



January 11, 2021

Mr. Kurt Fritz, P.G.
Pennsylvania Department of
Environmental Protection
Bureau of Waste Management
909 Elmerton Avenue
Harrisburg, Pennsylvania 17110-8200

**Re: Fourth Quarter 2020 Environmental Monitoring Report
Waste Management Lancaster Landfill, Facility ID# 101559
Mount Joy Township, Lancaster County, Pennsylvania**

Dear Mr. Fritz:

Enclosed is a compact disk containing analytical data and completed Pennsylvania Department of Environmental Protection (DEP) Forms for the 4th Quarter 2020 Environmental Monitoring Report for the Lancaster Landfill.

Sampling and analysis was performed by Geochemical Testing, Inc. Civil & Environmental Consultants, Inc. reviewed the data and prepared the Letter Report.

Should you have any questions or require any additional information, please contact me at (215) 269-2251.

Respectively Submitted,

A handwritten signature in blue ink that reads 'Jeff Shanks'.

Jeff Shanks, P.G.
Waste Management
Environmental Protection

Enclosure



January 11, 2021

Mr. Jeff Shanks, P.G.
Lancaster Landfill
2487 Cloverleaf Road
Elizabethtown, Pennsylvania 17022

Dear Mr. Shanks:

Subject: Fourth Quarter 2020 Environmental Monitoring Report
Waste Management Lancaster Landfill
Facility ID# 101559
Mount Joy Township, Lancaster County, Pennsylvania
CEC Project 306-896

Civil & Environmental Consultants, Inc. (CEC) has performed a technical review of the 4th Quarter 2020 environmental monitoring results for Lancaster Landfill. Please find enclosed the accompanying compact disk (CD) containing the completed Pennsylvania Department of Environmental Protection (PADEP) Forms 21 and 50, an electronic data deliverable of the analytical data, dust fall laboratory results, and gas monitoring probe results. Geochemical Testing, Inc. completed the sampling event on November 2 – 3, 2020.

INTRODUCTION

Environmental monitoring at Lancaster Landfill consists of nine groundwater monitoring wells, seven surface water monitoring points, four underdrain monitoring points, four gas monitoring points, four dust fall monitoring points, one leachate collection zone monitoring point, and eight leachate detection zone (LDZ) monitoring points.

During the 4th Quarter 2020 environmental monitoring event, nine groundwater monitoring wells, six surface water monitoring points, one leachate collection zone, and six LDZs were sampled and analyzed for PADEP Form 21 or Form 50 parameters. Additionally, field measurements were collected from the four gas monitoring points, the four dust fall monitoring points were sampled and analyzed monthly during the quarter, and two underdrains were sampled during the 4th Quarter 2020 (the other two underdrains were dry).

All samples were submitted to Geochemical Testing in Somerset, Pennsylvania via laboratory carrier under a chain-of-custody seal.

SAMPLING ACTIVITIES

GROUNDWATER

Groundwater samples were collected from MW-101U, MW-104D, MW-105D, MW-106D, MW-107DR, MW-108DR, MW-109DR, MW-110DR, and MW-111DR. A submersible pump or bladder pump and disposable polyethylene tubing was used with low-flow sampling techniques or a bailer was used to purge the groundwater monitoring wells until field parameters stabilized. The samples were then collected and analyzed per the September 2018 Groundwater and Surface Water Sampling and Analysis Plan (GW-SW SAP) prepared by CEC. A sample was also collected from two of the four groundwater discharge pipes (i.e., underdrains) during the 4th Quarter 2020.

SURFACE WATER

During the 4th Quarter 2020, surface water samples were collected from MGSD02, MGSD03, MGSD04, MGSD05, MGSU06, and MGSU07 (MGSU01 was dry) The samples were collected and analyzed in accordance with the September 2018 GW-SW SAP.

LEACHATE

The leachate collection zone was sampled during the 4th Quarter 2020 and analyzed for PADEP Form 50 parameters in accordance with PADEP recommendations communicated to Lancaster Landfill and CEC personnel during the May 30, 2013 meeting at PADEP's Southcentral Regional Office. Each LDZ was scheduled to be sampled during the 4th Quarter 2020 and a sample was collected from LDZ-1, LDZ-2, LDZ-5, LDZ-6, LDZ-7, and LDZ-10 (LDZ-3 and LDZ-4 were dry).

DUST FALL

Dust fall analysis is performed monthly through the placement of four dust fall jars around Lancaster Landfill. The jars are collected monthly, and fresh jars are placed in the holders.

GAS MONITORING

Finally, field measurements of methane, carbon dioxide, oxygen, balance, and percent lower explosive limit (%LEL) were collected from three of the four on-site gas monitoring probes.

