APPENDIX M1: LEACHATE INFORMATION

Table M1-1 Leachate Analytical Data (March 2022 – March 2025)

Revised Leachate Generation & Storage Calculations

Figure M1-1 Summary of Current Open and Closed Areas at Adams County Sanitary Landfill

10/8/2025 City of Adams Letter to Adams County Landfill Regarding Leachate Treatment at the City of Adams Wastewater Treatment Facility

Table M1-1
Leachate Analytical Data (March 2022 - March 2025)
Adams County Sanitary Landfill - Vertical Expansion Feasibility Report - Addendum No. 1
WDNR License No. 3150
Town Strongs Prairie, Adams County, WI

Parameters		Date						
		3/4/2022	9/8/2022	3/3/2023	9/8/2023	3/6/2024	9/5/2024	3/19/2025
VOCs	1,1,1-Trichloroethane (µg/L)	<1.9	<1.9	<0.38	<3.8	<1.9	<7.6	<1.9
	1,1,2-Trichloroethane (µg/L)	<1.4	<1.4	<0.27	<2.7	<1.4	<5.4	<1.4
	1,1-Dichloroethane (µg/L)	<1.4	<1.4	<0.28	<2.8	<1.4	<5.6	<1.4
	1,1-Dichloroethylene (µg/L)	<2.5	<2.5	<0.49	<4.9	<2.5	<9.8	<2.5
	1,2,4-Trichlorobenzene (µg/L)	<2.5	<2.5	<0.50	<5.0	<2.5	<10	<2.5
	1,2-Dibromo-3-Chloropropane (µg/L)	<2.5	<2.5	<0.49	<4.9	<2.5	<9.8	<2.5
	1,2-Dibromoethane(EDB) (µg/L)	<1.7	<1.7	<0.33	<3.3	<1.7	<6.6	<1.7
	1,2-Dichloroethane (µg/L)	<3.5	<3.5	<0.69	<6.9	<3.5	<14	<3.5
	1,2-Dichloropropane (µg/L)	<1.9	<1.9	<0.37	<3.7	<1.9	<7.4	<1.3
	Acetone (µg/L)	180	51 J	33	<41	<21	360	660
	Benzene (µg/L)	3.8 J	<2.4	1.5 J	4.7 J	<2.4	<8.0	6.8 J
	Bromodichloromethane (µg/L)	<3.8	<3.8	<0.76	<7.6	<3.8	<15	<0.4
	Bromomethane (µg/L)	<3.6	<3.6	<0.72	<7.2	<3.6	<14	<2.5
	Carbon Disulfide (µg/L)	<4.2	<4.2	<0.83	<8.3	<4.2	<17	8.9 J
	Carbon Tetrachloride (µg/L)	<1.9	<1.9	<0.37	<3.7	<1.9	<7.4	<1.9
	Chlorobenzene (µg/L)	<1.9	<1.9	<0.37	<3.7	<1.9	<7.4	1.5 J
	Chloroethane (µg/L)	<5.5	<5.5	<1.1	<11.0	<5.5	<22	<5.5
	Chloroform (µg/L)	<2.3	<2.3	<0.46	<4.6	<2.3	<9.2	<1.5
	Chloromethane (µg/L)	<6.5	<6.5	<1.3	<13.0	<6.5	<26	<2
	Cis-1,2-Dichloroethene (µg/L)	<2.1	<2.1	<0.41	<4.1	<2.1	<8.2	<2.1
	Cis-1,3-Dichloropropene (µg/L)	<1.7	<1.7	<0.34	<3.4	<1.7	<6.8	<1.3
	Dibromochloromethane (µg/L)	<1.8	<1.8	<0.36	<3.6	<1.8	<7.2	<1.3
	Dibromomethane (µg/L)	<2.3	<2.3	<0.45	<4.5	<2.3	<9.0	<2.3
	Dichlorodifluoromethane (µg/L)	<3.2	<3.2	<0.63	<6.3	<3.2	<13	<3.2
	Dichloromethane (µg/L)	<6.0	<6.0	<1.2	<12.0	<6.0	<24	<6
	Ethylbenzene (µg/L)	5.0 J	<2.1	2.7	4.4 J	<2.1	<8.4	9.1
	Fluorotrichloromethane (µg/L)	<2.1	<2.1	<0.41	<4.1	<2.1	<8.2	<2.1
	Hexachlorobutadiene (µg/L)	<2.9	<2.9	<0.57	<5.7	<2.9	<11	<2.9

