NATIONAL BIOSOLIDS DATA PROJECT

STATE BIOSOLIDS SURVEY

2018 data
conducted 2020-2021
biosolidsdata.org

North Dakota

Infrastructure & Wastewater

	2004 Data	2018 Data	
Total Number of WWTPs:	**3 (survey), 284 CWNS**	**285**	
WWTP & Biosolids Infrastructure Totals			
Number of Separate Preparers (in- or out-of-state, receiving solids from your state):	0	0	----------
Total number of your state's WWTPs sending to those Separate Preparers:	0	0	----------
Number of operating sludge incinerators in your state (total):	0	0	----------
Fluidized bed:	0	0	----------
Multiple hearth:	0	0	----------
Number of Part 258 landfills in your state accepting sewage sludge:	data not requested for 2004	no data	----------
Number of WWTPs in your state with industrial pre-treatment programs:	data not requested for 2004	4	----------
Number of WWTPs in your state with *sludge* lagoons:	data not requested for 2004	many	----------
Wastewater Flow Totals			
Total statewide average daily wastewater flow (MGD):	data not requested for 2004	60	----------
Total statewide WWTP *design* capacity for wastewater flow (MGD):	data not requested for 2004	no data	----------
Total statewide average daily *dry weather* flow (MGD):	data not requested for 2004	no data	----------
Other Totals			
Number of documented odor & nuisance complaints received by state in 2018 related to biosolids transportation and use or disposal outside of the gates of the WWTP:	data not requested for 2004	0	----------
Number of WWTPs involved in those complaints:	data not requested for 2004	0	----------
Percent of population served by on-site systems (e.g. septic systems):	no data	no data	----------

The 2004 data on left are from 2005, considered representative of 2004, are from EPA Region 8, and include the largest major TWTDS in North Dakota. • The 2018 estimate of number of WWTPs and total average flow are from Seiple et al. 2020. • 10 WWTPs are majors (>1 MGD), accounting for 76% of the state's flow, and ~275 are minor, mostly lagoon systems.

Biosolids Use and Disposal

UNITS:	Dry metric tons	**Dry metric tons**	
BIOSOLIDS USED OR DISPOSED, 2018 (adjusted total):			**7,000**

Summary

	Number of Entities (WWTPs & Sep. Preparers) Going To…	Quantity of Biosolids	Number of Entities (WWTPs & Sep. Preparers) Going To…	Quantity of Biosolids
Beneficial Use (applied to soils, not including ADC)	2	1,400	6	4,046
Disposal & Alternative Dispositions	1	6,397	4	2,685
Other	0	0	16	104
TOTAL	**3**	**7,797**	**26**	**6,835**

NOTE: Quantity of sewage sludge or biosolids used or disposed means the quantity that goes out the gate of the WWTPs. Use the units (the form of measurement) you chose above.

Data totalling 3,651 dry metric tons (DMT) for 5 WRRFs - 5 of the state's largest - are from U. S. EPA ECHO electronic reporting for 2018. North Dakota has several large and many smaller lagoon wastewater and sludge storage systems. The solids (sludge) from the large lagoon systems are cleaned out and stored, land applied, or disposed of every year. The solids from the small lagoon systems are cleaned out every 5 - 20+ years. NBDP assumes that 5% of small (<1 MGD) lagoon systems are cleaned out and the solids are used or disposed in any given year, which results in an estimated 106 dmt included in the "other" line at left.

Beneficial Use

	Number of Entities (WWTPs & Sep. Preparers) Going To…	Quantity of Biosolids	Number of Entities (WWTPs & Sep. Preparers) Going To…	Quantity of Biosolids
Agricultural (EQ, Class A, & Class B)	2	1,400	5	3,796
Forestland (EQ, Class A, & Class B)	0	0	0	0
Reclamation (EQ, Class A, & Class B)	0	0	0	0
Class A EQ Distribution (bagged or bulk, public distribution, or unsure where it went)	0	0	1	250
Beneficial Use Subtotal	**2**	**1,400**	**6**	**4,046**
Long-term storage	0	0	many lagoons	
Number of *acres* to which biosolids were applied:		no data provided		no data

Disposal & Alternative Dispositions

	Number of Entities (WWTPs & Sep. Preparers) Going To…	Quantity of Biosolids	Number of Entities (WWTPs & Sep. Preparers) Going To…	Quantity of Biosolids
Landfill (total)	1	6,397	4	2,685

