VIRGINIA POLLUTION ABATEMENT APPLICATION

FORM D

MUNICIPAL EFFLUENT AND BIOSOLIDS

PART D-IV BIOSOLIDS CHARACTERIZATION FORM

1. Facility Name: _____

2. Design Flow: _____ MGD

3. Annual Sludge/Biosolids Production (Total): _____ metric tons (dry weight basis)

4. Annual Biosolids Land Applied or Distributed: _____ metric tons (dry weight basis)

5. Source Identification (if facility produces multiple sources): _____

6. Pathogen Treatment Classification: ☐ Class A ☐ Class B

7. Indicate Pathogen Reduction Option:

   Class B:

   ☐ Alternative 1: Fecal coliform testing -geometric mean of 7 samples

   ☐ Alternative 2: Process to Significantly Reduce Pathogens (PSRP) - if selected, indicate process below:

   Process: ☐ anaerobic digestion ☐ aerobic digestion ☐ alkaline stabilization ☐ air drying ☐ composting

   ☐ other _____

   Class A:

   ☐ Alternative 1: Fecal coliform or Salmonella testing and heat treatment at or above 50°C.

   ☐ Alternative 2: Fecal coliform or Salmonella testing and alkaline stabilization at or above 52°C.

   ☐ Alternative 3: Fecal coliform or Salmonella testing and enteric virus and viable helminth ova testing and evaluation when enteric viruses and viable helminth ova prior to pathogen treatment are equal to or greater than 1 Plaque-forming unit or one ova, respectively, per 4 grams total solids.

   ☐ Alternative 4: Fecal coliform or Salmonella testing and enteric virus and viable helminth ova testing.

   ☐ Alternative 5: Process to Further Reduce Pathogens (PFRP) - Fecal coliform or Salmonella testing and process indicated below:

   Process: ☐ composting at 55°C ☐ heat drying at 80°C ☐ heat treatment at 180°C

   ☐ thermophilic aerobic digestion ☐ beta ray irradiation ☐ gamma ray irradiation

   ☐ pasteurization ☐ other _____

8. Indicate Vector Attraction Reduction Option:

   ☐ ≥ 38% volatile solids reduction

   ☐ anaerobic 40 day bench test

   ☐ aerobic 30 day bench test

   ☐ Specific Oxygen Uptake Rate (SOUR) test

   ☐ 14 days aerobically treated at 104° F

   ☐ alkaline stabilization

   ☐ drying to ≥75% total solids with no primary sludges

   ☐ drying to ≥90% total solids including primary sludges

   ☐ no vector attraction reduction at WWTW – 6 hour incorporation into soil or injection into soil

9. Provide a description of the method of sludge treatment or stabilization for each biosolids source, including a flow diagram of each residual treatment train.

10. Provide biosolids analytical data for the following parameters from a minimum of 3 samples taken within 4 ½ years prior to the date of the permit application. Samples must be representative of the biosolids to be land applied and taken at least one month apart. Existing data may be used in lieu of sampling done solely for the purpose of this application. For all analyses, provide the documentation from a VELAP certified laboratory that indicates analysis result, analytical method used, and method detection level.

	Average Monthly Concentration[1]		
Parameter	Month/Year[2]:	Month/Year[2]:	Month/Year[2]:
Percent Solids	%	%	%
Volatile Solids	%	%	%
pH	SU	SU	SU
Alkalinity as $CaCO_3$[3]	mg/kg	mg/kg	mg/kg
Nitrogen, (Nitrate)	mg/kg	mg/kg	mg/kg
Nitrogen, (Ammonium)	mg/kg	mg/kg	mg/kg
Nitrogen, (Total Kjeldahl)	mg/kg	mg/kg	mg/kg
Phosphorus, (Total)	mg/kg	mg/kg	mg/kg
Potassium, (Total)	mg/kg	mg/kg	mg/kg
Lead	mg/kg	mg/kg	mg/kg
Cadmium	mg/kg	mg/kg	mg/kg
Copper	mg/kg	mg/kg	mg/kg
Nickel	mg/kg	mg/kg	mg/kg
Zinc	mg/kg	mg/kg	mg/kg
Arsenic	mg/kg	mg/kg	mg/kg
Molybdenum	mg/kg	mg/kg	mg/kg
Selenium	mg/kg	mg/kg	mg/kg

(1) Values to be reported on a dry weight basis unless indicated.
(2) If only one sample was analyzed in the month specified, it is not necessary to transpose the values from the attached laboratory sheet to the table above.
(3) Lime treated biosolids (10% or more lime by dry weight) must be analyzed for percent $CaCO_3$.

11. Provide calculations describing the average nutrient value of the biosolids as pounds per dry ton for the following parameters:

Plant Available Nitrogen	Phosphorus (P_2O_5)	Potassium (K_2O)	Calcium Carbonate Equivalence (for lime treated biosolids)
lbs/dry ton	lbs/dry ton	lbs/dry ton	

12. Provide a representative PCB analysis if results have not been supplied to DEQ.

Polychlorinated biphenols _____ mg/kg

13. For Exceptional Quality Biosolids, provide at least one analysis for each parameter.

Parameter	Biosolids[1]
Aldrin/dieldrin (total)	_____ mg/kg
Benzo (a) pyrene	_____ mg/kg
Chlordane	_____ mg/kg
DDT/DDE/DDD (total)[2]	_____ mg/kg
Dimethyl nitrosamine	_____ mg/kg
Heptachlor	_____ mg/kg
Hexachlorobenzene	_____ mg/kg
Hexachlorobutadiene	_____ mg/kg
Lindane	_____ mg/kg
Toxaphene	_____ mg/kg
Trichloroethylene	_____ mg/kg

(1) Values to be reported on a dry weight basis.
(2) Note: DDT = 2,2--Bis (chlorophenyl)--1,1,1—Trichloroethane; DDE = 1,1--Bis (chlorophenyl)--2,2—Dichloroethane; DDD = 1,1--Bis (chlorophenyl)--2,2--Dichloroethane

14. Provide at least one analysis of any other pollutants which you believe may be present in the biosolids. Upon review, additional analyses may be required by DEQ.

_____ _____

_____ _____

15. Based on the amount of biosolids to be land applied or distributed annually, indicate the sampling frequency:

Amount of biosolids[1] (metric tons per 365-day period)	Frequency	Check one:
Greater than zero but less than 290	Once per year	
Equal to or greater than 290 but less than 1,500	Once per quarter (four times per year)	
Equal to or greater than 1,500 but less than 15,000	Once per 60 days (six times per year)	
Equal to or greater than 15,000	Per month (12 times per year)	

(1) Either the amount of bulk biosolids applied to the land or the amount of biosolids received by a person who prepares biosolids that is sold or given away in a bag or other container for application to the land (dry weight basis).