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Table M1-1 (Cont.)
Leachate Analytical Data (March 2022 - March 2025)
Adams County Sanitary Landfill - Vertical Expansion Feasibility Report - Addendum No. 1
WDNR License No. 3150
Town Strongs Prairie, Adams County, WI

Parameters		Date						
		3/4/2022	9/8/2022	3/3/2023	9/8/2023	3/6/2024	9/5/2024	3/19/2025
VOCs (Cont.)	M-Dichlorobenzene (µg/L)	<1.5	<1.5	<0.30	<3.0	<1.5	<6.0	<1.5
	Methyl Ethyl Ketone (Mek) (µg/L)	200	<15	26	<29	<15	910	740
	Methyl Tert-Butyl Ether (MTBE) (µg/L)	<1.4	<1.4	<0.28	<2.8	<1.4	<5.6	<1.4
	Naphthalene (µg/L)	3.1 J	<1.8	1.3	12	<1.8	<7.0	7.3 J
	O-Dichlorobenzene (µg/L)	<1.8	<1.8	<0.36	<3.6	<1.8	<7.2	<1.8
	P-Dichlorobenzene (µg/L)	<1.7	<1.7	0.56 J	<3.3	<1.7	<6.6	2.5 J
	Styrene (µg/L)	<1.7	<1.7	<0.33	<3.3	<1.7	<6.6	<1.7
	Tetrachloroethylene (µg/L)	<2.8	<2.8	<0.55	<5.5	<2.8	<11	<1.3
	Tetrahydrofuran (µg/L)	770	570	120	830	340	1100	1100
	Toluene (µg/L)	3.6 J	<1.4	1.7	<2.7	<1.4	680	11
	Trans-1,2-Dichloroethene (µg/L)	<1.8	<1.8	<0.35	<3.5	<1.8	<7.0	<1.8
	Trans-1,3-Dichloropropene (µg/L)	<2.9	<2.9	<0.57	<5.7	<2.9	<11	<2.9
	Tribromomethane (µg/L)	<2.5	<2.5	<0.50	<5.0	<2.5	<10	<2.5
	Trichloroethylene (TCE) (µg/L)	<2.0	<2.0	<0.39	<3.9	<2.0	<7.8	<1.3
	Vinyl Chloride (µg/L)	<0.75	<0.75	0.20 J	<1.5	<0.75	<3.0	<0.6
	Xylene, M & P- (µg/L)	9.8 J	<3.7	4.3	12 J	<3.7	<15	24
	Xylene, O- (µg/L)	6.0 J	<3.6	2.4	<7.2	<3.6	<14	12
SVOCs	1,2,4-Trichlorobenzene (µg/L)	<0.28	<0.28	<0.28	<2.8	<0.28	<0.28	<3.1
	1-Methylnaphthalene (µg/L)	<0.24	<0.24	0.28 J	<2.4	<0.24	<0.24	<2.7
	2,3,4,6-Tetrachlorophenol (µg/L)	<1.9	<1.9	<1.9	<19	<1.9	<1.9	<22
	2,4,5-Trichlorophenol (µg/L)	<1.8	<1.8	<1.8	<18	<1.8	<1.8	<20
	2,4,6-Trichlorophenol (µg/L)	<1.6	<1.6	<1.6	<16	<1.6	<1.6	<18
	2,4-Dichlorophenol (µg/L)	<1.3	<1.3	<1.3	<13	<1.3	<1.3	<14
	2,4-Dimethylphenol (µg/L)	<1.5	<1.5	<1.5	<15	<1.5	<1.5	<17
	2,4-Dinitrophenol (µg/L)	<3.2	<3.2	<3.2	<32	<3.2	<3.2	<35
	2,4-Dinitrotoluene (µg/L)	<0.24	<0.24	<0.24	<2.4	<0.24	<0.24	<2.7
	2,6-Dinitrotoluene (µg/L)	<0.29	<0.29	<0.29	<2.9	<0.29	<0.29	<3.2
	2-Chloronaphthalene (µg/L)	<0.30	<0.30	<0.30	<3	<0.30	<0.30	<3.3

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Table M1-1 (Cont.)
Leachate Analytical Data (March 2022 - March 2025)
Adams County Sanitary Landfill - Vertical Expansion Feasibility Report - Addendum No. 1
WDNR License No. 3150
Town Strongs Prairie, Adams County, WI

Parameters		Date						
		3/4/2022	9/8/2022	3/3/2023	9/8/2023	3/6/2024	9/5/2024	3/19/2025
SVOCs (Cont.)	2-Chlorophenol (µg/L)	<1.3	<1.3	<1.3	<13	<1.3	<1.3	<15
	2-Methylnaphthalene (µg/L)	<0.23	<0.23	0.35 J	<2.3	<0.23	<0.23	<2.6
	2-Nitroaniline (µg/L)	<0.63	<0.63	<0.63	<6.3	<0.63	<0.63	<7
	2-Nitrophenol (µg/L)	<1.3	<1.3	<1.3	<13	<1.3	<1.3	<14
	3,3'-Dichlorobenzidine (µg/L)	<0.63	<0.63	<0.63	<6.3	<0.63	<0.63	<7.1
	3-Nitroaniline (µg/L)	<0.96	<0.96	<0.96	<9.6	<0.96	<0.96	<11
	4,6-Dinitro-O-Cresol (µg/L)	<1.3	<1.3	<1.3	<13	<1.3	<1.3	<14
	4-Bromophenyl Phenyl Ether L (µg/L)	<0.24	<0.24	<0.24	<2.4	<0.24	<0.24	<2.7
	4-Chlorophenylphenyl Ether (µg/L)	<0.34	<0.34	<0.34	<3.4	<0.34	<0.34	<3.8
	4-Nitroaniline (µg/L)	<0.49	<0.49	<0.49	<4.9	<0.49	<0.49	<5.5
	4-Nitrophenol (µg/L)	<1.9	<1.9	<1.9	<19	<1.9	<1.9	<22
	Acenaphthene (µg/L)	<0.27	<0.27	<0.27	<2.7	<0.27	<0.27	<3
	Acenaphthylene (µg/L)	<0.29	<0.29	<0.29	<2.9	<0.29	<0.29	<3.2
	Acetophenone (µg/L)	6.0	1.6 J	1.7 J	<4.4	<0.44	4.6	9.7 J
	Anthracene (µg/L)	<0.38	<0.38	<0.38	<3.8	<0.38	<0.38	<4.3
	Benz(A)Anthracene (µg/L)	<0.36	<0.36	<0.36	<3.6	<0.36	<0.36	<4
	Benzo(A)Pyrene (µg/L)	<3.3	<3.3	<3.3	<33	<3.3	<3.3	<3.7
	Benzo(B)Fluoranthene (µg/L)	<3.6	<3.6	<3.6	<36	<3.6	<3.6	<4
	Benzo(Ghi)Perylene (µg/L)	<3.6	<3.6	<3.6	<36	<3.6	<3.6	<4
	Benzo(K)Fluoranthene (µg/L)	<2.40	<2.40	<2.40	<24	<2.40	<2.40	<2.7
	Benzyl Alcohol (µg/L)	<0.48	<0.48	<0.48	<4.8	<0.48	<0.48	<5.4
	Bis(2-Chloroethoxy)Methane (µg/L)	<0.31	<0.31	<0.31	<3.1	<0.31	<0.31	<3.4
	Bis(2-Chloroethyl) Ether (µg/L)	<0.31	<0.31	<0.31	<3.1	<0.31	<0.31	<3.4
	Bis(2-Chloroisopropyl) Ether (µg/L)	<0.38	<0.38	<0.38	<3.8	<0.38	<0.38	<4.3
	Bis(2-Ethylhexyl) Phthalate (Dehp) (µg/L)	1.2 J	0.67 J	0.38 J	<2.5	<0.25	1.0 J	<2.8
	Butyl Benzyl Phthalate (µg/L)	<0.32	<0.32	<0.32	<3.2	<0.32	<0.32	<3.5
	Chrysene (µg/L)	<0.35	<0.35	<0.35	<3.5	<0.35	<0.35	<3.9
	Dibenz(A,H)Anthracene (µg/L)	<3.5	<3.5	<3.5	<35	<3.5	<3.5	<3.9

