0.60		mg/L	0.50	SW846 9060A			10/19/16 13:02	PAG	E
Turbidity	0.26		NTU	0.10	S2130B-01			10/19/16 00:49	MSA	B

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ANALYTICAL RESULTS

Workorder: 2182922 QUARTERLY CWMP-FORM 19Q

Lab ID: **2182922001**
Sample ID: **CWMP005W**

Date Collected: 10/18/2016 09:23 Matrix: Ground Water
Date Received: 10/18/2016 16:09

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	16.3		mg/L	0.11	SW846 6010C	10/21/16 13:06	TRR	10/26/16 12:52	TSS	C1
Iron, Total	ND		mg/L	0.067	SW846 6010C	10/21/16 13:06	TRR	10/26/16 12:52	TSS	C1
Magnesium, Total	9.4		mg/L	0.11	SW846 6010C	10/21/16 13:06	TRR	10/26/16 12:52	TSS	C1
Manganese, Total	0.059		mg/L	0.0056	SW846 6010C	10/21/16 13:06	TRR	10/26/16 12:52	TSS	C1
Potassium, Total	2.7		mg/L	0.56	SW846 6010C	10/21/16 13:06	TRR	10/26/16 12:52	TSS	C1
Sodium, Total	29.9		mg/L	0.56	SW846 6010C	10/21/16 13:06	TRR	10/26/16 12:52	TSS	C1
FIELD PARAMETERS										
Depth to Water Level	44.510		Feet		Field			10/18/16 09:23	BGS	D
Elev Top MW Casing above MSL	513.43		Feet		Field			10/18/16 09:23	BGS	D
Flow Rate	4.42		gal/min		Field			10/18/16 09:23	BGS	D
Ground Water Elevation	468.920		ft/MSL		Field			10/18/16 09:23	BGS	D
pH, Field (SM4500B)	4.900		pH_Units		Field			10/18/16 09:23	BGS	D
Sample Depth	130.000		Feet		Field			10/18/16 09:23	BGS	D
Specific Conductance, Field	370		umhos/cm	1	Field			10/18/16 09:23	BGS	D
Temperature	11.27		Deg. C		Field			10/18/16 09:23	BGS	D
Total Well Depth	138.920		Feet		Field			10/18/16 09:23	BGS	D
Volume in Water Column	138.783		Gallons		Field			10/18/16 09:23	BGS	D
Water Level After Purge	47.310		Feet		Field			10/18/16 09:23	BGS	D
Well Volumes Purged	2.23		Vol		Field			10/18/16 09:23	BGS	D



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Project Coordinator

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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2182922001	1	CWMP005W	EPA 410.4	Chemical Oxygen Demand (COD)
The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits.				
2182922001	2	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.				
2182922001	3	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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November 2, 2016

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

Certificate of Analysis

Project Name: 2016-CRESWELL	Workorder: 2183283
Purchase Order:	Workorder ID: QUARTERLY CWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, October 19, 2016.

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.

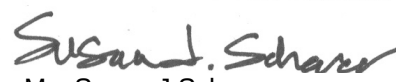
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

Workorder: 2183283 QUARTERLY CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2183283001	CWMP016W	Ground Water	10/19/2016 12:45	10/19/2016 16:48	Mr. Brian G Shade
2183283002	CWMP010W	Ground Water	10/19/2016 13:31	10/19/2016 16:48	Mr. Brian G Shade
2183283003	CWMP009W	Ground Water	10/19/2016 13:58	10/19/2016 16:48	Mr. Brian G Shade
2183283004	CWMP008W	Ground Water	10/19/2016 14:46	10/19/2016 16:48	Mr. Brian G Shade
2183283005	Field Blank	Water	10/19/2016 15:50	10/19/2016 16:48	Mr. Brian G Shade
2183283006	Trip Blank	Water	10/19/2016 16:48	10/19/2016 16:48	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2183283 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: 2183283 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183283001**
Sample ID: **CWMP016W**

Date Collected: 10/19/2016 12:45 Matrix: Ground Water
Date Received: 10/19/2016 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			10/27/16 20:36	CJG	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/27/16 20:36	CJG	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 20:36	CJG	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 20:36	CJG	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 20:36	CJG	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 20:36	CJG	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 20:36	CJG	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 20:36	CJG	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 20:36	CJG	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 20:36	CJG	H
Toluene	ND		ug/L	1.0	SW846 8260B			10/27/16 20:36	CJG	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/27/16 20:36	CJG	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 20:36	CJG	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 20:36	CJG	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 20:36	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)	112		%	62 - 133	SW846 8260B			10/27/16 20:36	CJG	H
4-Bromofluorobenzene (S)	94.2		%	79 - 114	SW846 8260B			10/27/16 20:36	CJG	H
Dibromofluoromethane (S)	84.1		%	78 - 116	SW846 8260B			10/27/16 20:36	CJG	H
Toluene-d8 (S)	88.3		%	76 - 127	SW846 8260B			10/27/16 20:36	CJG	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	8		mg/L	5	S2320B-97			10/20/16 09:14	MSA	B
Alkalinity, Total	8	2	mg/L	5	S2320B-97			10/20/16 09:14	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			10/21/16 20:18	CMM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			10/26/16 12:43	AK	A
Chloride	2.9		mg/L	2.0	EPA 300.0			10/20/16 10:35	BSL	B
Fluoride	ND		mg/L	0.20	EPA 300.0			10/20/16 10:35	BSL	B
Nitrate-N	0.70		mg/L	0.20	EPA 300.0			10/20/16 10:35	BSL	B
pH	6.44	1	pH_Units		SM4500B			10/20/16 09:14	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	10/20/16 00:00	JLG	10/20/16 10:00	JLG	G
Specific Conductance	53		umhos/cm	1	SW846 9050A			10/20/16 09:14	MSA	B
Sulfate	11.5		mg/L	2.0	EPA 300.0			10/20/16 10:35	BSL	B
Total Dissolved Solids	47		mg/L	5	S2540C-11			10/23/16 19:05	KAM	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			10/20/16 11:24	PAG	E
Turbidity	6.51		NTU	0.10	S2130B-01			10/20/16 04:56	MSA	B

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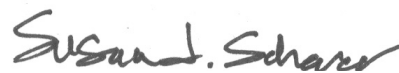
ANALYTICAL RESULTS

Workorder: 2183283 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183283001**
Sample ID: **CWMP016W**

Date Collected: 10/19/2016 12:45 Matrix: Ground Water
Date Received: 10/19/2016 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	5.3		mg/L	0.11	SW846 6010C	10/24/16 15:27	TRR	10/26/16 11:58	TSS	C1
Iron, Total	0.69		mg/L	0.067	SW846 6010C	10/24/16 15:27	TRR	10/26/16 11:58	TSS	C1
Magnesium, Total	1.3		mg/L	0.11	SW846 6010C	10/24/16 15:27	TRR	10/26/16 11:58	TSS	C1
Manganese, Total	0.0070		mg/L	0.0056	SW846 6010C	10/24/16 15:27	TRR	10/26/16 11:58	TSS	C1
Potassium, Total	0.85		mg/L	0.56	SW846 6010C	10/24/16 15:27	TRR	10/26/16 11:58	TSS	C1
Sodium, Total	3.6		mg/L	0.56	SW846 6010C	10/24/16 15:27	TRR	10/26/16 11:58	TSS	C1
FIELD PARAMETERS										
Depth to Water Level	14.000		Feet		Field			10/19/16 12:45	BGS	D
Elev Top MW Casing above MSL	311.97		Feet		Field			10/19/16 12:45	BGS	D
Flow Rate	2.25		gal/min		Field			10/19/16 12:45	BGS	D
Ground Water Elevation	297.970		ft/MSL		Field			10/19/16 12:45	BGS	D
pH, Field (SM4500B)	4.900		pH_Units		Field			10/19/16 12:45	BGS	D
Sample Depth	71.000		Feet		Field			10/19/16 12:45	BGS	D
Specific Conductance, Field	65		umhos/cm	1	Field			10/19/16 12:45	BGS	D
Temperature	10.72		Deg. C		Field			10/19/16 12:45	BGS	D
Total Well Depth	73.520		Feet		Field			10/19/16 12:45	BGS	D
Volume in Water Column	87.494		Gallons		Field			10/19/16 12:45	BGS	D
Water Level After Purge	23.010		Feet		Field			10/19/16 12:45	BGS	D
Well Volumes Purged	1.80		Vol		Field			10/19/16 12:45	BGS	D



