



Maryland

Department of the Environment

Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor

Ben Grumbles, Secretary
Horacio Tablada, Deputy Secretary

September 26, 2018

To Sewage Sludge Plant-Available Nitrogen (PAN) Values Recipients:

Re: **2019 PAN Values**

Enclosed please find the Maryland Department of the Environment's (the "Department") 2019 PAN values to be used for the development of Nutrient Management Plans (NMPs) for the land application of Class B sewage sludge generated by permitted facilities in Maryland. These values are valid for the period from January 1, 2019 through December 31, 2019. Therefore, all NMPs including those submitted to the Department as part of a Sewage Sludge Utilization (SSU) Permit Application prior to **the date of this letter with the intended use during the 2019 cropping year** must be amended to reflect the **2019 PAN values**.

Please note that land application of Class B sewage sludge generated by a permitted sewage sludge storage facility is subject to the Site Specific Conditions of the facility's SSU Permit, while land application of Class A treated sewage sludge must be conducted in accordance with the application rates of each Class A product label approved by the Department.

Should you have any questions or need further information regarding this letter or the attached PAN values, please feel free to contact me at nazeeh.freij@maryland.gov or (410) 537-3948.

Sincerely,

A handwritten signature in black ink, enclosed in a hand-drawn oval.

Nazeeh A Freij, Head
Treatment and Monitoring Unit

Enclosure

cc: C. John Sullivan III
Thomas Yoo
Brian Coblentz

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Land Management Administration • Resource Management Program

Summary of Sewage Sludge Plant Available Nitrogen (PAN) Calculations For CY- 2019

(Results of Sewage Sludge Analyses From 9/16/2016 to 9/15/2018 Used to calculate these rates)

Wastewater Treatment Plant	County	Sewage Sludge Type	Earliest Analysis	Latest Analysis	No. of Analyses	Organic Nitrogen	PAN K=1	PAN K=0.5	% P ₂ O ₅	% K ₂ O	% Solid Content	CCE
Annapolis	Anne Arundel	LS	09/21/2016	03/27/2018	7	3.0502	21.58		2.9443	0.1731	25.34	38.43
Back River	Baltimore	An Dig	10/01/2016	07/01/2018	22	4.5877	30.37		6.8929	0.1407	22.16	0.00
Ballenger Creek	Frederick	LS	10/04/2016	08/07/2018	23	2.5344	15.82		2.6408	0.3681	29.91	27.03
Beltsville USDA - East	Prince George's	Ae Dig	02/15/2017	04/30/2018	2	3.1430	29.80	29.60	7.8204	0.4677	1.91	0.00
Bowie	Prince George's	LS	10/26/2016	05/09/2018	14	4.6429	34.07		4.2273	0.2543	20.86	28.57
Broadneck	Anne Arundel	LS	09/22/2016	02/21/2018	7	4.2531	34.17		4.4884	0.2246	18.92	23.43
Broadwater	Anne Arundel	LS	11/17/2016	05/18/2017	2	3.2940	20.88		4.1220	0.1380	30.63	39.00
Cox Creek	Anne Arundel	LS	09/21/2016	05/16/2018	9	3.9137	28.99		2.5750	0.2880	26.39	21.98
Damascus	Montgomery	LS	10/04/2016	07/03/2018	20	4.6000	29.19		5.6426	0.4168	21.51	57.62

Plant Available Nitrogen (PAN) is in terms of pounds of available nitrogen per dry ton of sewage sludge. LS (Lime Stabilized), An Dig (Anaerobically Digested), Ae Dig (Aerobically Digested), Organic nitrogen (NO) is expressed in percent of dry weight of sewage sludge, NO = TKN - NH₄ - NO₃, TKN (Total Kjeldahl Nitrogen), NH₄ (Ammonium), NO₃ (Nitrate).

K=1 (Volatilization Factor for incorporated liquid and dewatered sewage sludge applied in any manner), K=0.5 (Volatilization Factor for surface applied liquid sewage sludge), P₂O₅ (% Available Phosphate), K₂O (% Water Soluble Potash), CCE (% Calcium Carbonate Equivalent, it is the neutralizing power per weight of material of the lime stabilized sewage sludge relative to pure calcium carbonate CaCO₃). P₂O₅ = [(%TP)*2.29], while K₂O = [(%TK)*1.2], %TP (Percent Total Phosphorus), and %TK (Percent Total Potassium).