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Table M1-1 (Cont.)
Leachate Analytical Data (March 2022 - March 2025)
Adams County Sanitary Landfill - Vertical Expansion Feasibility Report - Addendum No. 1
WDNR License No. 3150
Town Strongs Prairie, Adams County, WI

Parameters		Date						
		3/4/2022	9/8/2022	3/3/2023	9/8/2023	3/6/2024	9/5/2024	3/19/2025
SVOCs (Cont.)	Dibenzofuran (µg/L)	<0.31	<0.31	<0.31	<3.1	<0.31	<0.31	<3.4
	Diethyl Phthalate (µg/L)	2.0	1.0 J	0.49 J	<2.8	<0.28	<0.28	<3.1
	Dimethyl Phthalate (µg/L)	<0.31	<0.31	<0.31	<3.1	<0.31	<0.31	<3.4
	Di-N-Butyl Phthalate (µg/L)	0.65 J	0.52 J	<0.34	<3.4	0.51 J	0.80 J	<3.8
	Di-N-Octyl Phthalate (µg/L)	<0.59	<0.59	<0.59	<5.9	<0.59	<0.59	<6.6
	Fluoranthene (µg/L)	<0.26	<0.26	<0.26	<2.6	<0.26	<0.26	<2.9
	Fluorene (µg/L)	<0.24	<0.24	<0.24	<2.4	<0.24	<0.24	<2.7
	Hexachlorobenzene (µg/L)	<0.28	<0.28	<0.28	<2.8	<0.28	<0.28	<3.1
	Hexachlorobutadiene (µg/L)	<0.28	<0.28	<0.28	<2.8	<0.28	<0.28	<3.1
	Hexachlorocyclopentadiene (µg/L)	<0.31	<0.31	<0.31	<3.1	<0.31	<0.31	<3.4
	Hexachloroethane (µg/L)	<0.30	<0.30	<0.30	<3.0	<0.30	<0.30	<3.3
	Indeno(1,2,3-Cd)Pyrene (µg/L)	<3.8	<3.8	<3.8	<38	<3.8	<3.8	<4.2
	Isophorone (µg/L)	<0.25	9.5	<0.25	<2.5	<0.25	<0.25	<2.8
	M-Dichlorobenzene (µg/L)	<0.23	<0.23	<0.23	<2.3	<0.23	<0.23	<2.6
	Naphthalene (µg/L)	1.7 J	1.9	4.2	<3.4	<0.34	3.5	8 J
	Nitrobenzene (µg/L)	<0.29	<0.29	<0.29	<2.9	<0.29	<0.29	<3.2
	N-Nitrosodimethylamine (µg/L)	<0.27	<0.27	<0.27	<2.7	<0.27	<0.27	<3
	N-Nitrosodi-N-Propylamine (µg/L)	<0.45	<0.45	<0.45	<4.5	<0.45	<0.45	<5.1
	O-Cresol (2-Methylphenol) (µg/L)	<1.4	<1.4	<1.4	<14	<1.4	14	<16
	O-Dichlorobenzene (µg/L)	<0.22	<0.22	<0.22	<2.2	<0.22	<0.22	<2.5
	P-Chloro-M-Cresol (µg/L)	<1.3	<1.3	<1.3	<13	<1.3	<1.3	<14
	P-Dichlorobenzene (µg/L)	0.64 J	1.1 J	1.2 J	<2.6	<0.26	1.0 J	<2.9
	Pentachlorophenol (Pcp) (µg/L)	<1.5	<1.5	<1.5	<15	<1.5	<1.5	<17
	Phenanthrene (µg/L)	<0.24	<0.24	<0.24	<2.4	<0.24	<0.24	<2.7
	Phenol (µg/L)	<1.9	<1.9	<1.9	<19	<1.9	20	62 J
	Pyrene (µg/L)	<0.31	<0.31	<0.31	<3.1	<0.31	<0.31	<3.4
	Pyridine (µg/L)	<0.96	<0.96	<0.96	<9.6	<0.96	<0.96	<11