Burial	data not requested for 2004	data not requested for 2004	4	2,685
Alternative daily (ADC), intermediate, or final cover	data not requested for 2004	data not requested for 2004	no data	no data
Surface Disposal	0	0	0	0
Incineration	0	0	0	0
Cement kiln or industrial furnace	data not requested for 2004	data not requested for 2004	0	0
Deep well injection	data not requested for 2004	data not requested for 2004	0	0
Gasification	data not requested for 2004	data not requested for 2004	0	0
Pyrolysis	data not requested for 2004	data not requested for 2004	0	0
Disposal & Alternative Dispositions Subtotal	**1**	**6,397**	**4**	**2,685**
TOTAL	**3**	**7,797**	**26**	**6,835**

Fargo, the largest city in North Dakota, landfills its solids at the city-owned landfill. Landfill disposal is the likely, assumed outlet for solids from Minot, Wahpeton, and West Fargo, all 3 of which are large lagoon systems.

Biosolids Quality Summary

	Number of Entities (WWTPs & Sep. Preparers) Producing…	Quantity of Biosolids	Number of Entities (WWTPs & Sep. Preparers) Producing…	Quantity of Biosolids
Class A EQ	0	0	1	250
Other Class A	0	0	0	0
Class B	3	7,797	5	3,796
Other (no data, etc.)	0	0	20	2,789
TOTAL	**3**	**7,797**	**26**	**6,835**

NOTE: For "number of entities," the total may not match because some entities go to more than one use or dispos

The relatively new (2017) Williston mechanical treatment facility is the first in the state to produce a Class A biosolids product.

Biosolids Treatment Practices

	Estimated Number of WWTPs or Separate Preparers Using…	Estimated Quantity of Biosolids Produced Using…	Estimated Number of WWTPs or Separate Preparers Using…	Estimated Quantity of Biosolids Produced Using…
Stabilization				
Aerobic Digestion (total)	0	0	no data	no data
Class A (ATAD/Other)	data not requested for 2004	data not requested for 2004	1	no data
Class B	data not requested for 2004	data not requested for 2004	no data	no data
Anaerobic digestion (AD) (total)	3	7,797		
Class A (e.g. thermophilic)	data not requested for 2004	data not requested for 2004	0	0
Class B (mesophilic)	data not requested for 2004	data not requested for 2004	1	1,321
WWTPs co-digesting (FOG, food, glycol, etc.)	data not requested for 2004	data not requested for 2004	0	N/A
Biogas used (heating, electicity, fuel, etc.;scf/year)	data not requested for 2004	data not requested for 2004	1	N/A
Lime/Alkaline (total)	0	0		
Class A lime/alkaline	data not requested for 2004	data not requested for 2004	no data	no data
Class B lime/alkaline	data not requested for 2004	data not requested for 2004	no data	no data
Composting	0	0	0	0
Thermal (e.g. heat drying, not incineration/gasificatn/pyrol)	0	0	0	0
Gasification	data not requested for 2004	data not requested for 2004	0	0
Pyrolysis	data not requested for 2004	data not requested for 2004	0	0
Hydrolysis (thermal, chemical, etc.)	data not requested for 2004	data not requested for 2004	0	N/A
Long-term (lagoons, reed beds, etc.)	1	no data	many	N/A
Oxidation ditch / extended aeration	data not requested for 2004	data not requested for 2004	several	N/A
Other stabilization technology	0	0	0	0
Dewatering				
Belt Filter Press	1	6,397	1	661
Plate & Frame Press	0	0		
Screw Press	0	0		
Centrifuge	0	0		
Vaccuum Filter	0	0		
Drying beds (open-air)	2	6,397	1	661
Solar drying (e.g. in greenhouse)	data not requested for 2004	data not requested for 2004		
Other dewatering technology	0	0		
Thickening				
Gravity thickener	data not requested for 2004	data not requested for 2004		
Gravity belt thickener (GBT)	data not requested for 2004	data not requested for 2004		
Centrifuge	data not requested for 2004	data not requested for 2004		
Dissolved air flotation (DAF)	data not requested for 2004	data not requested for 2004		
Other thickening technology	data not requested for 2004	data not requested for 2004		
Other				
Biosolids sold in bags (explain at right what size bags)	data not requested for 2004	data not requested for 2004	0	0

Fargo has anaerobic digestion; biogas is used to heat the digesters and buildings. Belt filter presses are used for dewatering in winter and drying beds are used in summer.