Wastewater Treatment Plant	County	Sewage Sludge Type	Earliest Analysis	Latest Analysis	No. of Analyses	Organic Nitrogen	PAN K=1	PAN K=0.5	% P2O5	% K2O	% Solid Content	CCE
Deep Creek Lake	Garrett											
Cake		Ae Dig	05/10/2017	07/09/2018	2	2.2941	18.17		3.7785	0.1902	24.30	0.00
Liquid		Ae Dig	02/21/2018	07/09/2018	3	3.0127	33.34	33.34	5.7479	0.5520	2.25	0.00
Dorsey Run Advanced	Anne Arundel											
Cake		LS	10/26/2016	07/06/2018	13	2.6455	19.67		2.5188	0.1230	29.88	45.27
Frederick	Frederick											
Cake		An Dig	10/03/2016	07/05/2018	12	5.1158	36.78		7.5188	0.1798	18.77	0.00
Freedom District	Carroll											
Cake		LS	10/26/2016	05/14/2018	12	3.1093	31.94		4.4426	0.2483	29.12	38.25
Grantsville	Garrett											
Liquid		Ae Dig	05/09/2017	03/01/2018	2	1.2751	19.83	18.50	2.2557	0.3348	2.20	0.00
Havre de Grace	Harford											
Cake		Ae Dig	11/04/2016	06/08/2018	7	3.0544	29.24		6.6901	0.3703	25.58	11.41
Leonardtwn	St. Mary's											
Cake		Ae Dig	05/17/2017	03/12/2018	3	3.7173	36.62		5.6487	0.4280	19.50	25.00
Little Patuxent	Howard											
Cake		LS	09/22/2016	07/20/2018	19	3.0694	21.03		2.3487	0.3834	41.19	47.37
Marlay-Taylor Water Reclamation Facility	St. Mary's											
Cake		An Dig	11/20/2016	04/10/2018	6	3.9917	30.67		5.6563	0.1948	21.42	0.00
Maryland City Water Reclamation Facility	Anne Arundel											
Cake		LS	11/17/2016	02/20/2018	3	4.6443	31.65		2.1221	0.3600	21.46	37.33

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Maryland Correctional Institution (MCI) Cake	Washington	LS	10/12/2016	07/12/2018	14	3.7909	28.46		3.8570	0.3034	23.26	39.08
Mattawoman Cake	Charles	LS	11/01/2016	07/18/2018	10	3.3777	23.39		3.6365	0.2347	25.24	19.02
Mount Airy Cake	Carroll	LS	11/08/2016	08/08/2018	8	3.2919	24.21		3.9503	0.4713	28.31	49.21
Mount Saint Mary's University Liquid	Frederick	Ae Dig	02/14/2017	02/12/2018	2	1.2910	21.23	17.94	3.4762	0.6072	1.80	0.00
Ocean City Cake	Worcester	LS	09/28/2016	06/27/2018	22	2.7243	19.08		2.4379	0.2037	40.14	46.85
Parkway Cake	Prince George's	LS	11/01/2016	07/03/2018	11	3.0510	19.56		2.4684	0.1225	30.12	47.62
Patuxent Cake	Anne Arundel	LS	09/22/2016	03/20/2018	8	4.8048	31.48		3.6640	0.4230	20.47	26.88
Piscataway Cake	Prince George's	LS	09/20/2016	07/17/2018	35	3.2841	20.24		3.3320	0.0515	24.53	41.82
QA 1-Kent Island Cake	Queen Anne's	Ae Dig	02/22/2017	08/06/2018	7	4.9383	37.61		6.5036	0.5211	18.63	0.00
Rock Hall Liquid	Kent	Ae Dig	04/25/2017	04/24/2018	2	1.1840	24.32	18.37	11.0169	0.2946	12.15	0.00
Seneca Creek Cake	Montgomery	LS	09/20/2016	07/17/2018	43	5.5684	37.19		5.4180	0.4657	24.41	37.79

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Sharptown	Wicomico	Ae Dig	01/03/2017	04/24/2018	2	0.0797	0.58	0.55	0.0564	0.3305	1.89	7.40
Liquid												
Sod Run	Harford	An Dig	10/04/2016	06/05/2018	18	4.4359	35.76	31.63	7.9768	0.1861	16.62	0.00
Cake												
Liquid												
Taneytown	Carroll	Ae Dig	03/30/2017	03/01/2018	2	2.9150	23.19	26.76	6.5265	0.3240	16.60	0.00
Cake												
Liquid												
Thurmont	Frederick	Ae Dig	03/21/2017	03/21/2017	1	6.7796	54.49	47.89	9.5035	1.3200	12.34	0.00
Liquid												
Upper Potomac River Commission/Westernport	Allegany	Ae Dig	03/15/2017	04/04/2018	3	0.5926	4.72		0.3216	0.0451	19.27	0.00
Cake												
Valley Forge Sewage Authority	Outside of Maryland	LS	10/11/2016	07/17/2018	22	4.0666	27.51		1.6769	0.1522	30.92	25.10
Cake												
Wicomico Shores	St. Mary's	Ae Dig	05/02/2017	04/03/2018	2	3.9120	36.33		4.5342	0.1932	34.10	0.00
Cake												

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