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Table M1-1 (Cont.)
Leachate Analytical Data (March 2022 - March 2025)
Adams County Sanitary Landfill - Vertical Expansion Feasibility Report - Addendum No. 1
WDNR License No. 3150
Town Strongs Prairie, Adams County, WI

Parameters		Date						
		3/4/2022	9/8/2022	3/3/2023	9/8/2023	3/6/2024	9/5/2024	3/19/2025
MSW Leachate Monitoring Parameters	pH, Field (Standard Units)	8.19	8.39	8.01	7.51	8.14	8.33	7.87
	Specific Conductance, Field (µmho/cm at 25° C)	11540	7570	5730	2740	4720	10310	2770
	Alkalinity, Total (mg/L as CaCO3)	4500	2800	2200	4600	1600	3900	4100
	Biochemical Oxygen Demand, 5 day 20°C (mg/L)	54	48	63	120	14	160	470
	Cadmium, Total (µg/L Cd)	<0.42	<0.42	<0.42	1.9	<0.41	<0.41	<0.41
	Chemical Oxygen Demand, Unfiltered (mg/L)	680	730	680	1300	400	1300	1400
	Chloride, Total or Dissolved (mg/L Cl)	1300	830	560	1400	480	1300	1300
	Hardness, Total (mg/L as CaCO3)	1000	808	665	1590	505	919	1110
	Iron, Total (mg/L Fe)	27.8	7.43	3.75	43.8	2.32	8.86	1.33
	Lead, Total (µg/L Pb)	2.4 J	5.7	2.2 J	47	23.2	3.7 J	1.7 J
	Manganese, Total (µg/L Mn)	761	1290	1300	2190	393	910	1160
	Mercury, Total (µg/L Hg)	<0.02	<0.02	<0.02	0.024 J	<0.02	0.028 J	<0.02
	Nitrogen, Ammonia, Total (mg/L as N)	640	460	340	770	240	670	130
	Nitrogen, Kjeldahl, Total (mg/L as N)	680	440	340	880	260	720	720
	Sodium, Total (mg/L Na)	1010	608	443	1070	459	844	871
	Solids, Total Suspended (mg/L)	450	58	19	2600	46	150	12
	Sulfate, Total (mg/L SO4)	170	95	150	91	120	110	40

Notes:

Created by: AY

Checked by: AC

Data provided on this summary table was retrieved from the WDNR GEMS database.

J = lab qualifier indicating the result value was between the laboratory limit of detection and limit of quantitation and is an estimate.

< = the analyte was not detected at a concentration at or above the laboratory's method detection limit (i.e. < MDL).

In accordance with the February 2019 Conditional Plan of Operation Approval for the Adams County Landfill & Recycling Center Horizontal Expansion, semi-annual monitoring is required at the Leachate Tank for MSW leachate sampling parameters and VOCs, and annual monitoring is required for SVOCs. Additionally, MSW leachate sampling parameters (pH, BOD, COD, ammonia-N, specific conductance, alkalinity, and hardness) are measured quarterly.

Acroynms:

VOCs = Volatile Organic Compounds

SVOCs = Semivolatile Organic Compounds

mg/L = milligrams per liter

µg/L = micrograms per liter

TETRA TECH

CLIENT:	Adams County Solid Waste Department	PRE:	AWY
PROJECT:	Adams County Vertical Expansion Feasibility Report – Addendum No. 1	CHK:	AGC
SUBJECT:	Leachate Generation & Storage	DATE:	6/10/2025
PROJECT NO.	4251274		

8040 Excelsior Drive, Suite 305
Madison, WI 53717
(877) 294-9070
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LEACHATE GENERATION & STORAGE CALCULATIONS

Purpose: To estimate the daily volume of leachate that will be collected during operation and after closure at the Adams County Sanitary Landfill (Landfill), including the currently permitted Landfill and the proposed Vertical Expansion. To determine the minimum capacity of leachate storage needed to contain the volume of leachate generated over a 4-day period, in accordance with NR 504.06(5)(o).