DISCUSSION

GROUNDWATER AND SURFACE WATER

As indicated in the documents enclosed, the 4th Quarter 2020 analytical results from groundwater and surface water samples were generally consistent with historical data. Concentrations of some inorganic parameters exhibit slight variability, which is most likely attributed to natural variations in groundwater quality.

LEACHATE

One volatile organic compound (VOC; vinyl chloride) commonly found in landfill leachate was detected at a relatively low concentration in the collection zone sample during the 4th Quarter 2020. The average daily leachate collection zone flow from the landfill during the quarter was 438.6 gallons per acre per day (g/a/d). This flow is generally consistent to historical flow measurements. It should be noted that the flows were calculated using data collected from the entire calendar quarter.

Analytical data from the LDZs were generally consistent to historic results. Additionally, the results from the LDZs did not exceed primary Maximum Contaminant Levels (MCLs), except for chromium at LDZ-7. Chromium was detected in LDZ-7 at 110 micrograms per liter (ug/L), which marginally exceeded the primary MCL of 100 ug/L. In accordance with the PADEP Form 50, groundwater wells downgradient of Cell 7 (i.e., MW-104D, MW-105D, and MW-109DR) will be analyzed during the 1st Quarter 2021 for the parameters listed in the Subtitle D Detection Zone Add On list on the PADEP Form 19. The average daily LDZ flows from the landfill were: 5.1 g/a/d from LDZ 1, 0.03 g/a/d from LDZ 2, 0.1 g/a/d from LDZ 3, 0.3 g/a/d from LDZ 4, 4.9 g/a/d from LDZ 5, 6.3 g/a/d from LDZ 6, 3.0 g/a/d from LDZ 7, and 2.7 g/a/d from LDZ 10. These flows are generally consistent to historical flow measurements.

DUST FALL

The results of the dust fall analysis contained herein indicate no sample exceeded the maximum dust fall of 1.5 mg/cm²/month as specified in PA 25 §131.3 and referenced in PA 25 §273.217, except for Locations A, C, and D during September; each location during October; and Location D during November. It should be noted that method ASTM D 1739-98 MOD is a conservative analysis because it includes organic matter that would otherwise be removed via method ASTM D 1739-82 MOD. When the locations were reanalyzed using method ASTM D 1739-82 MOD, only Location A during October exceeded the 1.5 mg/cm²/month benchmark. Further, a review of the laboratory case narrative indicates these exceedences do not appear to be entirely reflective of dust emissions generated from landfill operations due to organic matter (insects, leaves, etc.) present in each of these samples. During the month of September, Location A was noted as containing brown water with dirt and leaves; Location C was noted as containing black water with dirt, sticks, and leaves; and Location D was noted

Mr. Jeff Shanks, P.G.
CEC Project 306-896
Page 4
January 11, 2021

as containing brown water with dirt, sticks, and leaves. During the month of October, each location was noted as containing brown water with dirt and leaves. During the month of November, Location D was noted as containing light tan water with dirt, leaves, and a dead bird.

GAS MONITORING

Methane gas monitoring at Lancaster Landfill is completed quarterly, and no methane was detected in excess of the lower explosive limit in any probe during the 4th Quarter 2020.

CONCLUSION

CEC reviewed the analytical data from the 4th Quarter 2020 sampling event. Based on this review, it appears the analytical data is generally consistent with historical results. Consequently, continued landfilling activities at Lancaster Landfill do not appear to be altering existing environmental conditions.

Based on current and historical analytical and flow data from the leachate detection zones, the LDZ sampling and analysis schedule proposed in the 4th Quarter 2018 report continues to meet the requirements of the PADEP Form 50 and does not need to be adjusted at this time. In other words, LDZ 3 and LDZ 4 are scheduled to be sampled during the 1st Quarter 2021 because they were dry during the 4th Quarter 2020. Additionally, groundwater wells downgradient of Cell 7 (i.e., MW-104D, MW-105D, and MW-109DR) will be analyzed during the 1st Quarter 2021 for the parameters listed in the Subtitle D Detection Zone Add On list on the PADEP Form 19 because of MCL exceedences in LDZ 7 during the 4th Quarter 2020.

Should you have any questions or comments, please do not hesitate to contact us at 724-327-5200.

Very truly yours,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.



Thomas E. Antonacci, P.G.
Project Manager



Robert C. Dlugos, P.G.
Principal

TEA:RCD/jg
Enclosure

cc: R. Weiss (PADEP) - without enclosure
S. Diffendal (Lancaster Landfill)

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