Groundwater Evaluation Form

Wastewater Effluent, Sludge and Septage Source Information

Name of Project and any existing NPDES or ND Permit Numbers:			
Report the type(s) of Land Application:	**Effluent** ☐	**Septage** ☐	**Sludge** ☐
THE FOLLOWING QUESTIONS ARE INTENDED TO ASSESS THE POTENTIAL FOR LAND APPLICATION TO IMPACT THE ENVIRONMENT OR PUBLIC HEALTH.			
CHECK THE BOX REPRESENTATIVE OF MATERIAL CHARACTERIZATION AND SITE HISTORY TO THE BEST OF YOUR KNOWLEDGE.			
Compliance History: Please indicate which selection is reflective of your operational status (if new site, select this box). ☐	No Notice of Violation(s) (NOV) related to wastewater effluent application or sludge/septage land application since permit effective date ☐	NOV (related to a wastewater, sludge or septage land application) issued since permit effective date ☐	Under a Consent Order specifically related to an effluent, septage or sludge land application site, or a wastewater treatment system processing wastewater, septage or sludge ☐
What is the Total Nitrogen in wastewater effluent, septage or sludge material (Nitrate-Nitrogen + Ammonia-Nitrogen + Organic-Nitrogen)?	Less than 10 mg/L for last 2 years or the last 12 samples OR equivalent using a dry weight basis ☐	Between 10 mg/L and 20 mg/L for last 2 years or the last 12 samples OR equivalent using a dry weight basis ☐	Greater than 20 mg/L for last 2 years or the last 12 samples OR equivalent using a dry weight basis ☐
Are PAHs, PCBs, BTEX, Dioxin, Trihalomethanes or Chlorinated Solvents present in the wastewater effluent or process water?	Not believed to be present in any stage of the treatment works ☐	Believed to be present in the influent but not the effluent / sludge ☐	Believed to be present in effluent / sludge ☐
Has the wastewater effluent, septage or sludge been tested for the following Persistent Organic Pollutants: PCBs, Dioxins, PFAS?	No ☐	Yes, all sample results below detection and/or reprting limits ☐	Yes, detected in sample results ☐
Nutrient Source Acquisition: Where/how is the biosolid for the land application site being acquired or planned to be acquired?	Paid for/Purchased (e.g. commercial fertilizer) ☐	Given/Transferred at no cost from another location ☐	The applicant is paid to take the nitrogen source ☐
What is the Consistency of Nitrogen content in the wastwater effluent, septage or sludge? Using statistical methods-see below.	Variance of less than 10 for last 2 years or the last 12 samples ☐	Variance of 10 to 19 for last 2 years or the last 12 samples ☐	Variance of 20 or greater for the last 2 years or the last 12 samples ☐

VARIANCE CALCULATION: Calculate the dispersion of data from its mean and quantify the variability or consistency of measured data in order to understand how accurate calculations using the mean as a variable or even direct values from the set are. If calculations used to establish loading rates are based on variables with high variance the actual loading to the site becomes less certain and should be limited to error on the side of safety. Variance can easily be calculated using summary statistics in excel or by taking the average of the squared deviation of each data point from the population mean (calculated variance is unitless).

The Groundwater Protection Program (GPP) recommends what monitoring should be included in land application permits. The GPP approaches groundwater protection with a preventative approach due to the massive cost and risk to human health associated with groundwater contamination. Beneficially reusing nutrient-containing waste, miantaining the most efficient operational status, and conservative application of waste materials are essential to a successfull program. As the final treatment stage of a WWTP, land application removes nutrients from the waste source by crop uptake and allows for volatilization, biodegradation, and photo degradation of chemicals. Pollutant removal by land application is incomplete under the best circumstances and can lead to leaching excess nutrients into the groundwater. Overapplication of nutrients can increase leaching beyond the crop's root zone. Preventing overapplication requires accurate calculation of the nutrient content and the concistency of the waste materials applied can affect this calculation.

As nitrogen mineralizes throughout the year the absence or failure of a crop can lead to nitrate leaching during precipitation and irrigation events. Timing of application during the peak uptake periods and utilizing the minimum amount of nutrients to achieve a satisfactory yield

reduces leaching and lowers risk of groundwater contamination. Nearby wells can be contaminated when sites are managed improperly. Establishing a program that practices lower risk management methods in lower risk locations will require less monitoring and will be less likely to require remediation. The questions in this form highlight some of the factors used by the Department to consider which sites are appropriate for land application and what monitoring requirements may be needed to protect the Waters of the State.