Approach: Two conditions have been evaluated for the proposed Vertical Expansion leachate generation. The first condition is considered the worst-case scenario, which is the maximum open, uncapped area at one time. The point in time identified as having the most open area will be the worst-case scenario for leachate generation and therefore will result in the most conservative approach to determining the maximum amount of leachate generated during the operational life of the existing Landfill and proposed Vertical Expansion. The second condition considers all landfill areas, including the proposed Vertical Expansion area, as fully capped, which would generate the least amount of leachate. Future closure areas assumed a geocomposite final cover. Figure M1-1, provided as an attachment to this calculation sheet, provides a summary of the current open and closed areas for Adams County.

The leachate generations rates provided in NR 512.12(3) were used to estimate the quantity of leachate generated.

NR 512.12(3) provides the following leachate generation rates:

- 6 inches / year for all unclosed areas that have a composite liner
- 1 inch / year for all closed areas that have a composite cover

Estimated Leachate Generation Rate Formula

Leachate Generation Rate = (Area, acres) x (NR 512 Generation Rate, in/yr) x (43,560 sf/acre) / (12 in/ft) x (7.48 gal/cf) / (365 day/yr)

Leachate Generation Rate x 4 to calculate the 4-day storage volume to determine required storage volume.

References: Adams County Sanitary Landfill Vertical Expansion Feasibility Report dated February 2023.

Attachments: Figure M1-1

Assumptions: Leachate generation rates will be between these two operating conditions.

Condition 1: The worst-case scenario assumes that no further capping activities will occur until final waste grades are reached across the Landfill (existing and proposed Vertical Expansion). The currently constructed final cap area of the Landfill is 5.74 acres over liner Phase 1 and Phase 2 with a small portion over Phase 3. All 5.74 acres

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CLIENT:	Adams County Solid Waste Department	PRE:	AWY
PROJECT:	Adams County Vertical Expansion Feasibility Report – Addendum No. 1	CHK:	AGC
SUBJECT:	Leachate Generation & Storage	DATE:	6/10/2025
PROJECT NO.	4251274		

of the capped area have a geocomposite final cover (1-inch per year infiltration). The total open uncapped area is 16.14 acres (6 inches per year infiltration) which includes all the current constructed uncapped area (through Phase 6) and the proposed Vertical Expansion. The proposed Vertical Expansion does not add any horizontal volume.

Condition 2: The fully closed scenario includes the currently approved Landfill and the proposed Vertical Expansion for a total closed area of 21.88 acres at 1-inch per year infiltration.

Calculations: The following table summarizes the two conditions described above and the resulting leachate generation rates using the formula provided above.