State Pollutant (trace metal, etc.) Concentration Limits in Biosolids Applied to Land, 2018

Enter numbers only where state limits differed in 2018 from U.S. EPA limits.

	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Lead (Pb)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Selenium (Se)	Zinc (Zn)
EPA Table 1 (mg/kg)	75	85		4300	840	57	75	420	100	7500
EPA Table 3 (mg/kg) & CPLR (kg/ha)	41	39		1500	300	17		420	36 (CPLR = 100)	2800
State ceiling limit (higher limit) (mg/kg)	orth Dakota follows Part 503.									
State high quality (lower number) limit (mg/kg)										
State CPLR (kg/ha)										
State APLR (kg/ha/365days)										

TESTING

For each of the following constituents, indicate if testing is required by your state, as of 2018.	Is testing required for *all* sewage sludge or biosolids?	Or is testing required only for biosolids being beneficially used as fertilizers and soil amendments?	Frequency of testing (indicate how often testing must be done for each parameter):		If frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:	
			In accordance with Part 503 requirements	In accordance with other frequency required (if applicable, please specify)		
Part 503 metals (As, Cu, Hg, etc.)	no	yes	yes			
Other metals (boron, silver…)	no	no	not applicable (N/A)			
Dioxins/furans	no	no	not applicable (N/A)			
PCBs	no	yes	yes			
Priority pollutants (https://www.epa.gov/sites/production/files/2015-09/documents/priority-pollutant-list-epa.pdf))	no	no	not applicable (N/A)			
Other organic compounds (e.g. PDBEs, pharmaceutical)	no	no	not applicable (N/A)			
Radioactive isotopes (alpha, beta, Ra 226, etc.)	no	no	not applicable (N/A)			
Nutrients (NPK)	no	yes	yes			
Pathogen reduction (Class A or B)	no	yes	yes			
Vector attraction reduction (VAR)	no	yes	yes			
PFAS (as of 2018)	no	no	not applicable (N/A)			
Microplastics (as of 2018)	no	no	not applicable (N/A)			
TCLP (toxicity characteristic leaching procedure)	no	no	not applicable (N/A)		required by most landfills	
Paint Filter Liquids Test	no	no	not applicable (N/A)		required by most landfills	

REPORTING

For each of the following, indicate what WWTPs and/or biosolids preparers must report to the state:	Is reporting to the state required for these parameters?	Frequency of reporting (indicate how often testing must be done for each parameter):		How are these data stored by the state?	Are data compiled by the state in reports or summaries? Is so, please attach.	
		In accordance with Part 503 requirements	In accordance with other frequency required (if applicable, please specify)			
The amounts of biosolids/ sewage sludge used or disposed	no	yes		not applicable (N/A)	no	
Part 503 metals (As, Cu, Hg, etc.)	no	yes		not applicable (N/A)	no	
Other metals (boron, silver…)	no	no		not applicable (N/A)	no	
Dioxins/furans	no	no		not applicable (N/A)	no	
PCBs	no	yes		not applicable (N/A)	no	
Priority pollutants (https://www.epa.gov/sites/production/files/2015-09/documents/priority-pollutant-list-epa.pdf)	no	no		not applicable (N/A)	no	
Other organic compounds (e.g. PDBEs, pharmaceutical)	no	no		not applicable (N/A)	no	
Radioactive isotopes (alpha, beta, Ra 226, etc.)	no	no		not applicable (N/A)	no	
Nutrients (NPK)	no	no		not applicable (N/A)	no	
Cumulative Pollutant Loading Rates (CPLR)	no	yes		not applicable (N/A)	no	
How biosolids achieve Class A or Class B	no	yes		not applicable (N/A)	no	
How biosolids achieve vector attraction reduction (VAR)	no	yes		not applicable (N/A)	no	
Solids stabilization process(es) used	no	yes		not applicable (N/A)	no	
Other biosolids treatments	no	no		not applicable (N/A)	no	
End use or disposal practice	no	no		not applicable (N/A)	no	
PFAS (as of 2018)	no	no		not applicable (N/A)	no	
Microplastics (as of 2018)	no	no		not applicable (N/A)	no	
TCLP (toxicity characteristic leaching procedure)	no	no		not applicable (N/A)	no	
Paint Filter Liquids Test	no	no		not applicable (N/A)	no	