Regulation 61-9 505.41(o) Misrepresentation of Information. (1) Any person making application for a Land Application permit or State permit or filing any record, report, or other document pursuant to a regulation of the Department, shall certify that all information contained in such document is true. All application facts certified to by the applicant shall be considered valid conditions of the permit issued pursuant to the application. (2) Any person who knowingly makes any false statement, representation, or certification in any application, record, report, or other documents filed with the Department pursuant to the State law, and the rules and regulations pursuant to that law, shall be deemed to have violated a permit condition and shall be subject to the penalties provided for pursuant to 48-1-320 or 48-1-330.

Groundwater Evaluation Form

Wastewater Effluent, Sludge and Septage Land Application Field Information

Name of Project and any existing NPDES or ND Permit Numbers:			
Site and Field name:			
Report the type(s) of Land Application:	**Effluent** ☐	**Septage** ☐	**Sludge** ☐
Is this a new site?	Yes ☐	No ☐	

THE FOLLOWING QUESTIONS ARE INTENDED TO ASSESS THE POTENTIAL FOR LAND APPLICATION TO IMPACT THE ENVIRONMENT OR PUBLIC HEALTH.

CHECK THE BOX REPRESENTING CONDITIONS AT THE SITE TO THE BEST OF YOUR KNOWLEDGE.

What is the Nitrate-Nitrogen concentration in the existing monitoring well network? If there are no wells or nitrate is not analyzed, select this box: ☐	Less than 2.0 mg/L for all wells ☐	Between 2.0 to 7.5 mg/L for any well ☐	Greater than 7.5 mg/L for any well ☐
What is the distance to potable drinking water wells?	Greater than 200 Feet ☐	100 to 200 feet ☐	Less than 100 feet ☐
What is the distance to the nearest surface water? Include intermittent streams as defined by R.61-69 Classified Waters.	Greater than 200 feet ☐	Between 100 and 200 feet ☐	Less than 100 feet ☐
What is the Flood Plain Designation? ☐	Above the 500 year FEMA flood area - Zone C ☐	Between the 100 year and 500 year FEMA flood areas - Zone B ☐	Inside the 100 year FEMA flood area - Zones A or V ☐
What is the Geologic setting?	Confining unit above surficial aquifer (e.g. Cooper Marl) ☐	Piedmont / Lower Coastal Plain ☐	Upper Coastal Plain / Sand Hills ☐
What is the depth to Seasonal High Water Table (SHWT)?	Greater than 10 feet ☐	Between 5 and 10 feet ☐	Less than 5 feet ☐
Which selection best describes the setback area?	All buffers are multiple zone riparian buffers with slopes less than 3% ☐	Some vegetation or features which impair the flow of water ☐	No vegetation or flow reduction measures in setback area ☐
What is the greatest slope for this field?	Less than 3% ☐	3 to 10% ☐	Greater than 10 % ☐
What is the Plant Available Nitrogen (PAN) in upper 12 inches of soil?	Less than 50 lb/ac ☐	50-150 lb/ac ☐	More than 150 lb/ac ☐
What is percent of recommended Plant Available Nitrogen (PAN) Applied Annually?	33% or less ☐	34% to 66% ☐	More than 66% ☐
Is there year-round crop/cover on site?	Yes ☐		No ☐
Is inorganic Nitrogen fertilizer applied?	None ☐	100 lb/ac or less ☐	Greater than 100 lb/ac ☐
What is the intended land application frequency?	Every fourth year or greater ☐	Every other or third year ☐	Every year ☐
Does application occur immediately prior to planting or during periods of high growth?	Always ☐	Sometimes ☐	Never ☐
Is the site Irrigated? Question for sludge sites only; select this box for any other type: ☐	No ☐		Yes ☐
How is the application timing related to crop growth?	Split, prior to planting and during maximum growth (sludge) or only when crop is present and growing (effluent) ☐	Spread all at one-time (sludge) or at variable spray rates by season (effluent) ☐	Any time (sludge) or Continuously (effluent) ☐
Describe crop fate. Where/how is the harvested crop used?	To market or used onsite for energy production ☐	Given away ☐	To landfill or incenerator ☐

NOTES: