Appendix K

Leachate Information

K1 Leachate Characterization
K2 MMSD Conditional Leachate Acceptance Letter
K3 Leachate Generation Calculations

K1 Leachate Characterization

Dane County Landfill No. 2 Rodefeld
Lift Station #1, 2023 Leachate Pumped Quantities

READING DATE	FLOW METER READING	DAYS IN PERIOD	GALLONS/ PERIOD	GALLONS/ DAY	MONTH	DAYS IN MONTH	GALLONS/ MONTH
01/03/23	2,015,966.0						
02/01/23	2,026,068.0	29	1,010,200	34,834.48	January	31	1,079,869
03/01/23	2,039,120.0	28	1,305,200	46,614.29	February	28	1,305,200
03/31/23	2,051,840.0	30	1,272,000	42,400.00	March	31	1,314,400
05/01/23	2,065,102.0	31	1,326,200	42,780.65	April	30	1,283,419
06/08/23	2,073,813.0	38	871,100	22,923.68	May	31	710,634
06/30/23	2,080,246.0	22	643,300	29,240.91	June	30	877,227
08/01/23	2,094,983.0	32	1,473,700	46,053.13	July	31	1,427,647
09/05/23	2,107,451.0	35	1,246,800	35,622.86	August	31	1,104,309
10/02/23	2,119,302.0	27	1,185,100	43,892.59	September	30	1,316,778
11/01/23	2,129,743.0	30	1,044,100	34,803.33	October	31	1,078,903
12/01/23	2,133,757.0	30	401,400	13,380.00	November	30	401,400
01/02/24	2,140,570.0	32	681,300	21,290.63	December	31	660,009
TOTAL/AVG	124,604.0	364	12,460,400	34,231.87		365	12,559,796

Dane County Landfill No. 2 Rodefeld
Lift Station #1, 2021 - 2023 Leachate Results

Parameter Group	Parameter	3/11/2021	6/9/2021	7/12/2021	9/13/2021	12/15/2021	3/16/2022	6/9/2022	9/7/2022	12/7/2022	3/8/2023	6/1/2023	9/19/2023	12/6/2023
Field	ph-Field (standard units)	7.21	7.62	7.29	7.24	7.39	6.52	7.32	8.43	7.59	7.34	8.24	7.21	6.96
Field	Specific conductance-field (umhos/cm @ 25c	3769	12241	12188	5670	11968	6105	5486	14732	9825	8433	14078	18670	1086.5
Field	Temperature, water (degrees centigrade)	16.4	18	19.4	21.5	15.7	15.5	18.6	22	15.4	14.5	18.3	21	13
BOD/COD	BOD 5-day carb (mg/l)	--	--	531	222 M	176	--	72	616	302	82.1	478	281	--
BOD/COD	BOD, 5 day (mg/l)	59.8 M	200	--	212	199 M	710 M	65	649 M	384	157	332	454	<200 M
BOD/COD	COD, unfiltered (mg/l)	424	1750	--	1930	1600	1470	665	1870	769	821	2250	2670	4070
Inorganic	Alkalinity, total (mg/l as CaCO3)	1400	<3.7	--	2240	4230	1700	2180	2570	557	2060	5500	1050	1210
Inorganic	Antimony, total (ug/l Sb)	--	36	--	--	--	--	15	--	--	--	20.8 J	--	--
Inorganic	Arsenic, total (ug/l As)	--	230	--	--	--	--	110	--	--	--	236	--	--
Inorganic	Barium, total (ug/l Ba)	--	470	--	--	--	--	310	--	--	--	745	--	--
Inorganic	Beryllium, total (ug/l as Be)	--	<0.89	--	--	--	--	<0.53	--	--	--	1.3 J	--	--
Inorganic	Cadmium, total (ug/l as Cd)	--	<0.43	--	--	--	--	0.29 J	--	--	--	<2.7	--	<6.6
Inorganic	Chloride, total (mg/l as Cl)	--	1430	--	--	--	--	606	--	--	--	1650	--	334
Inorganic	Chromium, total (ug/l Cr)	--	270	--	--	--	--	4100	--	--	--	364	--	177
Inorganic	Cobalt, total (ug/l Co)	--	46	--	--	--	--	21	--	--	--	132	--	--
Inorganic	Copper, total (ug/l Cu)	--	21	--	--	--	--	13	--	--	--	119	--	--
Inorganic	Fluoride, total (mg/l as F)	--	<0.067	--	--	--	--	<0.067	--	--	--	<4.8	--	--
Inorganic	Hardness, total (mg/l as CaCO3)	781	1210	--	675	1200	1000	1030	749	304	1610	1730	2650	2190
Inorganic	Iron, total (mg/l as Fe)	--	5	--	--	--	--	5.3	--	--	--	62.7	--	73.5
Inorganic	Lead, total (ug/l Pb)	--	<2.7	--	--	--	--	1	--	--	--	55.2	--	<29.6
Inorganic	Manganese, total (ug/l as Mn)	--	460	--	--	--	--	880	--	--	--	1490	--	3170
Inorganic	Mercury, total (ug/l Hg)	--	<0.098	--	--	--	--	<0.098	--	--	--	0.12 J	--	<0.066
Inorganic	Nickel, total (ug/l ni)	--	190	--	--	--	--	1300	--	--	--	344	--	--
Inorganic	Nitrite + nitrate, total 1 det. (mg/l as N)	--	<0.21	--	--	--	--	0.071 J	--	--	--	5.3	--	2.1 J
Inorganic	Nitrogen, ammonia, total (mg/l as N)	148	791	--	122	259	139	242	178	6.9	264	882	612	135
Inorganic	Nitrogen, kjeldahl, total (mg/l as N)	--	--	426	170	583	--	274	346	12.9	214	671	583	154
Inorganic	Phosphorus, total (mg/l as P)	2.1	11.5	--	6.1	3.9	2.8	1.3	10.3	7.2	3.5	15.9	11.7	146
Inorganic	Selenium, total (ug/l as Se)	--	<5.3	--	--	--	--	1.1 J	--	--	--	<24.5	--	--
Inorganic	Silver, total (ug/l as Ag)	--	<1.5	--	--	--	--	<0.12	--	--	--	<6.4	--	--
Inorganic	Sodium, total (mg/l as Na)	--	2060	--	--	--	--	507	--	--	--	1780	--	2080
Inorganic	Sulfate, total (mg/l as SO4)	--	1250	--	--	--	--	321	--	--	--	847	--	3930
Inorganic	Suspended solids, total (mg/l)	23.8	110	--	18	49	128	473	980	81	432	9180	69.6	100
Inorganic	Thallium, total (ug/l Tl)	--	<3.6	--	--	--	--	<0.57	--	--	--	<20.1	--	--
Inorganic	Vanadium, total (ug/l V)	--	82	--	--	--	--	31	--	--	--	175	--	--
Inorganic	Zinc, total (ug/l as Zn)	--	170	--	--	--	--	91	--	--	--	482	--	6390

Dane County Landfill No. 2 Rodefeld
Lift Station #1, 2021 - 2023 Leachate Results

Parameter Group	Parameter	3/11/2021	6/9/2021	7/12/2021	9/13/2021	12/15/2021	3/16/2022	6/9/2022	9/7/2022	12/7/2022	3/8/2023	6/1/2023	9/19/2023	12/6/2023
VOC	1,1,1-Trichloroethane (ug/l)	--	<1.9	--	--	<1.9	--	<0.38	<38	<7.6	--	<1.2	<3	<3
VOC	1,1,2-Trichloroethane (ug/l)	--	<1.8	--	--	<1.8	--	<0.35	<35	<7	--	<1.4	<3.4	<3.4
VOC	1,1-Dichloroethane (ug/l)	--	<2.1	--	--	<2.1	--	1.2	<41	<8.2	--	<1.2	<3	<3
VOC	1,1-Dichloroethylene (ug/l)	--	<2	--	--	<2	--	<0.39	<39	<7.8	--	<2.3	<5.8	<5.8
VOC	1,2-Dibromo-3-Chloropropane (ug/l)	--	<10	--	--	<10	--	<2	<200	<40	--	<9.5	<23.7	<23.7
VOC	1,2-Dibromoethane (EDB) (ug/l)	--	<1.9	--	--	<1.9	--	<0.39	<39	<7.7	--	<1.2	<3.1	<3.1
VOC	1,2-Dichloroethane (ug/l)	--	<2	--	--	<2	--	9.6	<39	41	--	<1.2	7.6 J	<2.9
VOC	1,2-Dichloropropane (ug/l)	--	<2.1	--	--	<2.1	--	0.77 J	<43	<8.6	--	<1.8	<4.5	<4.5
VOC	Acetone (ug/l)	--	2500	--	--	2900	--	650	30000	16000	--	1330	2890	<86.4
VOC	Benzene (ug/l)	--	1.4 J	--	--	2.8	--	1.2	15 J	9.7 J	--	4.4	4.7 J	<3
VOC	Bromodichloromethane (ug/l)	--	<1.9	--	--	<1.9	--	<0.37	<37	<7.4	--	<1.7	<4.2	<4.2
VOC	Bromomethane (ug/l)	--	<4	--	--	<4	--	<0.8	<80	<16	--	<4.8	<11.9	<11.9
VOC	Carbon disulfide (ug/l)	--	2.7 J	--	--	<2.2	--	<0.45	<45	<9	--	14.3	<6.5	18.5
VOC	Carbon tetrachloride (ug/l)	--	<1.9	--	--	<1.9	--	<0.38	<38	<7.7	--	<1.5	<3.7	<3.7
VOC	Chlorobenzene (ug/l)	--	<1.9	--	--	<1.9	--	<0.39	<39	<7.7	--	<3.4	<8.6	<8.6
VOC	Chloroethane (ug/l)	--	<2.5 M	--	--	<2.5 M	--	<0.51	<51	<10	--	<5.5	<13.8	<13.8
VOC	Chloroform (ug/l)	--	<1.9	--	--	2.4 J	--	<0.37	<37	<7.4	--	<2	<5	<5
VOC	Chloromethane (ug/l)	--	<1.6	--	--	<1.6	--	<0.32 M	<32	<6.4	--	<6.5	<16.4	<16.4
VOC	cis-1,2-Dichloroethene (ug/l)	--	<2	--	--	<2	--	<0.41	<41	<8.2	--	<1.9	<4.7	<4.7
VOC	cis-1,3-Dichloropropene (ug/l)	--	<2.1	--	--	<2.1	--	<0.42	<42	<8.3	--	<0.95	<2.4	<2.4
VOC	Dibromochloromethane (ug/l)	--	<2.4	--	--	<2.4	--	<0.49	<49	<9.8	--	<10.6	<26.4	<26.4
VOC	Dibromomethane (ug/l)	--	<1.4	--	--	<1.4	--	<0.27	<27	<5.4	--	<4	<9.9	<9.9
VOC	Dichlorodifluoromethane (ug/l)	--	<3.4	--	--	<3.4	--	<0.67	<67	<13	--	<1.8	<4.6	<4.6
VOC	Dichloromethane (ug/l)	--	<8.2	--	--	<8.2	--	3.4 JB	<160	<33	--	<1.3	<3.2	<3.2
VOC	Ethylbenzene (ug/l)	--	11	--	--	17	--	7.6	120	41	--	33.7	44.4	49.5
VOC	Fluorotrichloromethane (ug/l)	--	<2.1	--	--	<2.1	--	0.47 J	<43	<8.5	--	<1.7	<4.2	<4.2
VOC	m-Dichlorobenzene (ug/l)	--	<2	--	--	<2	--	<0.4	<40	<8	--	<1.4	<3.5	<3.5
VOC	Methylethylketone (ug/l)	--	1900	--	--	2600	--	560	25000	11000	--	1230	2900	<65.2
VOC	Methyl-tert-butyl ether (ug/l)	--	<2	--	--	<2	--	2.2	<39	<7.9	--	<4.5	<11.3	<11.3
VOC	Naphthalene (ug/l)	--	16	--	--	13	--	5.9 B	140	40	--	42.6	48.9 J	52.1
VOC	o-Dichlorobenzene (ug/l)	--	<1.7	--	--	<1.7	--	<0.33	<33	<6.7	--	<1.3	<3.3	<3.3
VOC	p-Dichlorobenzene (ug/l)	--	14	--	--	16	--	7.5	89 J	27	--	23.2	29.1	36
VOC	Styrene (ug/l)	--	<1.9	--	--	<1.9	--	<0.39	<39	<7.7	--	<1.4	<3.6	<3.6
VOC	Tetrachloroethylene (ug/l)	--	1.9 J	--	--	<1.9	--	0.94 J	<37	26	--	2 J	<4.1	<4.1
VOC	Tetrahydrofuran (ug/l)	--	2200	--	--	2000	--	1000	5000	3800	--	1020	2140	3230
VOC	Toluene (ug/l)	--	19	--	--	16	--	11	180	140	--	54.8	65.5	50.5
VOC	trans-1,2-Dichloroethene, total (ug/l)	--	<1.7	--	--	<1.7	--	2	<35	<7	--	<2.1	<5.3	<5.3
VOC	trans-1,3-Dichloropropene (ug/l)	--	<1.8	--	--	<1.8	--	<0.36	<36	<7.2	--	<1.1	<2.7	<2.7
VOC	Tribromomethane (ug/l)	--	<2.4	--	--	<2.4	--	<0.48	<48	<9.7	--	<1.7	<4.3	<4.3
VOC	Trichloroethylene (ug/l)	--	<0.82	--	--	0.85 J	--	0.83	<16	<3.3	--	<1.3	<3.2	4.2 J
VOC	Vinyl chloride (ug/l)	--	<1	--	--	1.5 J	--	0.82 J	<20	<4.1	--	<0.7	<1.7	<1.7
VOC	Xylenes (ug/l)	--	63	--	--	76	--	34	410	150	--	118	154	206

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SVOC	1,2,4-Trichlorobenzene (ug/l)	--	<1.7	--	--	--	--	<3.5 M	--	--	--	<237	--	--
SVOC	1-Methylnaphthalene (ug/l)	--	3.7 J	--	--	--	--	6 JM	--	--	--	<138	--	--
SVOC	2,3,4,6-Tetrachlorophenol (ug/l)	--	<5.5	--	--	--	--	<11 M	--	--	--	<232	--	--
SVOC	2,4,5-Trichlorophenol (ug/l)	--	<19 M	--	--	--	--	<38 M	--	--	--	<182	--	--
SVOC	2,4,6-Trichlorophenol (ug/l)	--	<5.3 M	--	--	--	--	<11 M	--	--	--	<200	--	--
SVOC	2,4-Dichlorophenol (ug/l)	--	<19	--	--	--	--	<38 M	--	--	--	<152	--	--
SVOC	2,4-Dimethylphenol (ug/l)	--	<13	--	--	--	--	<27 M	--	--	--	<42.8	--	--
SVOC	2,4-Dinitrophenol (ug/l)	--	<63	--	--	--	--	<130 M	--	--	--	<260	--	--
SVOC	2,4-Dinitrotoluene (ug/l)	--	<1.8	--	--	--	--	<3.6 M	--	--	--	<119	--	--
SVOC	2,6-Dinitrotoluene (ug/l)	--	<0.54	--	--	--	--	<1.1 M	--	--	--	<84.9	--	--
SVOC	2-Chloronapthalene (ug/l)	--	<1.7	--	--	--	--	<3.5 M	--	--	--	<124	--	--
SVOC	2-Chlorophenol (ug/l)	--	<4.1 M	--	--	--	--	<8.3 M	--	--	--	<258	--	--
SVOC	2-Methylnapthalene (ug/l)	--	5.2 J	--	--	--	--	8 JM	--	--	--	<152	--	--
SVOC	2-Methylphenol (ug/l)	--	9 J	--	--	--	--	<4.5 M	--	--	--	<77.3	--	--
SVOC	2-Nitroaniline (ug/l)	--	<9.5	--	--	--	--	<19 M	--	--	--	<91.6	--	--
SVOC	2-Nitrophenol (ug/l)	--	<18	--	--	--	--	<37 M	--	--	--	<151	--	--
SVOC	3,3'-Dichlorobenzidine (ug/l)	--	<13	--	--	--	--	<25 M	--	--	--	<54.4 M	--	--
SVOC	3-Nitroaniline (ug/l)	--	<13	--	--	--	--	<26 M	--	--	--	<71.2	--	--
SVOC	4,6-Dinitro-o-cresol (ug/l)	--	<43	--	--	--	--	<87 M	--	--	--	<122	--	--
SVOC	4-Bromophenyl phenyl ether (ug/l)	--	<4	--	--	--	--	<8 M	--	--	--	<88.5	--	--
SVOC	4-Chlorophenyl phenyl ether (ug/l)	--	<4.7	--	--	--	--	<9.4 M	--	--	--	<196	--	--
SVOC	4-Nitroaniline (ug/l)	--	<12 M	--	--	--	--	<25 M	--	--	--	<44.8 M	--	--
SVOC	4-Nitrophenol (ug/l)	--	<55	--	--	--	--	<110 M	--	--	--	<202	--	--
SVOC	Acenaphthylene (ug/l)	--	<2	--	--	--	--	<3.9 M	--	--	--	<61	--	--
SVOC	Acenapthene (ug/l)	--	3.1 J	--	--	--	--	6.8 JM	--	--	--	<72	--	--
SVOC	Acetophenone (ug/l)	--	21 J	--	--	--	--	16 JM	--	--	--	<81.6	--	--
SVOC	Anthracene (ug/l)	--	<2.5	--	--	--	--	<4.9 M	--	--	--	<75.5	--	--
SVOC	Benzo(a)anthracene (ug/l)	--	<0.42	--	--	--	--	<0.84 M	--	--	--	<53.1	--	--
SVOC	Benzo(a)pyrene (ug/l)	--	<0.73	--	--	--	--	<1.5 M	--	--	--	<131	--	--
SVOC	Benzo(b)fluoranthene (ug/l)	--	<0.59	--	--	--	--	<1.2 M	--	--	--	<144	--	--
SVOC	Benzo(ghi)perylene (ug/l)	--	<2.8	--	--	--	--	<5.5 M	--	--	--	<167	--	--
SVOC	Benzo(k)fluoranthene (ug/l)	--	<0.47	--	--	--	--	<0.94 M	--	--	--	<138	--	--
SVOC	Benzoic acid (ug/l)	--	--	--	--	--	--	--	--	--	--	<490	--	--
SVOC	Benzyl alcohol (ug/l)	--	<44	--	--	--	--	<89 M	--	--	--	<79.3	--	--
SVOC	Bis(2-chloroethoxy)methane (ug/l)	--	<2.1	--	--	--	--	<4.2 M	--	--	--	<43	--	--
SVOC	Bis(2-chloroethyl) ether (ug/l)	--	10 JM	--	--	--	--	<4.3 M	--	--	--	<68.3	--	--
SVOC	Bis(2-chloroisopropyl) ether (ug/l)	--	<2.8	--	--	--	--	<5.6 M	--	--	--	--	--	--
SVOC	Bis-2-ethylhexylphthalate (DEHP) (ug/l	--	120	--	--	--	--	<25 M	--	--	--	<68.7	--	--
SVOC	Butylbenzylphthalate (ug/l)	--	<3.5	--	--	--	--	<7.1 M	--	--	--	<69.5	--	--
SVOC	Chrysene (ug/l)	--	<0.5	--	--	--	--	<1 M	--	--	--	<71.8	--	--
SVOC	Cresol, M&P-, in whole water sample (ug/l)	--	180 M	--	--	--	--	33 M	--	--	--	175 J	--	--
SVOC	Dibenz(a,h)anthracene (ug/l)	--	<0.37	--	--	--	--	<0.75 M	--	--	--	<229 M	--	--
SVOC	Dibenzofuran (ug/l)	--	<1.9	--	--	--	--	<3.9 M	--	--	--	<92.9	--	--
SVOC	Diethyl phthalate (ug/l)	--	<2.7	--	--	--	--	<5.3 M	--	--	--	<60.2	--	--
SVOC	Dimethyl phthalate (ug/l)	--	<2.3	--	--	--	--	<4.6 M	--	--	--	<41.7	--	--

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SVOC	Di-n-butyl phthalate (ug/l)	--	<5.4	--	--	--	--	<11 M	--	--	--	<32.7	--	--
SVOC	Di-n-octyl phthalate (ug/l)	--	<7.7	--	--	--	--	<16 M	--	--	--	<46.5	--	--
SVOC	Di-n-propylnitrosamine (ug/l)	--	<1.1	--	--	--	--	<2.3 M	--	--	--	<82.3	--	--
SVOC	Diphenylamine (ug/l)	--	<19	--	--	--	--	<37 M	--	--	--	--	--	--
SVOC	Fluoranthene (ug/l)	--	<3.3	--	--	--	--	<6.7 M	--	--	--	<74	--	--
SVOC	Fluorene (ug/l)	--	<1.8	--	--	--	--	<3.6 M	--	--	--	<49.9	--	--
SVOC	Hexachlorobenzene (ug/l)	--	<0.58	--	--	--	--	<1.2 M	--	--	--	<164	--	--
SVOC	Hexachlorobutadiene (ug/l)	--	<3.8	--	--	--	--	<7.6 M	--	--	--	<252	--	--
SVOC	Hexachlorocyclopentadiene (ug/l)	--	<47	--	--	--	--	<94 M	--	--	--	<191	--	--
SVOC	Hexachloroethane (ug/l)	--	<4.4	--	--	--	--	<8.8 M	--	--	--	<151	--	--
SVOC	Indeno(1,2,3-cd)pyrene (ug/l)	--	<0.55	--	--	--	--	<1.1 M	--	--	--	<178 M	--	--
SVOC	Isophorone (ug/l)	--	7.4 J	--	--	--	--	<5.5 M	--	--	--	<97.8	--	--
SVOC	m-Dichlorobenzene (ug/l)	--	<1.5	--	--	--	--	<3.1 M	--	--	--	<217	--	--
SVOC	Naphthalene (ug/l)	--	20	--	--	--	--	12 JM	--	--	--	<166	--	--
SVOC	Nitrobenzene (ug/l)	--	<3.3	--	--	--	--	<6.6 M	--	--	--	<157	--	--
SVOC	n-Nitrosodimethylamine (ug/l)	--	<35	--	--	--	--	<70 M	--	--	--	<147	--	--
SVOC	n-Nitrosodiphenylamine (ug/l)	--	--	--	--	--	--	--	--	--	--	<40.6	--	--
SVOC	o-Dichlorobenzene (ug/l)	--	<1.8	--	--	--	--	<3.6 M	--	--	--	<202	--	--
SVOC	p-Chloro-m-cresol (ug/l)	--	<17	--	--	--	--	<34 M	--	--	--	<93.5	--	--
SVOC	p-Dichlorobenzene (ug/l)	--	11 J	--	--	--	--	9.9 JM	--	--	--	<177	--	--
SVOC	Pentachlorophenol (ug/l)	--	<29	--	--	--	--	<58 M	--	--	--	<163	--	--
SVOC	Phenanthrene (ug/l)	--	<2.2	--	--	--	--	<4.4 M	--	--	--	<46.3	--	--
SVOC	Phenol (ug/l)	--	120	--	--	--	--	<9.9 M	--	--	--	<97.7	--	--
SVOC	Pyrene, total (ug/l)	--	<3.1	--	--	--	--	<6.3 M	--	--	--	<97.8	--	--
SVOC	Pyridine (ug/l)	--	100 J	--	--	--	--	<74 M	--	--	--	<729	--	--

VOC = Volatile Organic Compound
SVOC = Semivolatile Organic Compound
BOD = Biological Oxygen Demand
COD = Chemical Oxygen Demand
J = Estimated value below laboratory's limit of quantitation
M = Analysis flagged by labroatory as failing to meet a quality control limit
-- = Not analyzed for

K2 MMSD Conditional Leachate Acceptance Letter

Madison Metropolitan Sewerage District
1610 Moorland Road • Madison, WI 53713-3398 • P: (608) 222-1201 • F: (608) 222-2703

December 22, 2023

John Welch
Director
Dane County's Department of Waste & Renewables
1919 Alliant Energy Center Way
Madison, WI 53713

RE: Leachate Acceptance from Proposed Dane County Landfill Site No. 3

Dear Mr. Welch,

The purpose of this letter is to address the capacity of Madison Metropolitan Sewerage District (District) to receive wastewater effluent, including landfill leachate, from the future Landfill Site No. 3 proposed by Dane County's Department of Waste & Renewables (W&R) on the eastern portion of the Yahara Hills Golf Course located at 4422 Brandt Road, Madison, WI 53718.

The District understands that as part of its landfill permitting process, W&R will submit a Feasibility Report to the Wisconsin Department of Natural Resources that requires *identification of and a detailed evaluation of the capability of any proposed wastewater treatment plants to treat the anticipated quality and quantity of leachate* under NR 512.13(3). W&R has identified the District's Nine Springs Wastewater Treatment Plant (NSWTP) as the proposed wastewater treatment plant to treat the anticipated quantity and quality of the proposed landfill leachate. W&R has requested that the District provide a letter of commitment addressing the capacity of NSWTP to treat the anticipated quality and quantity of leachate from the proposed Landfill Site No. 3.

Quality
As of the date of this letter, the District has not assessed the quality of the leachate from the proposed Dane County Landfill Site No. 3. The District intends to issue an industrial wastewater discharge permit for Landfill Site No. 3. To initiate the permitting process, W&R will be required to submit to the District an Industrial Wastewater Discharge Permit Application that details the anticipated leachate quantity and quality, along with other information about the proposed landfill site and its operations.

As part of the industrial wastewater permitting process, the District will evaluate the quality of leachate and establish applicable pollutant limits, along with other requirements including, but not limited to, sampling and laboratory analysis, monitoring of leachate discharged to the sanitary sewer, and compliance reporting at least twice per year. W&R's adherence to permit conditions will ensure that the District has capacity to treat the quality of the wastewater, including leachate, from Landfill Site No. 3.

Quantity
The District currently receives wastewater, including leachate, from Dane County's existing Landfill No. 2 (Rodefeld), which is near proposed Landfill Site No. 3. Due to the proximity of the two sites to one another, the District has taken the anticipated wastewater volumes of both sites into consideration in determining its capacity to receive leachate from Landfill Site No.3.

The District has capacity to treat the anticipated average daily volumes of wastewater (including leachate) provided by W&R (Appendix 1) and summarized in Table 1.

However, the District may not have sufficient capacity to accept all wastewater from Landfill Site No. 3 during wet weather events. During such events, there is an increased potential for higher wastewater flows through our collection system. While the District can receive some additional flow during these events, we must prioritize our operations over the acceptance of increased wastewater from sources such as proposed Landfill Site No. 3. Table 1 contains the maximum flow, or peak hourly flowrate, allowed per Section 4.6.1(b) of the District's Sewer Use Ordinance based on the average daily flowrates provided by W&R. To address this limitation on capacity, the industrial wastewater discharge permit for the Dane County Landfill Site No. 3 will likely contain requirements for monitoring flow, reporting flow, and controlling flow during high volume events to ensure that the peak hourly flowrates specified in Table 1 are not exceeded.

Table 1 Average daily volumes and peak hourly flowrate

Site	Average Daily Volume	Peak Hourly Flowrate
Dane County Landfill No. 2 (Rodefeld)	26,000 gallons per day	4,333 gallons per hour
Dane County Landfill No. 3	17,000 gallons per day	2,833 gallons per hour

District commitment
The District will have the capability to accept wastewater, including leachate, from Dane County Landfill Site No. 3 if W&R remains in compliance with all conditions in its current and future industrial wastewater discharge permits and if wastewater discharge does not exceed the average daily volumes or peak hourly flowrates shown in Table 1 for the existing Rodefeld Landfill and proposed Landfill Site No. 3.

Please feel free to contact me with any questions.

Sincerely,

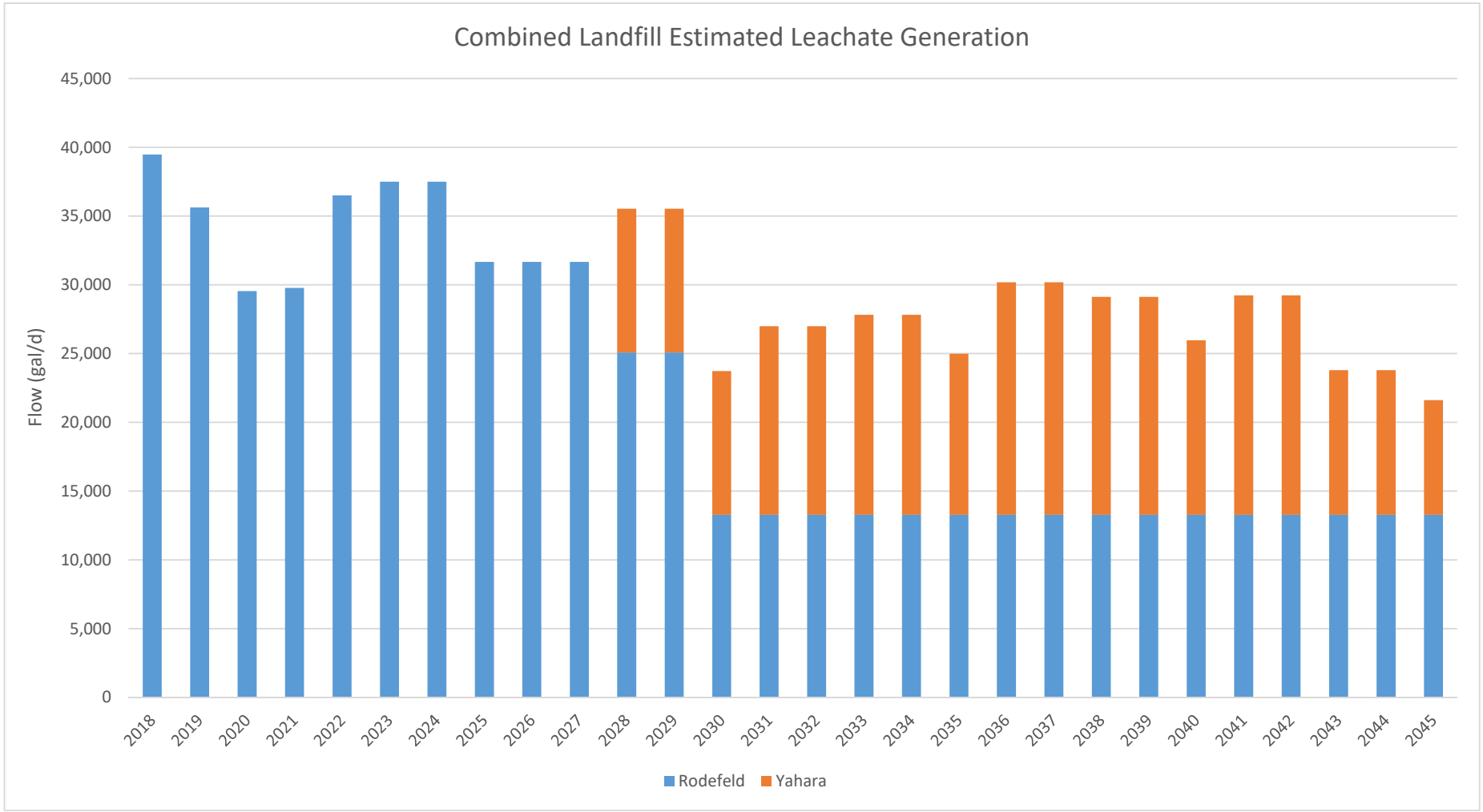
Michael Mucha
Chief Engineer & Director

Enclosure
Appendix 1: Combined Landfill Discharge (projected volumes from Rodefeld and Landfill No. 3 ("Yahara")) received from W&R December 13, 2023

Distribution List:
Allison Rathsack, Dane County
Roxanne Wienkes, Dane County
Betsy Powers, SCS Engineers
Martin Griffin, Madison Metropolitan Sewerage District
Julie Maas, Madison Metropolitan Sewerage District

APPENDIX 1

Combined Landfill Discharge				
Year	Rodefeld Estimated Leachate Generation (gal/d)	Yahara Estimated Leachate Generation (gal/d)	Combined Landfill Leachate Generation (gal/d)	Notes
2018	39,472	0	39,472	Actual volumes
2019	35,623	0	35,623	Actual volumes
2020	29,547	0	29,547	Actual volumes
2021	29,779	0	29,779	Actual volumes
2022	36,502	0	36,502	Actual volumes
2023	37,493	0	37,493	
2024	37,493	0	37,493	
2025	31,670	0	31,670	Rodefeld Area 1 Closure
2026	31,670	0	31,670	
2027	31,670	0	31,670	
2028	25,086	10,448	35,534	Rodefeld Area 2 Closure & Yahara Phase 1 Open
2029	25,086	10,448	35,534	
2030	13,278	10,448	23,726	Rodefeld Area 3 / Final Closure
2031	13,278	13,713	26,991	Yahara Phase 2 constructed, Phase 1 intermediate cover
2032	13,278	13,713	26,991	
2033	13,278	14,540	27,818	Yahara Phase 3 constructed, Phase 2 intermediate cover, Phase 1 Ccosure
2034	13,278	14,540	27,818	
2035	13,278	11,710	24,988	Yahara Phase 2 closure
2036	13,278	16,902	30,179	Yahara Phase 4 constructed, Phase 3 intermediate cover
2037	13,278	16,902	30,179	
2038	13,278	15,846	29,124	Yahara Phase 5 constructed, Phase 4 intermediate cover, Phase 3 closure
2039	13,278	15,846	29,124	
2040	13,278	12,690	25,967	Yahara Phase 4 closure
2041	13,278	15,955	29,232	Yahara Phase 6 constructed, Phase 5 intermediate cover
2042	13,278	15,955	29,232	
2043	13,278	10,513	23,791	Yahara Phase 6 intermediate cover, Phase 5 closure
2044	13,278	10,513	23,791	
2045	13,278	8,337	21,614	Yahara Phase 6 closure


Combined Landfill Estimated Leachate Generation
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Flow (gal/d)
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040
2041
2042
2043
2044
2045
Rodefeld
Yahara

K3 Leachate Generation Calculations

SCS ENGINEERS

		Sheet No. 1 of 10	
		Calc. No.	
		Rev. No.	
Job No. 25222268.00	Job: Landfill Site No. 3	By: RPR	Date: 01/30/24
Client: Dane County	Subject: Leachate Generation	Chk'd: MRH	Date: 02/07/24

Preliminary Leachate Generation Estimates

Purpose: To estimate the volume of leachate that will be collected and transferred to MMSD for treatment during operation and after closure at Landfill Site No. 3.

Approach: Estimate the amount of open, intermediate cover, and closed areas at stages of landfill development.

Use the leachate generation rates established in NR 512.12(3) to estimate the leachate volume

NR 512.12(3) establishes 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

3 inches/year for all closed areas that do not have a composite cover

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)

See attached figures showing covers status by liner phase.

See Sheet 2 for leachate generation by phase

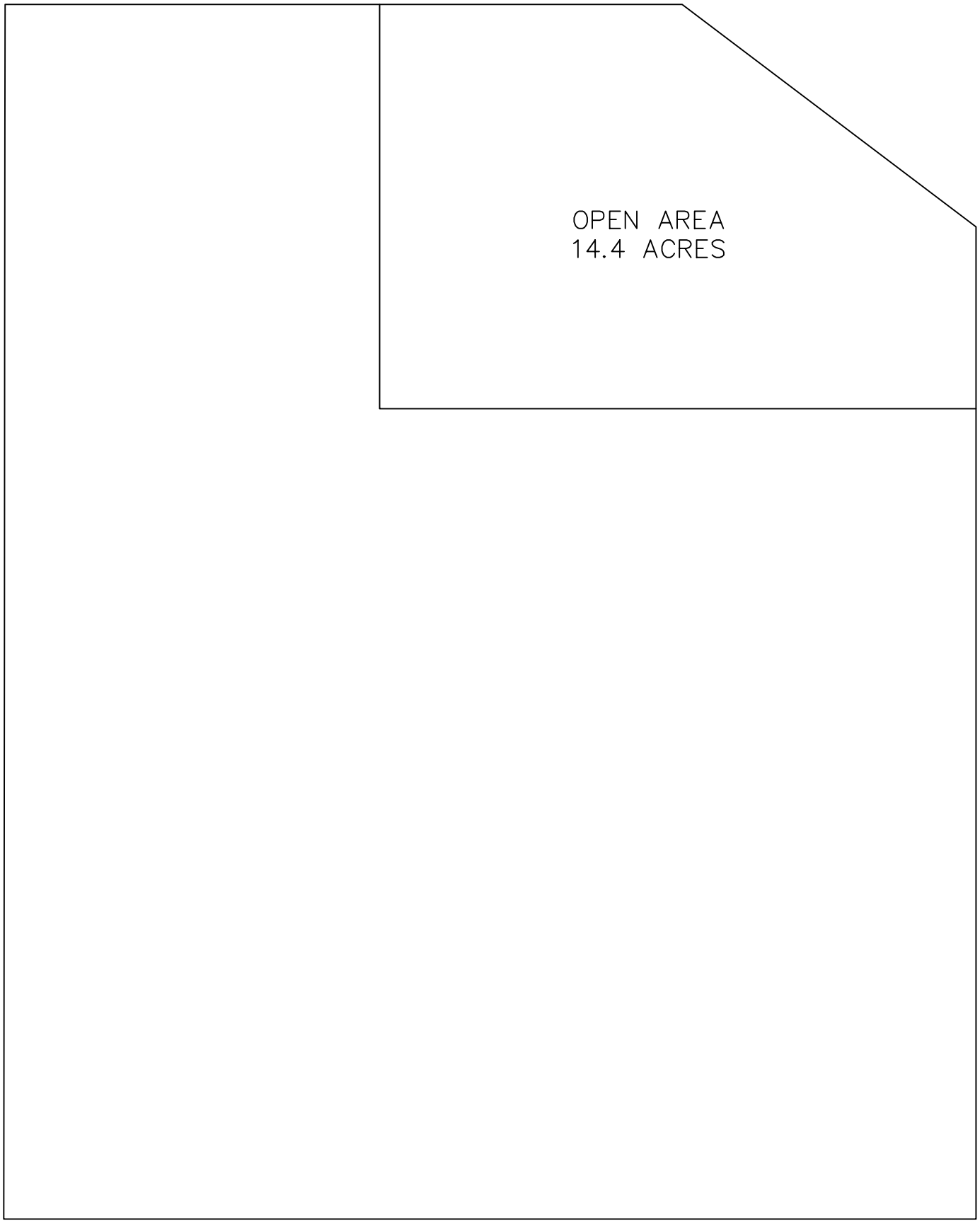
Assumptions:

Open areas assume no intermediate cover in place.

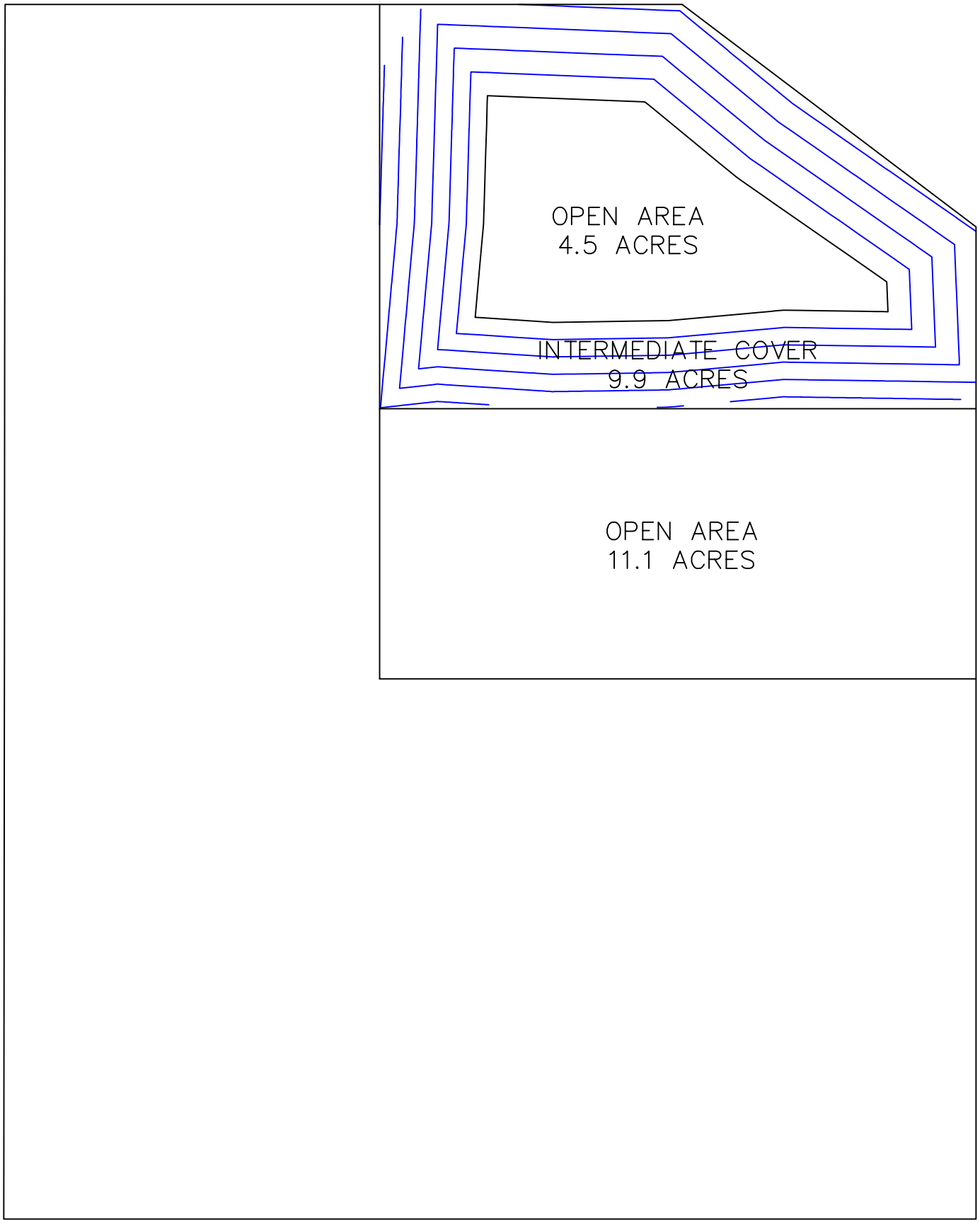
Results: The maximum leachate generation rate is 16,470 gallons per day, which occurs during operation of Phase 7. During post-closure conditions, the estimated leachate generation rate is 5,878 gallons per day.

Calculations:

Landfill Cover Status	Phases Included	Annual Precipitation (inches)	Area in Cover Status (acres)	Leachate Generation Rate (gpd)
Phase 1 Open				
Open	Phase 1	6.0	14.4	6,406
Total				**6,406**
Phase 2 Open				
Open	Phase 2	6.0	11.1	4,953
Open	Phase 1	6.0	4.5	1,989
Intermediate Cover	Phases 1	3.0	9.9	2,209
Total				**9,150**
Phase 3 Open				
Open	Phase 3	6.0	11.1	4,953
Open	Phases 1 and 2	6.0	5.1	2,266
Intermediate Cover	Phases 1 and 2	3.0	20.4	4,546
Total				**11,765**
Phase 4 Open				
Open	Phase 4	6.0	11.1	4,948
Open	Phases 2 and 3	6.0	5.1	2,266
Intermediate Cover	Phases 1-2	3.0	5.7	1,282
Intermediate Cover	Phases 1-3	3.0	14.4	3,223
Final Cover	Phases 1-3	1.0	11.3	839
Total				**12,558**
Phase 5 Open				
Open	Phase 5	6.0	10.4	4,656
Open	Phases 3 and 4	6.0	5.0	2,233
Intermediate Cover	Phases 1-3	3.0	13.5	3,006
Intermediate Cover	Phases 1-4	3.0	12.6	2,804
Final Cover	Phases 1-4	1.0	16.6	1,235
Total				**13,933**
Phase 6 Open				
Open	Phase 6	6.0	10.5	4,672
Open	Phases 1,2, and 5	6.0	5.1	2,280
Intermediate Cover	Phases 1-5	3.0	16.6	3,715
Intermediate Cover	Phases 2-4	3.0	15.2	3,387
Final Cover	Phases 1-5	1.0	21.1	1,572
Total				**15,627**
Phase 7 Open				
Open	Phase 7	6.0	10.5	4,678
Open	Phases 1, 2, 5, and 6	6.0	5.1	2,282
Intermediate Cover	Phases 2-6	3.0	20.9	4,666
Intermediate Cover	Phases 2, 3, 4, and 6	3.0	11.3	2,524
Final Cover	Phases 1-5	1.0	31.2	2,321
Total				**16,470**
Site Closed				
Final Cover	Phases 1-6	1.0	79.0	5,878
Total				**5,878**



PHASE 1 CONSTRUCTION



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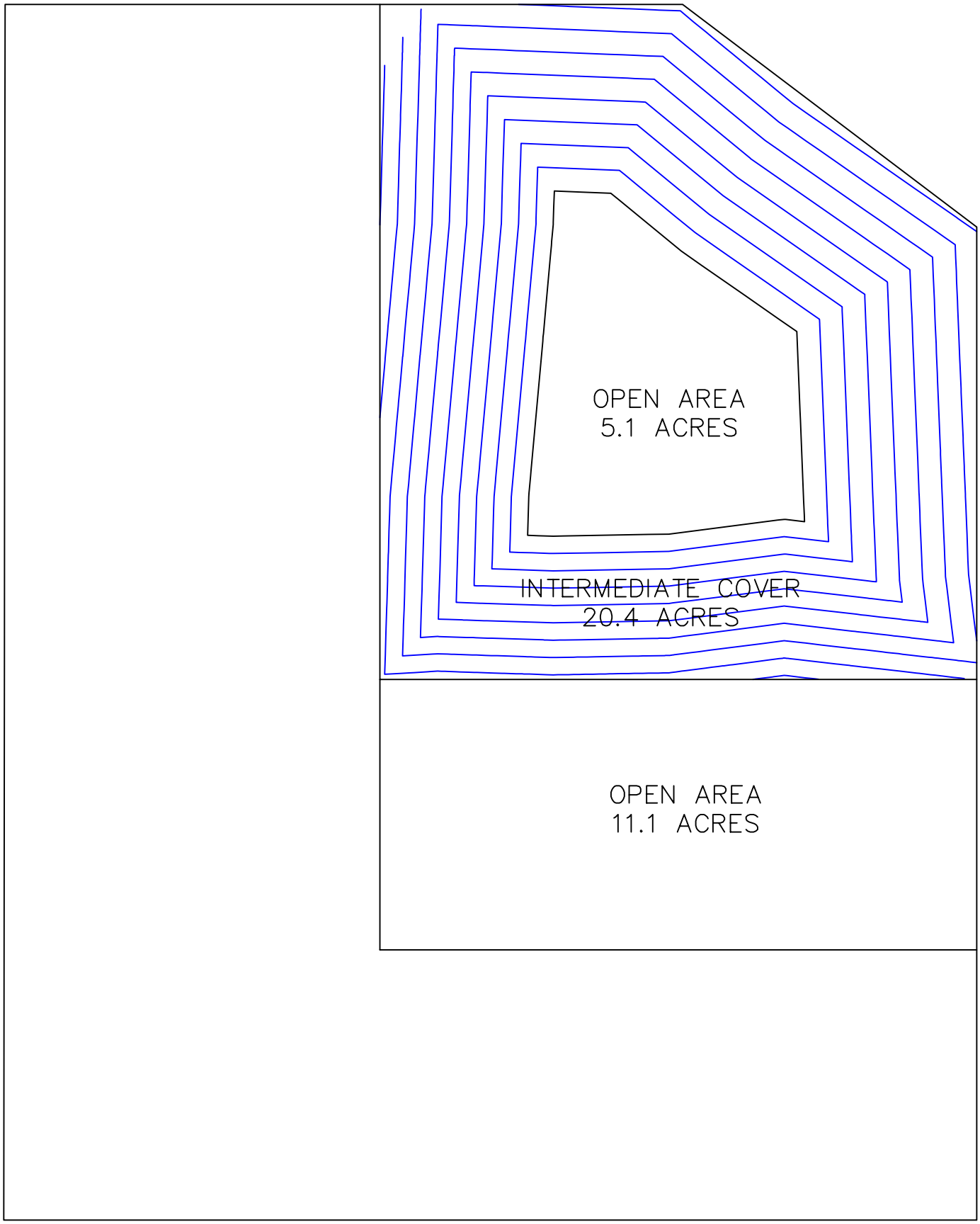

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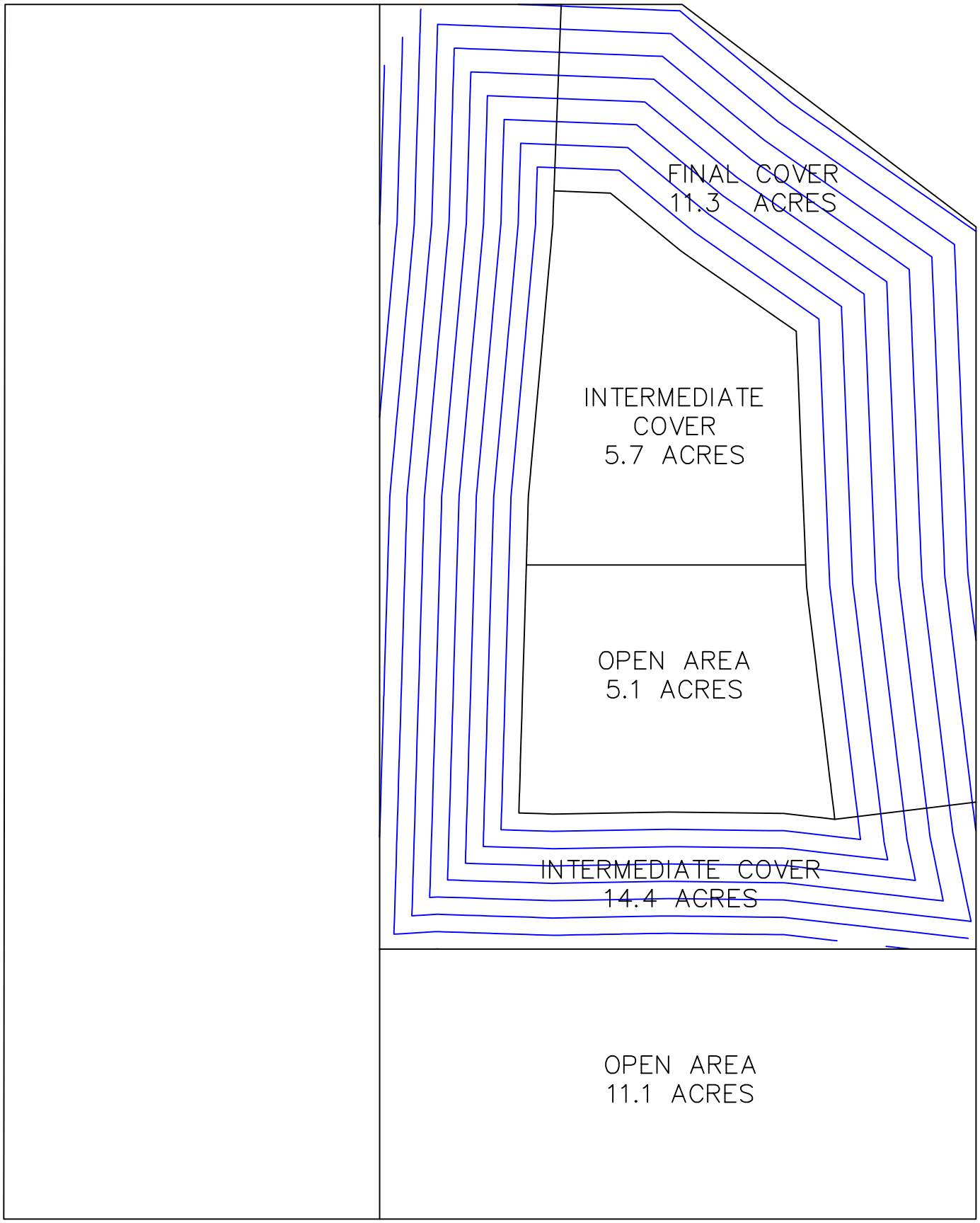

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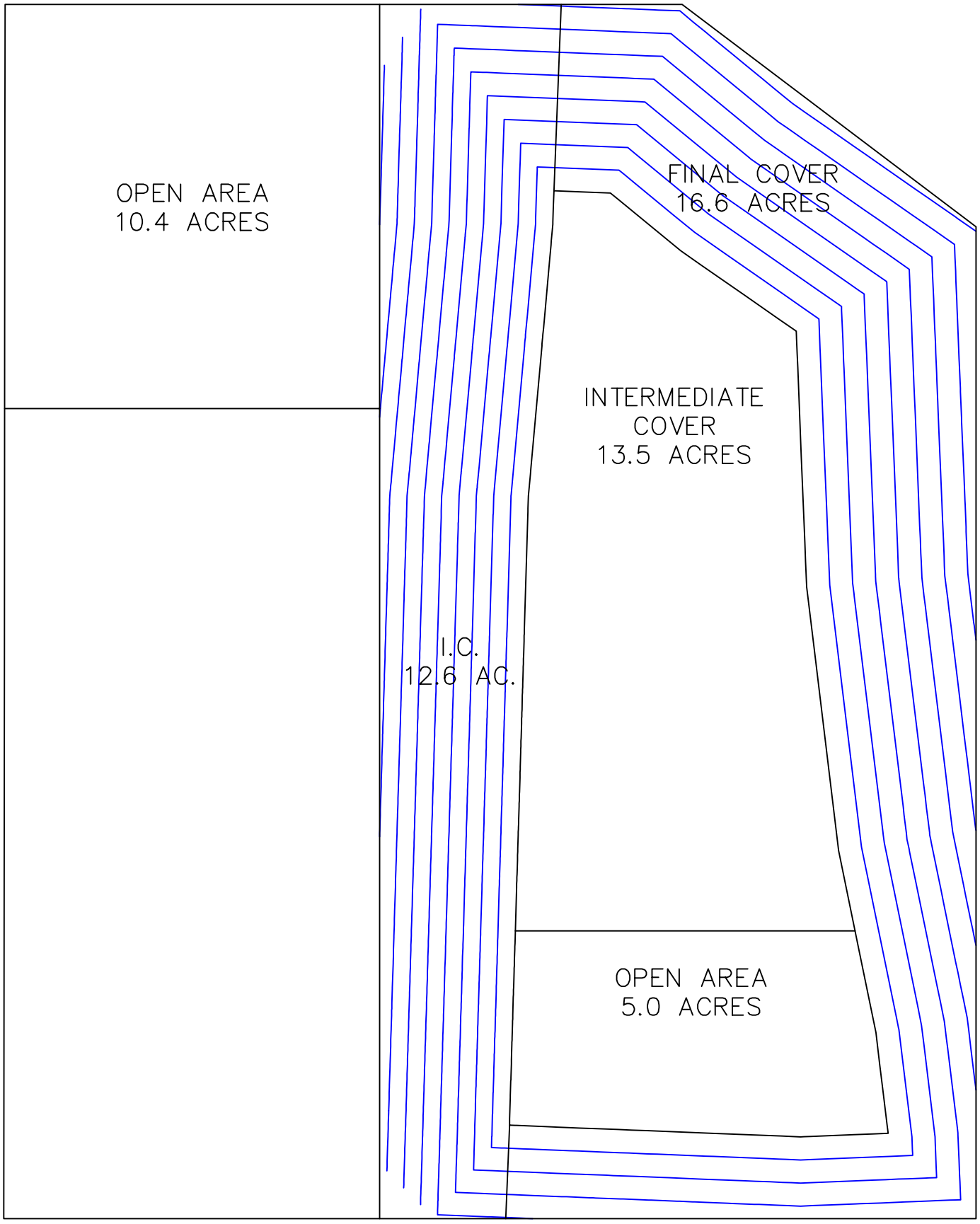

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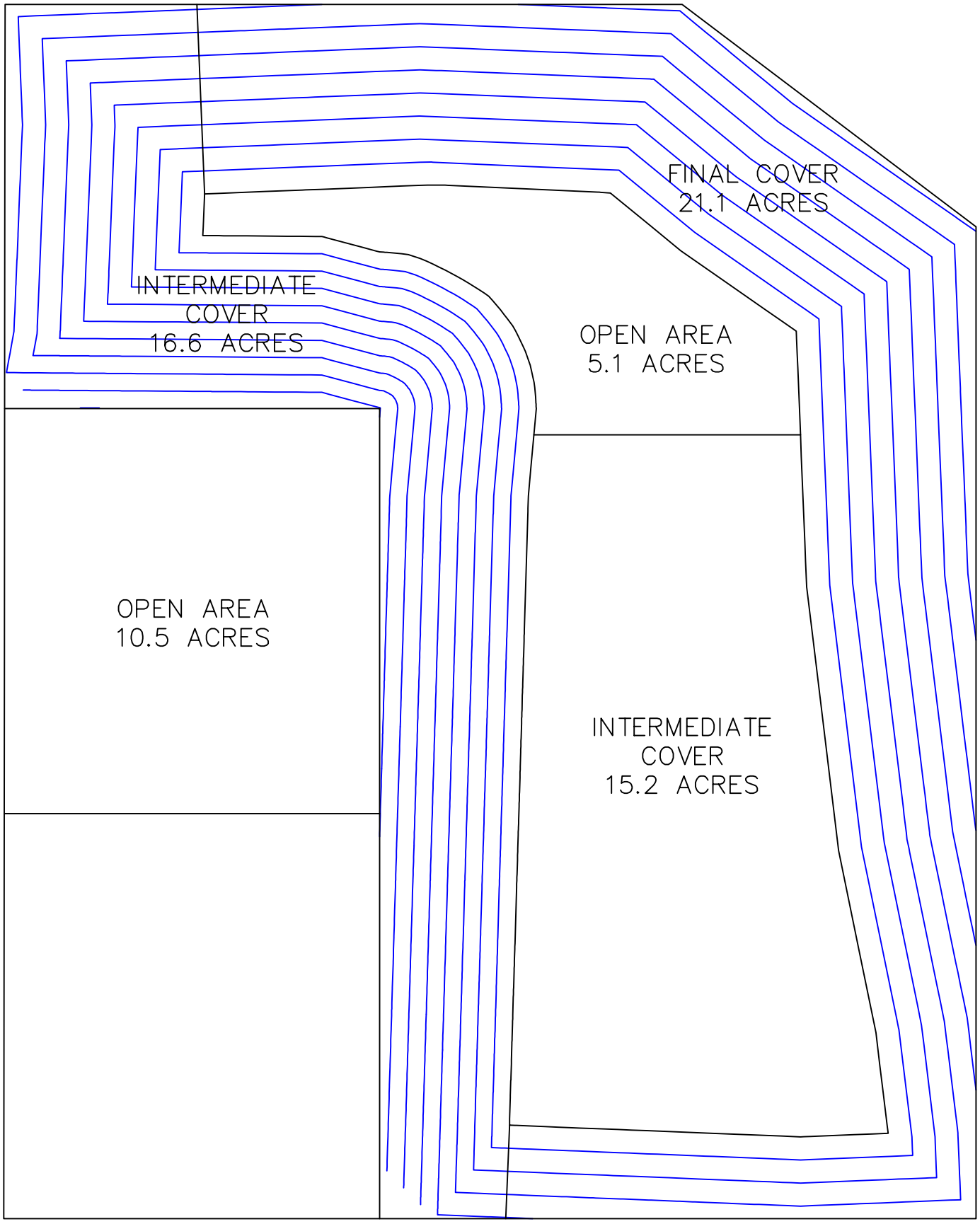

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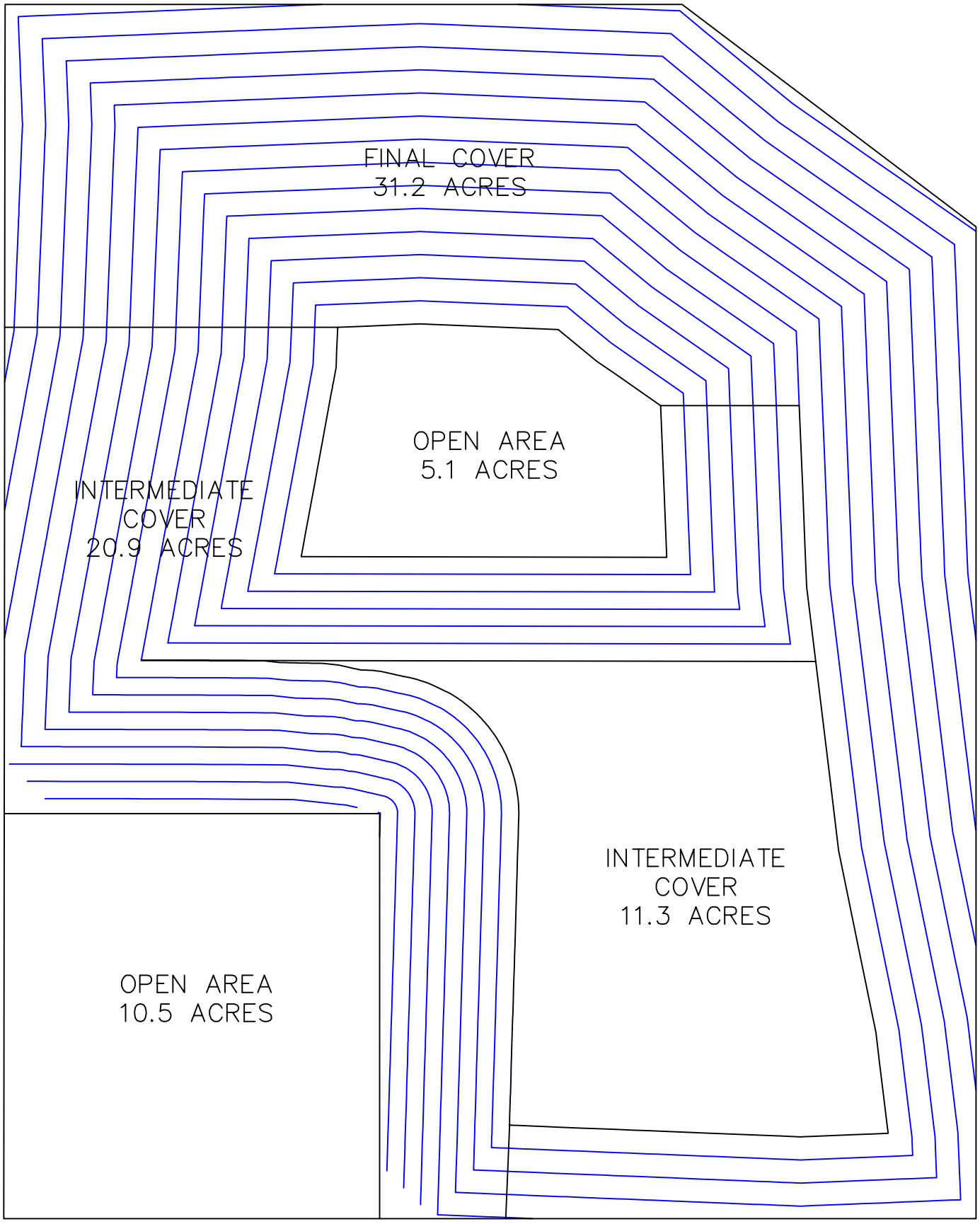
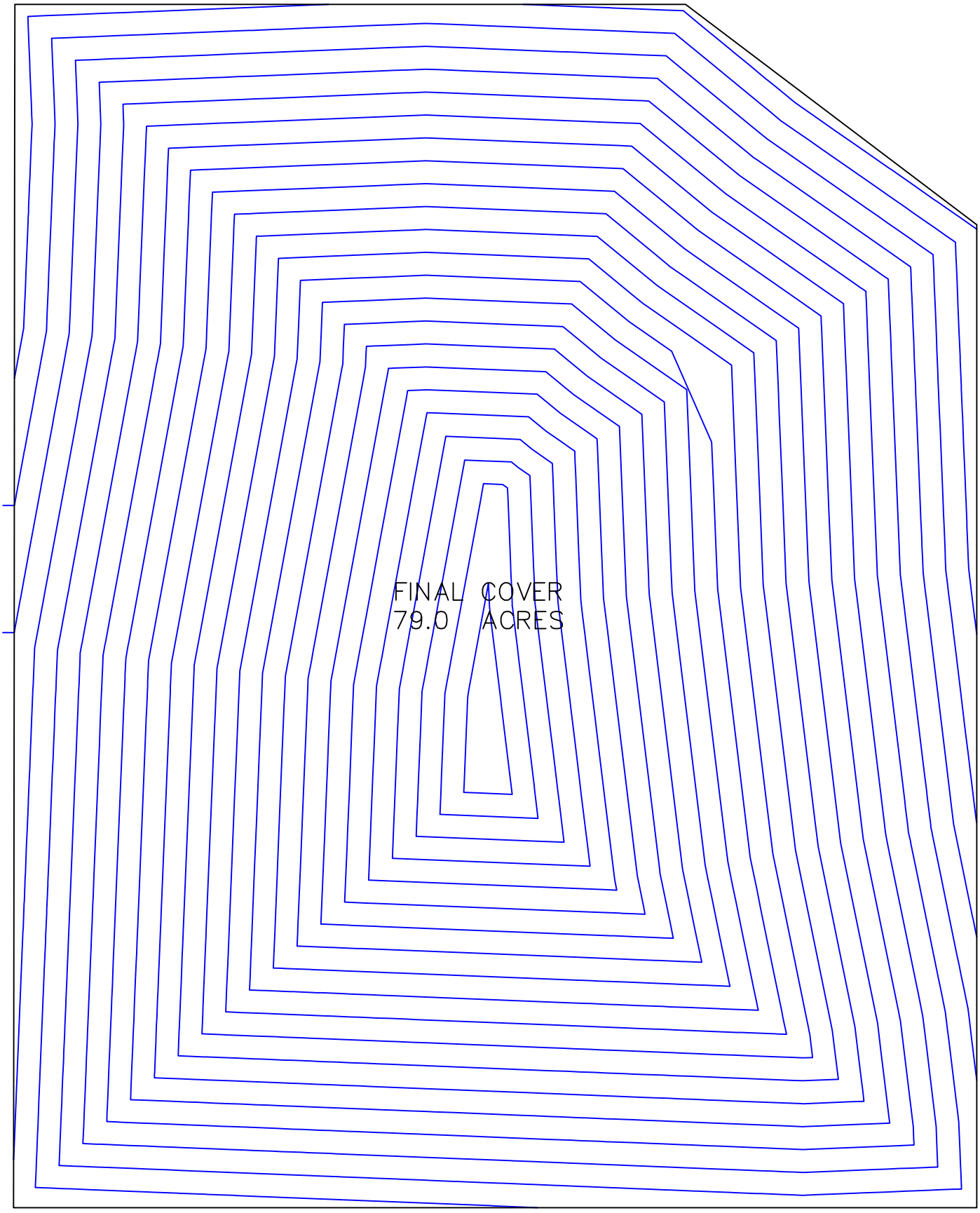


PHASE 7 CONSTRUCTION



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