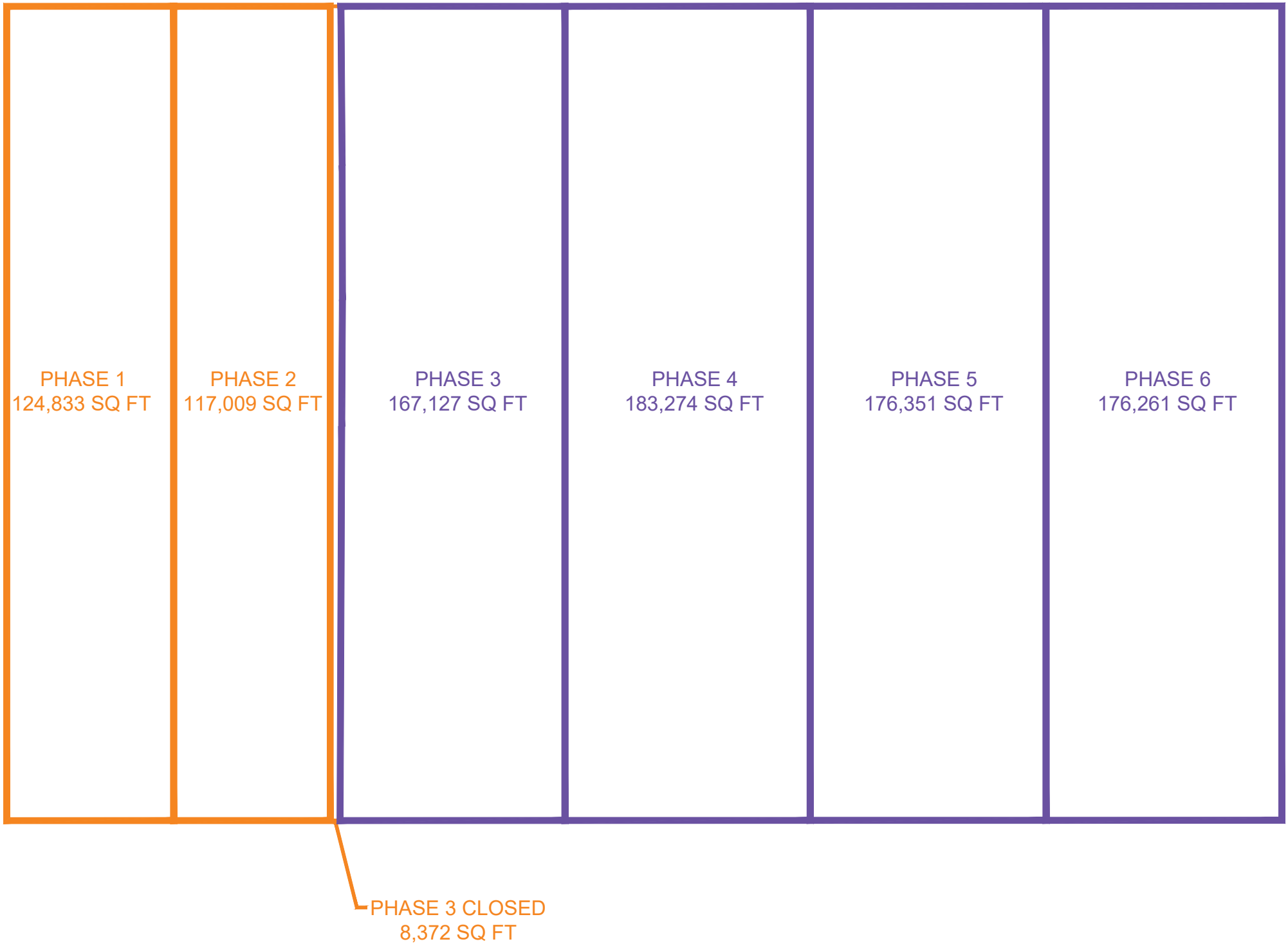
Landfill Cover Status	Area in Cover Status (acres)	Infiltration (inches/year)	Leachate Generation Rate (gallons/day)
Worst-Case			
Open	16.14	6	7,204
Closed (Geocomposite)	5.74	1	427
Total Worst-Case			**7,631**
Fully Capped			
Open	0	6	0
Closed (Geocomposite)	21.88	1	1,628
Total Fully Capped			**1,628**

Results: The estimated maximum leachate generation rate is approximately 7,631 gallons per day (or 2,785,235 gallons per year). The resulting 4-day storage volume required is approximately 30,524 gallons.

During post-closure conditions, the calculated leachate generation rate is approximately 1,628 gallons per day. The resulting 4-day storage volume required is approximately 6,512 gallons.

There is currently one underground storage tank (30,000 gallons of storage) and one above ground storage tank (35,000 gallons of storage) at Adams County with a combined total volume capacity of 65,000 gallons. The above ground storage tank was installed in late 2023. There is sufficient storage volume currently available at Adams County under the both the worst-case condition and the fully capped condition to meet the 4-day storage requirement.

Figure M1-1 - Summary of Current Open and Closed Areas at Adams County Sanitary Landfill



Wastewater Treatment Plant-Department of Public Works
1002 W. Lake St
Friendship, WI 53934
(608) 472-6839
Service Provided Weekdays 7:00 AM-3:00 PM

10/8/2025

Ruben Cuarenta
Superintendent of Operations
Adams County Landfill
1420 State Road 21
Friendship, WI 53934

Regarding Leachate treatment at the City of Adams Wastewater Treatment Facility,

At this time the City of Adams is accepting leachate from the Adams County Landfill, so long as it does not negatively affect total treatment for all wastewater. The frequency and volume are determined as conditions in weather and internal treatment change.

Brian Shekels
City of Adams WWTF