Ms. Susan J Scherer
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ANALYTICAL RESULTS

Workorder: 2183283 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183283002**
Sample ID: **CWMP010W**

Date Collected: 10/19/2016 13:31 Matrix: Ground Water
Date Received: 10/19/2016 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			10/26/16 18:14	DD	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/26/16 18:14	DD	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/26/16 18:14	DD	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/26/16 18:14	DD	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 18:14	DD	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 18:14	DD	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 18:14	DD	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/26/16 18:14	DD	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/26/16 18:14	DD	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 18:14	DD	H
Toluene	ND		ug/L	1.0	SW846 8260B			10/26/16 18:14	DD	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/26/16 18:14	DD	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/26/16 18:14	DD	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 18:14	DD	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/26/16 18:14	DD	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)	112		%	62 - 133	SW846 8260B			10/26/16 18:14	DD	H
4-Bromofluorobenzene (S)	93.1		%	79 - 114	SW846 8260B			10/26/16 18:14	DD	H
Dibromofluoromethane (S)	83.5		%	78 - 116	SW846 8260B			10/26/16 18:14	DD	H
Toluene-d8 (S)	91.6		%	76 - 127	SW846 8260B			10/26/16 18:14	DD	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	435		mg/L	5	S2320B-97			10/20/16 09:38	MSA	B
Alkalinity, Total	435	2	mg/L	5	S2320B-97			10/20/16 09:38	MSA	B
Ammonia-N	2.40		mg/L	0.100	D6919-09			10/21/16 20:38	CMM	A
Chemical Oxygen Demand (COD)	66		mg/L	7	EPA 410.4			10/26/16 12:43	AK	A
Chloride	727		mg/L	10.0	EPA 300.0			10/21/16 07:30	BSL	B
Fluoride	ND		mg/L	0.50	EPA 300.0			10/20/16 10:48	BSL	B
Nitrate-N	3.8		mg/L	0.50	EPA 300.0			10/20/16 10:48	BSL	B
pH	7.01	1	pH_Units		SM4500B			10/20/16 09:38	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	10/20/16 00:00	JLG	10/20/16 10:00	JLG	G
Specific Conductance	2810		umhos/cm	1	SW846 9050A			10/20/16 09:38	MSA	B
Sulfate	29.6		mg/L	5.0	EPA 300.0			10/20/16 10:48	BSL	B
Total Dissolved Solids	1610		mg/L	5	S2540C-11			10/23/16 19:05	KAM	B
Total Organic Carbon (TOC)	26.5		mg/L	2.5	SW846 9060A			10/20/16 11:24	PAG	E
Turbidity	1.74		NTU	0.10	S2130B-01			10/20/16 04:56	MSA	B

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ANALYTICAL RESULTS

Workorder: 2183283 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183283002**
Sample ID: **CWMP010W**

Date Collected: 10/19/2016 13:31 Matrix: Ground Water
Date Received: 10/19/2016 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	122		mg/L	0.11	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:09	TSS	C1
Iron, Total	0.34		mg/L	0.067	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:09	TSS	C1
Magnesium, Total	77.4		mg/L	0.11	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:09	TSS	C1
Manganese, Total	4.4		mg/L	0.0056	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:09	TSS	C1
Potassium, Total	33.0		mg/L	0.56	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:09	TSS	C1
Sodium, Total	292		mg/L	0.56	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:09	TSS	C1
FIELD PARAMETERS										
Depth to Water Level	8.900		Feet		Field			10/19/16 13:31	BGS	D
Elev Top MW Casing above MSL	360.90		Feet		Field			10/19/16 13:31	BGS	D
Flow Rate	1.34		gal/min		Field			10/19/16 13:31	BGS	D
Ground Water Elevation	352.000		ft/MSL		Field			10/19/16 13:31	BGS	D
pH, Field (SM4500B)	6.450		pH_Units		Field			10/19/16 13:31	BGS	D
Sample Depth	17.000		Feet		Field			10/19/16 13:31	BGS	D
Specific Conductance, Field	1332		umhos/cm	1	Field			10/19/16 13:31	BGS	D
Temperature	14.89		Deg. C		Field			10/19/16 13:31	BGS	D
Total Well Depth	19.600		Feet		Field			10/19/16 13:31	BGS	D
Volume in Water Column	6.955		Gallons		Field			10/19/16 13:31	BGS	D
Water Level After Purge	17.110		Feet		Field			10/19/16 13:31	BGS	D
Well Volumes Purged	1.35		Vol		Field			10/19/16 13:31	BGS	D



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ANALYTICAL RESULTS

Workorder: 2183283 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183283003**
Sample ID: **CWMP009W**

Date Collected: 10/19/2016 13:58 Matrix: Ground Water
Date Received: 10/19/2016 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	2.3		ug/L	1.0	SW846 8260B			10/26/16 18:36	DD	I
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/26/16 18:36	DD	I
1,1-Dichloroethane	2.3		ug/L	1.0	SW846 8260B			10/26/16 18:36	DD	I
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/26/16 18:36	DD	I
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 18:36	DD	I
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 18:36	DD	I
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 18:36	DD	I
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/26/16 18:36	DD	I
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/26/16 18:36	DD	I
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 18:36	DD	I
Toluene	ND		ug/L	1.0	SW846 8260B			10/26/16 18:36	DD	I
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/26/16 18:36	DD	I
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/26/16 18:36	DD	I
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 18:36	DD	I
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/26/16 18:36	DD	I
<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)	112		%	62 - 133	SW846 8260B			10/26/16 18:36	DD	I
4-Bromofluorobenzene (S)	92.2		%	79 - 114	SW846 8260B			10/26/16 18:36	DD	I
Dibromofluoromethane (S)	84.8		%	78 - 116	SW846 8260B			10/26/16 18:36	DD	I
Toluene-d8 (S)	90.3		%	76 - 127	SW846 8260B			10/26/16 18:36	DD	I
WET CHEMISTRY										
Alkalinity, Bicarbonate	545		mg/L	5	S2320B-97			10/20/16 09:51	MSA	B
Alkalinity, Total	545	2	mg/L	5	S2320B-97			10/20/16 09:51	MSA	B
Ammonia-N	31.4		mg/L	0.250	D6919-09			11/1/16 01:16	JAM	A
Chemical Oxygen Demand (COD)	93		mg/L	7	EPA 410.4			10/26/16 12:43	AK	A
Chloride	660		mg/L	10.0	EPA 300.0			10/21/16 08:54	BSL	B
Fluoride	ND		mg/L	0.20	EPA 300.0			10/20/16 12:18	BSL	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			10/20/16 12:18	BSL	B
pH	6.53	1	pH_Units		SM4500B			10/20/16 09:51	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	10/20/16 00:00	JLG	10/20/16 10:00	JLG	G
Specific Conductance	2490		umhos/cm	1	SW846 9050A			10/20/16 09:51	MSA	B
Sulfate	4.7		mg/L	2.0	EPA 300.0			10/20/16 12:18	BSL	B
Total Dissolved Solids	1340		mg/L	5	S2540C-11			10/23/16 19:05	KAM	B
Total Organic Carbon (TOC)	32.0		mg/L	12.5	SW846 9060A			10/24/16 10:38	PAG	E
Turbidity	50.2		NTU	0.10	S2130B-01			10/20/16 04:56	MSA	B

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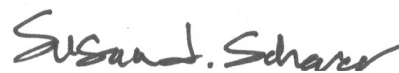
ANALYTICAL RESULTS

Workorder: 2183283 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183283003**
Sample ID: **CWMP009W**

Date Collected: 10/19/2016 13:58 Matrix: Ground Water
Date Received: 10/19/2016 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	159		mg/L	0.11	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:13	TSS	C1
Iron, Total	38.4		mg/L	0.067	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:13	TSS	C1
Magnesium, Total	75.2		mg/L	0.11	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:13	TSS	C1
Manganese, Total	12.6		mg/L	0.0056	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:13	TSS	C1
Potassium, Total	37.9		mg/L	0.56	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:13	TSS	C1
Sodium, Total	150		mg/L	0.56	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:13	TSS	C1
FIELD PARAMETERS										
Depth to Water Level	9.520		Feet		Field			10/19/16 13:58	BGS	D
Elev Top MW Casing above MSL	404.20		Feet		Field			10/19/16 13:58	BGS	D
Flow Rate	1.71		gal/min		Field			10/19/16 13:58	BGS	D
Ground Water Elevation	394.680		ft/MSL		Field			10/19/16 13:58	BGS	D
pH, Field (SM4500B)	6.070		pH_Units		Field			10/19/16 13:58	BGS	D
Sample Depth	16.000		Feet		Field			10/19/16 13:58	BGS	D
Specific Conductance, Field	2783		umhos/cm	1	Field			10/19/16 13:58	BGS	D
Temperature	14.01		Deg. C		Field			10/19/16 13:58	BGS	D
Total Well Depth	19.700		Feet		Field			10/19/16 13:58	BGS	D
Volume in Water Column	6.617		Gallons		Field			10/19/16 13:58	BGS	D
Water Level After Purge	11.560		Feet		Field			10/19/16 13:58	BGS	D
Well Volumes Purged	4.14		Vol		Field			10/19/16 13:58	BGS	D



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ANALYTICAL RESULTS

Workorder: 2183283 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183283004**
Sample ID: **CWMP008W**

Date Collected: 10/19/2016 14:46 Matrix: Ground Water
Date Received: 10/19/2016 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	1.4		ug/L	1.0	SW846 8260B			10/26/16 23:23	CJG	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/26/16 23:23	CJG	H
1,1-Dichloroethane	3.5		ug/L	1.0	SW846 8260B			10/26/16 23:23	CJG	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/26/16 23:23	CJG	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 23:23	CJG	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 23:23	CJG	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 23:23	CJG	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/26/16 23:23	CJG	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/26/16 23:23	CJG	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 23:23	CJG	H
Toluene	ND		ug/L	1.0	SW846 8260B			10/26/16 23:23	CJG	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/26/16 23:23	CJG	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/26/16 23:23	CJG	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 23:23	CJG	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/26/16 23:23	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)	107		%	62 - 133	SW846 8260B			10/26/16 23:23	CJG	H
4-Bromofluorobenzene (S)	93.2		%	79 - 114	SW846 8260B			10/26/16 23:23	CJG	H
Dibromofluoromethane (S)	80.8		%	78 - 116	SW846 8260B			10/26/16 23:23	CJG	H
Toluene-d8 (S)	88.1		%	76 - 127	SW846 8260B			10/26/16 23:23	CJG	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	491		mg/L	5	S2320B-97			10/20/16 10:02	MSA	B
Alkalinity, Total	491	2	mg/L	5	S2320B-97			10/20/16 10:02	MSA	B
Ammonia-N	8.68		mg/L	0.100	D6919-09			10/21/16 21:57	CMM	A
Chemical Oxygen Demand (COD)	40		mg/L	7	EPA 410.4			10/26/16 12:43	AK	A
Chloride	82.4		mg/L	2.0	EPA 300.0			10/20/16 12:31	BSL	B
Fluoride	ND		mg/L	0.20	EPA 300.0			10/20/16 12:31	BSL	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			10/20/16 12:31	BSL	B
pH	6.47	1	pH_Units		SM4500B			10/20/16 10:02	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	10/20/16 00:00	JLG	10/20/16 10:00	JLG	G
Specific Conductance	1130		umhos/cm	1	SW846 9050A			10/20/16 10:02	MSA	B
Sulfate	6.0		mg/L	2.0	EPA 300.0			10/20/16 12:31	BSL	B
Total Dissolved Solids	609		mg/L	5	S2540C-11			10/23/16 19:05	KAM	B
Total Organic Carbon (TOC)	15.4		mg/L	2.5	SW846 9060A			10/20/16 11:24	PAG	E
Turbidity	35.8		NTU	0.10	S2130B-01			10/20/16 04:56	MSA	B

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ANALYTICAL RESULTS

Workorder: 2183283 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183283004**
Sample ID: **CWMP008W**

Date Collected: 10/19/2016 14:46 Matrix: Ground Water
Date Received: 10/19/2016 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	85.5		mg/L	0.11	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:17	TSS	C1
Iron, Total	31.7		mg/L	0.067	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:17	TSS	C1
Magnesium, Total	40.7		mg/L	0.11	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:17	TSS	C1
Manganese, Total	16.3		mg/L	0.0056	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:17	TSS	C1
Potassium, Total	11.3		mg/L	0.56	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:17	TSS	C1
Sodium, Total	65.8		mg/L	0.56	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:17	TSS	C1
FIELD PARAMETERS										
Depth to Water Level	4.470		Feet		Field			10/19/16 14:46	BGS	D
Elev Top MW Casing above MSL	422.30		Feet		Field			10/19/16 14:46	BGS	D
Flow Rate	1.09		gal/min		Field			10/19/16 14:46	BGS	D
Ground Water Elevation	417.830		ft/MSL		Field			10/19/16 14:46	BGS	D
pH, Field (SM4500B)	6.090		pH_Units		Field			10/19/16 14:46	BGS	D
Sample Depth	19.000		Feet		Field			10/19/16 14:46	BGS	D
Specific Conductance, Field	1259		umhos/cm	1	Field			10/19/16 14:46	BGS	D
Temperature	14.62		Deg. C		Field			10/19/16 14:46	BGS	D
Total Well Depth	22.800		Feet		Field			10/19/16 14:46	BGS	D
Volume in Water Column	2.933		Gallons		Field			10/19/16 14:46	BGS	D
Water Level After Purge	16.380		Feet		Field			10/19/16 14:46	BGS	D
Well Volumes Purged	7.44		Vol		Field			10/19/16 14:46	BGS	D



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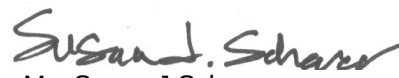
ANALYTICAL RESULTS

Workorder: 2183283 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183283005**
Sample ID: **Field Blank**

Date Collected: 10/19/2016 15:50 Matrix: Water
Date Received: 10/19/2016 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			10/26/16 12:45	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/26/16 12:45	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/26/16 12:45	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/26/16 12:45	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 12:45	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 12:45	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 12:45	DD	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/26/16 12:45	DD	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/26/16 12:45	DD	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 12:45	DD	A
Toluene	ND		ug/L	1.0	SW846 8260B			10/26/16 12:45	DD	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/26/16 12:45	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/26/16 12:45	DD	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 12:45	DD	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/26/16 12:45	DD	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)	109		%	62 - 133	SW846 8260B			10/26/16 12:45	DD	A
4-Bromofluorobenzene (S)	91.4		%	79 - 114	SW846 8260B			10/26/16 12:45	DD	A
Dibromofluoromethane (S)	82.5		%	78 - 116	SW846 8260B			10/26/16 12:45	DD	A
Toluene-d8 (S)	89.9		%	76 - 127	SW846 8260B			10/26/16 12:45	DD	A


Ms. Susan J Scherer
Project Coordinator

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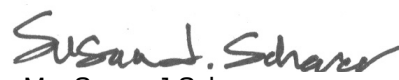
ANALYTICAL RESULTS

Workorder: 2183283 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183283006**
Sample ID: **Trip Blank**

Date Collected: 10/19/2016 16:48 Matrix: Water
Date Received: 10/19/2016 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			10/26/16 13:07	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/26/16 13:07	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/26/16 13:07	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/26/16 13:07	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 13:07	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 13:07	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 13:07	DD	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/26/16 13:07	DD	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/26/16 13:07	DD	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 13:07	DD	A
Toluene	ND		ug/L	1.0	SW846 8260B			10/26/16 13:07	DD	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/26/16 13:07	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/26/16 13:07	DD	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/26/16 13:07	DD	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/26/16 13:07	DD	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)	109		%	62 - 133	SW846 8260B			10/26/16 13:07	DD	A
4-Bromofluorobenzene (S)	92.5		%	79 - 114	SW846 8260B			10/26/16 13:07	DD	A
Dibromofluoromethane (S)	82.2		%	78 - 116	SW846 8260B			10/26/16 13:07	DD	A
Toluene-d8 (S)	91.6		%	76 - 127	SW846 8260B			10/26/16 13:07	DD	A


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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2183283001	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.				
2183283001	2	CWMP016W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2183283002	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.				
2183283002	2	CWMP010W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2183283003	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.				
2183283003	2	CWMP009W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2183283004	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.				
2183283004	2	CWMP008W	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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October 31, 2016

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

Certificate of Analysis

Project Name: 2016-CRESWELL	Workorder: 2183300
Purchase Order:	Workorder ID: QUARTERLY CWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, October 19, 2016.

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.

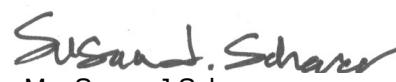
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications 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: 2183300 QUARTERLY CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2183300001	CWMP017S	Ground Water	10/19/2016 10:17	10/19/2016 16:48	Mr. Brian G Shade
2183300002	CWMP018S	Ground Water	10/19/2016 09:40	10/19/2016 16:48	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2183300 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: 2183300 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183300001**
Sample ID: **CWMP017S**

Date Collected: 10/19/2016 10:17 Matrix: Ground Water
Date Received: 10/19/2016 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:07	CJG	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/27/16 00:07	CJG	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 00:07	CJG	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 00:07	CJG	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:07	CJG	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:07	CJG	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:07	CJG	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:07	CJG	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 00:07	CJG	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:07	CJG	H
Toluene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:07	CJG	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/27/16 00:07	CJG	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 00:07	CJG	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:07	CJG	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 00:07	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)	114		%	62 - 133	SW846 8260B			10/27/16 00:07	CJG	H
4-Bromofluorobenzene (S)	94.3		%	79 - 114	SW846 8260B			10/27/16 00:07	CJG	H
Dibromofluoromethane (S)	84		%	78 - 116	SW846 8260B			10/27/16 00:07	CJG	H
Toluene-d8 (S)	90.5		%	76 - 127	SW846 8260B			10/27/16 00:07	CJG	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	646		mg/L	5	S2320B-97			10/20/16 11:42	MSA	B
Alkalinity, Total	646	2	mg/L	5	S2320B-97			10/20/16 11:42	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			10/21/16 23:30	CMM	A
Chemical Oxygen Demand (COD)	23		mg/L	7	EPA 410.4			10/31/16 12:50	AK	A
Chloride	1220		mg/L	25.0	EPA 300.0			10/21/16 09:08	BSL	B
Fluoride	ND		mg/L	0.20	EPA 300.0			10/20/16 15:19	BSL	B
Nitrate-N	33.3		mg/L	1.0	EPA 300.0			10/20/16 15:32	BSL	B
pH	8.18	1	pH_Units		SM4500B			10/20/16 11:42	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	10/20/16 00:00	JLG	10/25/16 00:00	JLG	G
Specific Conductance	4520		umhos/cm	1	SW846 9050A			10/20/16 11:42	MSA	B
Sulfate	100		mg/L	2.0	EPA 300.0			10/20/16 15:19	BSL	B
Total Dissolved Solids	2460		mg/L	5	S2540C-11			10/23/16 19:07	KAM	B
Total Organic Carbon (TOC)	5.4		mg/L	0.50	SW846 9060A			10/20/16 11:24	PAG	E
Turbidity	0.51		NTU	0.10	S2130B-01			10/20/16 04:56	MSA	B

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ANALYTICAL RESULTS

Workorder: 2183300 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183300001**
Sample ID: **CWMP017S**

Date Collected: 10/19/2016 10:17 Matrix: Ground Water
Date Received: 10/19/2016 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	100		mg/L	0.11	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:20	TSS	C1
Iron, Total	0.10		mg/L	0.067	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:20	TSS	C1
Magnesium, Total	134		mg/L	0.11	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:20	TSS	C1
Manganese, Total	0.016		mg/L	0.0056	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:20	TSS	C1
Potassium, Total	29.8		mg/L	0.56	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:20	TSS	C1
Sodium, Total	461		mg/L	0.56	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:20	TSS	C1
FIELD PARAMETERS										
Dissolved Oxygen	7.330		mg/L	0.010	Field			10/19/16 10:17	BGS	D
Flow Rate	218.80		gal/min		Field			10/19/16 10:17	BGS	D
pH, Field (SM4500B)	7.890		pH_Units		Field			10/19/16 10:17	BGS	D
Specific Conductance, Field	5113		umhos/cm	1	Field			10/19/16 10:17	BGS	D
Temperature	22.66		Deg. C		Field			10/19/16 10:17	BGS	D


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ANALYTICAL RESULTS

Workorder: 2183300 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183300002**
Sample ID: **CWMP018S**

Date Collected: 10/19/2016 09:40 Matrix: Ground Water
Date Received: 10/19/2016 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:29	CJG	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/27/16 00:29	CJG	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 00:29	CJG	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 00:29	CJG	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:29	CJG	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:29	CJG	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:29	CJG	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:29	CJG	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 00:29	CJG	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:29	CJG	H
Toluene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:29	CJG	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/27/16 00:29	CJG	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 00:29	CJG	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 00:29	CJG	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 00:29	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)	111		%	62 - 133	SW846 8260B			10/27/16 00:29	CJG	H
4-Bromofluorobenzene (S)	92.1		%	79 - 114	SW846 8260B			10/27/16 00:29	CJG	H
Dibromofluoromethane (S)	83.5		%	78 - 116	SW846 8260B			10/27/16 00:29	CJG	H
Toluene-d8 (S)	89.4		%	76 - 127	SW846 8260B			10/27/16 00:29	CJG	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	442		mg/L	5	S2320B-97			10/20/16 11:54	MSA	B
Alkalinity, Total	485	2	mg/L	5	S2320B-97			10/20/16 11:54	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			10/21/16 23:49	CMM	A
Chemical Oxygen Demand (COD)	24		mg/L	7	EPA 410.4			10/28/16 09:55	AK	A
Chloride	862		mg/L	10.0	EPA 300.0			10/20/16 15:57	BSL	B
Fluoride	ND		mg/L	0.20	EPA 300.0			10/20/16 15:45	BSL	B
Nitrate-N	24.1		mg/L	1.0	EPA 300.0			10/20/16 15:57	BSL	B
pH	8.51	1	pH_Units		SM4500B			10/20/16 11:54	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	10/20/16 00:00	JLG	10/25/16 00:00	JLG	G
Specific Conductance	3360		umhos/cm	1	SW846 9050A			10/20/16 11:54	MSA	B
Sulfate	58.9		mg/L	2.0	EPA 300.0			10/20/16 15:45	BSL	B
Total Dissolved Solids	1920		mg/L	5	S2540C-11			10/23/16 19:07	KAM	B
Total Organic Carbon (TOC)	8.5		mg/L	0.50	SW846 9060A			10/20/16 11:24	PAG	E
Turbidity	0.34		NTU	0.10	S2130B-01			10/20/16 04:56	MSA	B

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ANALYTICAL RESULTS

Workorder: 2183300 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183300002**
Sample ID: **CWMP018S**

Date Collected: 10/19/2016 09:40 Matrix: Ground Water
Date Received: 10/19/2016 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	89.6		mg/L	0.11	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:25	TSS	C1
Iron, Total	ND		mg/L	0.067	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:25	TSS	C1
Magnesium, Total	105		mg/L	0.11	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:25	TSS	C1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:25	TSS	C1
Potassium, Total	24.4		mg/L	0.56	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:25	TSS	C1
Sodium, Total	359		mg/L	0.56	SW846 6010C	10/24/16 15:27	TRR	10/26/16 12:25	TSS	C1
FIELD PARAMETERS										
Dissolved Oxygen	9.360		mg/L	0.010	Field			10/19/16 09:40	BGS	D
Flow Rate	150.66		gal/min		Field			10/19/16 09:40	BGS	D
pH, Field (SM4500B)	8.080		pH_Units		Field			10/19/16 09:40	BGS	D
Specific Conductance, Field	3721		umhos/cm	1	Field			10/19/16 09:40	BGS	D
Temperature	16.17		Deg. C		Field			10/19/16 09:40	BGS	D


Ms. Susan J Scherer
Project Coordinator

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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2183300001	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.				
2183300001	2	CWMP017S	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2183300002	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.				
2183300002	2	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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November 1, 2016

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

Certificate of Analysis

Project Name: 2016-CRESWELL	Workorder: 2183692
Purchase Order:	Workorder ID: QUARTERLY CWMP-FORM 19Q-RR

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, October 20, 2016.

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.

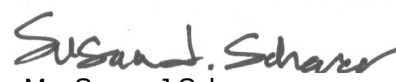
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications 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: 2183692 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2183692001	CWMP002W	Ground Water	10/20/2016 12:18	10/20/2016 15:58	Mr. Brian G Shade
2183692002	CWMP003W	Ground Water	10/20/2016 13:02	10/20/2016 15:58	Mr. Brian G Shade
2183692003	CWMP004W	Ground Water	10/20/2016 13:14	10/20/2016 15:58	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2183692 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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PROJECT SUMMARY

Workorder: 2183692 QUARTERLY CWMP-FORM 19Q-RR VOC

Sample Comments

Lab ID: 2183692002

Sample ID: CWMP003W

Sample Type: SAMPLE

A positive residual chlorine result was detected in the preservation check for the volatile organics analysis of this sample. This may be due to the presence of residual chlorine or another oxidizing agent.

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ANALYTICAL RESULTS

Workorder: 2183692 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2183692001**
Sample ID: **CWMP002W**

Date Collected: 10/20/2016 12:18 Matrix: Ground Water
Date Received: 10/20/2016 15:58

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Bromoform	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Bromomethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Chloroethane	4.4		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Chloroform	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Chloromethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
1,4-Dichlorobenzene	1.1		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
1,1-Dichloroethane	8.4		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			10/27/16 11:00	DD	E
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Styrene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Toluene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/27/16 11:00	DD	E
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			10/27/16 11:00	DD	E
1,1,1-Trichloroethane	1.2		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			10/27/16 11:00	DD	E
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 11:00	DD	E
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr

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ANALYTICAL RESULTS

Workorder: 2183692 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2183692001**
Sample ID: **CWMP002W**

Date Collected: 10/20/2016 12:18 Matrix: Ground Water
Date Received: 10/20/2016 15:58

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	111		%	62 - 133	SW846 8260B			10/27/16 11:00	DD	E
4-Bromofluorobenzene (S)	93.8		%	79 - 114	SW846 8260B			10/27/16 11:00	DD	E
Dibromofluoromethane (S)	82.6		%	78 - 116	SW846 8260B			10/27/16 11:00	DD	E
Toluene-d8 (S)	90.3		%	76 - 127	SW846 8260B			10/27/16 11:00	DD	E
WET CHEMISTRY										
Alkalinity, Bicarbonate	57		mg/L	5	S2320B-97			10/21/16 22:31	MSA	C
Alkalinity, Total	57	1	mg/L	5	S2320B-97			10/21/16 22:31	MSA	C
Ammonia-N	ND		mg/L	0.100	D6919-09			10/23/16 02:17	JAM	A
Chemical Oxygen Demand (COD)	13		mg/L	7	EPA 410.4			10/31/16 06:30	AK	A
Chloride	117		mg/L	2.0	EPA 300.0			10/21/16 07:14	BSL	C
Fluoride	ND		mg/L	0.20	EPA 300.0			10/21/16 07:14	BSL	C
Nitrate-N	3.6		mg/L	0.20	EPA 300.0			10/21/16 07:14	BSL	C
pH	6.26	2	pH_Units		S4500HB-00			10/21/16 22:31	MSA	C
Phenolics	ND		mg/L	0.005	SW846 9066	10/31/16 00:00	JLG	10/28/16 00:00	JLG	I
Specific Conductance	550		umhos/cm	1	S2510B-97			10/21/16 22:31	MSA	C
Sulfate	25.7		mg/L	2.0	EPA 300.0			10/21/16 07:14	BSL	C
Total Dissolved Solids	302		mg/L	5	S2540C-11			10/24/16 20:05	KAM	C
Total Organic Carbon (TOC)	3.3		mg/L	0.50	S5310B-00			10/24/16 10:38	PAG	G
Turbidity	ND		NTU	0.10	S2130B-01			10/21/16 03:49	MSA	C
METALS										
Calcium, Total	53.1		mg/L	0.11	SW846 6010C	10/26/16 12:52	OTD	10/28/16 11:38	SRT	J1
Iron, Total	0.072		mg/L	0.067	SW846 6010C	10/26/16 12:52	OTD	10/28/16 11:38	SRT	J1
Magnesium, Total	15.8		mg/L	0.11	SW846 6010C	10/26/16 12:52	OTD	10/28/16 11:38	SRT	J1
Manganese, Total	1.1		mg/L	0.0056	SW846 6010C	10/26/16 12:52	OTD	10/28/16 11:38	SRT	J1
Potassium, Total	2.8		mg/L	0.56	SW846 6010C	10/26/16 12:52	OTD	10/28/16 11:38	SRT	J1
Sodium, Total	21.7		mg/L	0.56	SW846 6010C	10/26/16 12:52	OTD	10/28/16 11:38	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	82.890		Feet		Field			10/20/16 12:18	BGS	B
Elev Top MW Casing above MSL	525.81		Feet		Field			10/20/16 12:18	BGS	B
Ground Water Elevation	442.920		ft/MSL		Field			10/20/16 12:18	BGS	B
pH, Field (SM4500B)	5.640		pH_Units		Field			10/20/16 12:18	BGS	B
Sample Depth	85.000		Feet		Field			10/20/16 12:18	BGS	B
Specific Conductance, Field	520		umhos/cm	1	Field			10/20/16 12:18	BGS	B
Temperature	17.70		Deg. C		Field			10/20/16 12:18	BGS	B
Total Well Depth	100.000		Feet		Field			10/20/16 12:18	BGS	B

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ANALYTICAL RESULTS

Workorder: 2183692 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2183692001**
Sample ID: **CWMP002W**

Date Collected: 10/20/2016 12:18 Matrix: Ground Water
Date Received: 10/20/2016 15:58

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: 2183692 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2183692002**
Sample ID: **CWMP003W**

Date Collected: 10/20/2016 13:02 Matrix: Ground Water
Date Received: 10/20/2016 15:58

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Bromoform	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Bromomethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Chloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Chloroform	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Chloromethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
1,1-Dichloroethane	2.3		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			10/27/16 11:22	DD	E
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Styrene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Toluene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/27/16 11:22	DD	E
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			10/27/16 11:22	DD	E
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			10/27/16 11:22	DD	E
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 11:22	DD	E
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr

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ANALYTICAL RESULTS

Workorder: 2183692 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2183692002**
Sample ID: **CWMP003W**

Date Collected: 10/20/2016 13:02 Matrix: Ground Water
Date Received: 10/20/2016 15:58

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	110		%	62 - 133	SW846 8260B			10/27/16 11:22	DD	E
4-Bromofluorobenzene (S)	94		%	79 - 114	SW846 8260B			10/27/16 11:22	DD	E
Dibromofluoromethane (S)	81.4		%	78 - 116	SW846 8260B			10/27/16 11:22	DD	E
Toluene-d8 (S)	89.2		%	76 - 127	SW846 8260B			10/27/16 11:22	DD	E
WET CHEMISTRY										
Alkalinity, Bicarbonate	16		mg/L	5	S2320B-97			10/21/16 23:15	MSA	C
Alkalinity, Total	16	1	mg/L	5	S2320B-97			10/21/16 23:15	MSA	C
Ammonia-N	ND		mg/L	0.100	D6919-09			10/23/16 02:37	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			10/31/16 06:30	AK	A
Chloride	89.0		mg/L	2.0	EPA 300.0			10/21/16 08:32	BSL	C
Fluoride	ND		mg/L	0.20	EPA 300.0			10/21/16 08:32	BSL	C
Nitrate-N	9.4		mg/L	0.20	EPA 300.0			10/21/16 08:32	BSL	C
pH	6.37	2	pH_Units		S4500HB-00			10/21/16 23:15	MSA	C
Phenolics	ND		mg/L	0.005	SW846 9066	10/31/16 00:00	JLG	10/28/16 00:00	JLG	I
Specific Conductance	400		umhos/cm	1	S2510B-97			10/21/16 23:15	MSA	C
Sulfate	6.0		mg/L	2.0	EPA 300.0			10/21/16 08:32	BSL	C
Total Dissolved Solids	235		mg/L	5	S2540C-11			10/24/16 20:05	KAM	D
Total Organic Carbon (TOC)	0.87		mg/L	0.50	S5310B-00			10/24/16 10:38	PAG	G
Turbidity	0.93		NTU	0.10	S2130B-01			10/21/16 03:49	MSA	C
METALS										
Calcium, Total	29.8		mg/L	0.11	SW846 6010C	10/26/16 12:52	OTD	10/28/16 13:47	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	10/26/16 12:52	OTD	10/28/16 13:47	SRT	J1
Magnesium, Total	10.3		mg/L	0.11	SW846 6010C	10/26/16 12:52	OTD	10/28/16 13:47	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	10/26/16 12:52	OTD	10/28/16 13:47	SRT	J1
Potassium, Total	1.7		mg/L	0.56	SW846 6010C	10/26/16 12:52	OTD	10/28/16 13:47	SRT	J1
Sodium, Total	20.4		mg/L	0.56	SW846 6010C	10/26/16 12:52	OTD	10/28/16 13:47	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	99.210		Feet		Field			10/20/16 13:02	BGS	B
Elev Top MW Casing above MSL	524.21		Feet		Field			10/20/16 13:02	BGS	B
Ground Water Elevation	425.000		ft/MSL		Field			10/20/16 13:02	BGS	B
pH, Field (SM4500B)	5.490		pH_Units		Field			10/20/16 13:02	BGS	B
Sample Depth	100.000		Feet		Field			10/20/16 13:02	BGS	B
Specific Conductance, Field	377		umhos/cm	1	Field			10/20/16 13:02	BGS	B
Temperature	17.40		Deg. C		Field			10/20/16 13:02	BGS	B
Total Well Depth	140.000		Feet		Field			10/20/16 13:02	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: 2183692 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2183692002**
Sample ID: **CWMP003W**

Date Collected: 10/20/2016 13:02 Matrix: Ground Water
Date Received: 10/20/2016 15:58

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: 2183692 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2183692003**
Sample ID: **CWMP004W**

Date Collected: 10/20/2016 13:14 Matrix: Ground Water
Date Received: 10/20/2016 15:58

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Bromoform	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Bromomethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Chloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Chloroform	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Chloromethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			10/27/16 11:44	DD	E
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Styrene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Toluene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/27/16 11:44	DD	E
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			10/27/16 11:44	DD	E
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			10/27/16 11:44	DD	E
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 11:44	DD	E
<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>

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ANALYTICAL RESULTS

Workorder: 2183692 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2183692003**
Sample ID: **CWMP004W**

Date Collected: 10/20/2016 13:14 Matrix: Ground Water
Date Received: 10/20/2016 15:58

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	110		%	62 - 133	SW846 8260B			10/27/16 11:44	DD	E
4-Bromofluorobenzene (S)	92		%	79 - 114	SW846 8260B			10/27/16 11:44	DD	E
Dibromofluoromethane (S)	82.6		%	78 - 116	SW846 8260B			10/27/16 11:44	DD	E
Toluene-d8 (S)	89.3		%	76 - 127	SW846 8260B			10/27/16 11:44	DD	E
WET CHEMISTRY										
Alkalinity, Bicarbonate	24		mg/L	5	S2320B-97			10/21/16 23:25	MSA	C
Alkalinity, Total	24	1	mg/L	5	S2320B-97			10/21/16 23:25	MSA	C
Ammonia-N	ND		mg/L	0.100	D6919-09			10/23/16 02:57	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			10/31/16 06:30	AK	A
Chloride	48.0		mg/L	2.0	EPA 300.0			10/21/16 08:44	BSL	C
Fluoride	ND		mg/L	0.20	EPA 300.0			10/21/16 08:44	BSL	C
Nitrate-N	7.7		mg/L	0.20	EPA 300.0			10/21/16 08:44	BSL	C
pH	6.57	2	pH_Units		S4500HB-00			10/21/16 23:25	MSA	C
Phenolics	ND		mg/L	0.005	SW846 9066	10/31/16 00:00	JLG	10/28/16 00:00	JLG	I
Specific Conductance	243		umhos/cm	1	S2510B-97			10/21/16 23:25	MSA	C
Sulfate	6.0		mg/L	2.0	EPA 300.0			10/21/16 08:44	BSL	C
Total Dissolved Solids	152		mg/L	5	S2540C-11			10/24/16 20:05	KAM	C
Total Organic Carbon (TOC)	0.78		mg/L	0.50	S5310B-00			10/24/16 10:38	PAG	G
Turbidity	ND		NTU	0.10	S2130B-01			10/21/16 03:49	MSA	C
METALS										
Calcium, Total	20.6		mg/L	0.11	SW846 6010C	10/26/16 12:52	OTD	10/28/16 13:51	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	10/26/16 12:52	OTD	10/28/16 13:51	SRT	J1
Magnesium, Total	6.4		mg/L	0.11	SW846 6010C	10/26/16 12:52	OTD	10/28/16 13:51	SRT	J1
Manganese, Total	0.0074		mg/L	0.0056	SW846 6010C	10/26/16 12:52	OTD	10/28/16 13:51	SRT	J1
Potassium, Total	1.3		mg/L	0.56	SW846 6010C	10/26/16 12:52	OTD	10/28/16 13:51	SRT	J1
Sodium, Total	15.0		mg/L	0.56	SW846 6010C	10/26/16 12:52	OTD	10/28/16 13:51	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	119.480		Feet		Field			10/20/16 13:14	BGS	B
Elev Top MW Casing above MSL	529.53		Feet		Field			10/20/16 13:14	BGS	B
Ground Water Elevation	410.050		ft/MSL		Field			10/20/16 13:14	BGS	B
pH, Field (SM4500B)	5.600		pH_Units		Field			10/20/16 13:14	BGS	B
Sample Depth	130.000		Feet		Field			10/20/16 13:14	BGS	B
Specific Conductance, Field	253		umhos/cm	1	Field			10/20/16 13:14	BGS	B
Temperature	16.60		Deg. C		Field			10/20/16 13:14	BGS	B
Total Well Depth	140.000		Feet		Field			10/20/16 13:14	BGS	B

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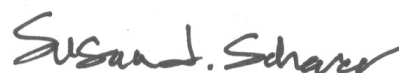
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ANALYTICAL RESULTS

Workorder: 2183692 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2183692003**
Sample ID: **CWMP004W**Date Collected: 10/20/2016 13:14 Matrix: Ground Water
Date Received: 10/20/2016 15:58

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
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Ms. Susan J Scherer
Project Coordinator**ALS Environmental Laboratory Locations Across North America**Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2183692001	1	CWMP002W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2183692001	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.				
2183692002	1	CWMP003W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2183692002	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.				
2183692003	1	CWMP004W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2183692003	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.				

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November 1, 2016

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

Certificate of Analysis

Project Name: 2016-CRESWELL	Workorder: 2183693
Purchase Order:	Workorder ID: QUARTERLY CWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, October 20, 2016.

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.

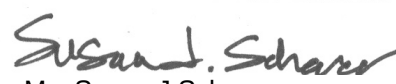
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications 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: 2183693 QUARTERLY CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2183693001	CWMP012W	Ground Water	10/20/2016 09:31	10/20/2016 15:58	Mr. Brian G Shade
2183693002	Field Blank	Ground Water	10/20/2016 14:01	10/20/2016 15:58	Mr. Brian G Shade
2183693003	Trip Blank	Water	10/20/2016 15:58	10/20/2016 15:58	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2183693 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: 2183693 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183693001**
Sample ID: **CWMP012W**

Date Collected: 10/20/2016 09:31 Matrix: Ground Water
Date Received: 10/20/2016 15:58

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			10/27/16 12:06	DD	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/27/16 12:06	DD	H
1,1-Dichloroethane	1.2		ug/L	1.0	SW846 8260B			10/27/16 12:06	DD	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 12:06	DD	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 12:06	DD	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 12:06	DD	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 12:06	DD	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 12:06	DD	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 12:06	DD	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 12:06	DD	H
Toluene	ND		ug/L	1.0	SW846 8260B			10/27/16 12:06	DD	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/27/16 12:06	DD	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 12:06	DD	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 12:06	DD	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 12:06	DD	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)	111		%	62 - 133	SW846 8260B			10/27/16 12:06	DD	H
4-Bromofluorobenzene (S)	92.9		%	79 - 114	SW846 8260B			10/27/16 12:06	DD	H
Dibromofluoromethane (S)	81.4		%	78 - 116	SW846 8260B			10/27/16 12:06	DD	H
Toluene-d8 (S)	88.4		%	76 - 127	SW846 8260B			10/27/16 12:06	DD	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	63		mg/L	5	S2320B-97			10/21/16 23:34	MSA	B
Alkalinity, Total	63	2	mg/L	5	S2320B-97			10/21/16 23:34	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			10/23/16 03:17	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			10/31/16 06:30	AK	A
Chloride	36.4		mg/L	2.0	EPA 300.0			10/21/16 08:57	BSL	B
Fluoride	ND		mg/L	0.20	EPA 300.0			10/21/16 08:57	BSL	B
Nitrate-N	12.0		mg/L	0.20	EPA 300.0			10/21/16 08:57	BSL	B
pH	6.61	1	pH_Units		SM4500B			10/21/16 23:34	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	10/31/16 00:00	JLG	10/28/16 00:00	JLG	G
Specific Conductance	300		umhos/cm	1	SW846 9050A			10/21/16 23:34	MSA	B
Sulfate	5.8		mg/L	2.0	EPA 300.0			10/21/16 08:57	BSL	B
Total Dissolved Solids	205		mg/L	5	S2540C-11			10/24/16 20:05	KAM	J
Total Organic Carbon (TOC)	4.1		mg/L	0.50	SW846 9060A			10/24/16 10:38	PAG	E
Turbidity	1330		NTU	0.10	S2130B-01			10/21/16 03:49	MSA	B

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ANALYTICAL RESULTS

Workorder: 2183693 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183693001**
Sample ID: **CWMP012W**

Date Collected: 10/20/2016 09:31 Matrix: Ground Water
Date Received: 10/20/2016 15:58

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	32.2		mg/L	0.11	SW846 6010C	10/25/16 13:15	OTD	10/27/16 13:56	SRT	C1
Iron, Total	49.7		mg/L	0.067	SW846 6010C	10/25/16 13:15	OTD	10/27/16 13:56	SRT	C1
Magnesium, Total	9.2		mg/L	0.11	SW846 6010C	10/25/16 13:15	OTD	10/27/16 13:56	SRT	C1
Manganese, Total	0.25		mg/L	0.0056	SW846 6010C	10/25/16 13:15	OTD	10/27/16 13:56	SRT	C1
Potassium, Total	1.4		mg/L	0.56	SW846 6010C	10/25/16 13:15	OTD	10/27/16 13:56	SRT	C1
Sodium, Total	12.9		mg/L	0.56	SW846 6010C	10/25/16 13:15	OTD	10/27/16 13:56	SRT	C1
FIELD PARAMETERS										
Depth to Water Level	65.210		Feet		Field			10/20/16 12:45	BGS	D
pH, Field (SM4500B)	5.540		pH_Units		Field			10/20/16 12:45	BGS	D
Sample Depth	65.210		Feet		Field			10/20/16 12:45	BGS	D
Specific Conductance, Field	304		umhos/cm	1	Field			10/20/16 12:45	BGS	D
Temperature	14.70		Deg. C		Field			10/20/16 12:45	BGS	D


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ANALYTICAL RESULTS

Workorder: 2183693 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183693002**

Date Collected: 10/20/2016 14:01

Matrix: Ground Water

Sample ID: **Field Blank**

Date Received: 10/20/2016 15:58

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:16	DD	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/27/16 10:16	DD	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 10:16	DD	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 10:16	DD	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:16	DD	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:16	DD	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:16	DD	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:16	DD	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 10:16	DD	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:16	DD	H
Toluene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:16	DD	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/27/16 10:16	DD	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 10:16	DD	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:16	DD	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 10:16	DD	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)	108		%	62 - 133	SW846 8260B			10/27/16 10:16	DD	H
4-Bromofluorobenzene (S)	93.5		%	79 - 114	SW846 8260B			10/27/16 10:16	DD	H
Dibromofluoromethane (S)	80.7		%	78 - 116	SW846 8260B			10/27/16 10:16	DD	H
Toluene-d8 (S)	91.4		%	76 - 127	SW846 8260B			10/27/16 10:16	DD	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	S2320B-97			10/21/16 23:42	MSA	B
Alkalinity, Total	ND	2	mg/L	5	S2320B-97			10/21/16 23:42	MSA	B
Ammonia-N	ND		mg/L	0.010	D6919-09			10/23/16 04:16	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			10/31/16 06:30	AK	A
Chloride	ND		mg/L	1.0	EPA 300.0			10/21/16 09:10	BSL	B
Fluoride	ND		mg/L	0.10	EPA 300.0			10/21/16 09:10	BSL	B
Nitrate-N	ND		mg/L	0.10	EPA 300.0			10/21/16 09:10	BSL	B
pH	6.28	1	pH_Units		SM4500B			10/21/16 23:42	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	10/31/16 00:00	JLG	10/28/16 00:00	JLG	G
Specific Conductance	ND		umhos/cm	1	SW846 9050A			10/21/16 23:42	MSA	B
Sulfate	ND		mg/L	1.0	EPA 300.0			10/21/16 09:10	BSL	B
Total Dissolved Solids	ND		mg/L	5	S2540C-11			10/24/16 20:05	KAM	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			10/24/16 10:38	PAG	E
Turbidity	ND		NTU	0.10	S2130B-01			10/21/16 03:49	MSA	B

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ANALYTICAL RESULTS

Workorder: 2183693 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183693002**
Sample ID: **Field Blank**

Date Collected: 10/20/2016 14:01 Matrix: Ground Water
Date Received: 10/20/2016 15:58

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	ND		mg/L	0.11	SW846 6010C	10/25/16 13:15	OTD	10/27/16 14:00	SRT	C1
Iron, Total	ND		mg/L	0.067	SW846 6010C	10/25/16 13:15	OTD	10/27/16 14:00	SRT	C1
Magnesium, Total	ND		mg/L	0.11	SW846 6010C	10/25/16 13:15	OTD	10/27/16 14:00	SRT	C1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	10/25/16 13:15	OTD	10/27/16 14:00	SRT	C1
Potassium, Total	ND		mg/L	0.56	SW846 6010C	10/25/16 13:15	OTD	10/27/16 14:00	SRT	C1
Sodium, Total	ND		mg/L	0.56	SW846 6010C	10/25/16 13:15	OTD	10/27/16 14:00	SRT	C1


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ANALYTICAL RESULTS

Workorder: 2183693 QUARTERLY CWMP-FORM 19Q

Lab ID: **2183693003**

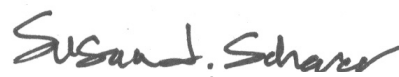
Date Collected: 10/20/2016 15:58

Matrix: Water

Sample ID: **Trip Blank**

Date Received: 10/20/2016 15:58

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:38	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/27/16 10:38	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 10:38	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 10:38	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:38	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:38	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:38	DD	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:38	DD	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 10:38	DD	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:38	DD	A
Toluene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:38	DD	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/27/16 10:38	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/27/16 10:38	DD	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/27/16 10:38	DD	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/27/16 10:38	DD	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)	111		%	62 - 133	SW846 8260B			10/27/16 10:38	DD	A
4-Bromofluorobenzene (S)	92.5		%	79 - 114	SW846 8260B			10/27/16 10:38	DD	A
Dibromofluoromethane (S)	80.9		%	78 - 116	SW846 8260B			10/27/16 10:38	DD	A
Toluene-d8 (S)	89.7		%	76 - 127	SW846 8260B			10/27/16 10:38	DD	A



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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2183693001	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.				
2183693001	2	CWMP012W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2183693002	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.				
2183693002	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.				

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS



COC #
ALSC



1 of 1

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 Quarterly 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: ☒ X-Y mreider@LCSWMA.com Approved By:
Email? ☒ X-Y No: (717) 397-9973
Fax? ☒ X-Y No: (717) 397-9973

Receipt Information (completed by Receiving Lab)

Cooler Temp: 6 Therm ID: 17352

No. of Coolers: Y N Initial

Custody Seals Present? ☒ Y ☒ N

(If present) Seals Intact? ☒ Y ☒ N

Received on Ice? ☒ Y ☒ N

COC Labels Complete/Accurate? ☒ Y ☒ N

Cont. in Good Cond.? ☒ Y ☒ N

Correct Containers? ☒ Y ☒ N

Correct Sample Volumes? ☒ Y ☒ N

Correct Preservation? ☒ Y ☒ N

Headspaces/Volatilities? ☒ Y ☒ N

Courier/Tracking #: ☒ Y ☒ N

ANALYSES/METHOD REQUESTED									
Container Type	AG	AN	CG	PL	PL	PL	PL	PL	PL
40 ml	500 ml	500 ml	40 ml	500 ml	500 ml	500 ml	500 ml	500 ml	500 ml
Preservative	HCl	H2SO4	HCl	H2SO4	HNO3	HNO3	HNO3	HNO3	HNO3
TOC	O-OH	VOC - Form 190	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Total Metals: Ca, Fe, Mn, Mg, K, Na	PH, NO3, Cl, F, SPC, SO4, Turb.	TDS	Alkalinity, HCO3

(as it will appear on the lab report)	Date	Time	G	C	GW	Enter Number of Containers Per Sample or Field Results Below.										Sample/COC Comments
						2	1	2	X	X	1	1	1	1	1	
1. CWM PD12 W	10-20-16	0931	G	GW	2	1	2	X	X	1	1	1	1			
2 Field Blank	1	1406	I	I	1	1	1	1	1	1	1	1	1			
3 Trip Blank	1	1558	I	I	1		1									
4																
5																
6																
7																
8																
9														ALS Field Services: ☐ Pickup ☐ Labor ☐ Composite Sampling ☐ Rental Equipment ☐ Other:		
10																

Project Comments:

Relinquished By / Company Name: ALS Date: 10-20-16 1558

Received By / Company Name: Mark Reider Date: 10-20-16 1558

LOGGED BY (signature): [Signature] Date: 10-20-16

REVIEWED BY (signature): [Signature] Date: 10-20-16

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

Special Processing: ☐ Standard ☐ CLP-like ☐ USACE ☐ Navy ☐ USACE

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

Sample Disposal: ☐ Lab ☒ X ☐ Special

Reportable to PADEP? ☐ Yes ☐ No PWSID # ☐

EDDS: Format Type: ☐