

DISCHARGE EVENT SAMPLING GUIDANCE FOR CONCENTRATED ANIMAL FEEDING OPERATIONS (CAFOs)

The purpose of this document is to provide guidance to permittees to properly characterize discharge to surface water caused by land applications and overflow events from storage structures.

Introduction

CAFOs are authorized to discharge to surface waters of the state and/or have overflows from waste storage structures if the requirements under the National Pollutant Discharge Elimination System (NPDES) Part I.A.1 of the permit are met. Permits require that in the event of an overflow from a storage structure or discharge from a land application area, the waste and receiving surface waters are sampled and monitored. The purpose of the monitoring requirements is to determine if discharge of production area waste or waste from a land application area causes or contributes to exceedances of Michigan Water Quality Standards (WQS).

Michigan's Department of Environment, Great Lakes, and Energy (EGLE) strongly encourages facilities to develop a Discharge Sampling Plan (DSP), which includes development of a relationship with a contracted laboratory, preparation of an emergency sampling kit, and employee training, to prepare for a discharge event. Please see the attached checklists which can be helpful in developing a DSP and sampling kit.

Sampling Frequency and Locations

Discharges shall be monitored once daily by the permittee each day on which a discharge or overflow occurs and shall be consistent with Part II.B.2 in the permit. The first sample shall occur within the first hour of discharge then daily thereafter, until the end of the discharge event.

Any sampling, measurements, or observations must take place prior to the discharge entering surface waters of the state. If there are multiple points of entry into surface waters, samples for each discharge point may be required. The permittee should work with EGLE District Compliance Staff to determine if multiple samples should be taken.

Parameters and Analytical Methods

The sample parameters required for CAFO related discharges are generally nutrients associated with agricultural waste, *E. coli*, and parameters known to correlate with the presence of agricultural waste. The sample parameters required to be monitored, the sample type, reporting metric (daily average and daily maximum), units, and monitoring frequency during a discharge event are listed in the permit. Listed in Table 1 are the parameters, units, and analytical methods.

Table 1. Parameters to monitor during a discharge/overflow event and the analytical methods.

Parameter	Units	Analytical Methods
Overflow Volume (at storage structure)	Gallons	NA
Discharge to Surface Waters Volume	Gallons	NA
5-Day Carbonaceous Biological Oxygen Demand (CBOD5)	mg/L*	USEPA Method 5210
Escherichia coli (<i>E. coli</i>)	cts/100 ml†	USEPA Method 1603
Total Phosphorus (as P)	mg/L	USEPA Method 365.1
Ammonia Nitrogen (as N)	mg/L	USEPA Method 350
Total Suspended Solids (TSS)	mg/L	USEPA Method 2540D

*mg/L = milligrams per liter

†cts/100 mL = count per 100 milliliters

MGD = milligion gallong per day

The analytical methods listed are United States Environmental Protection Agency (USEPA) approved methods. Other analytical methods promulgated under 40 CFR Part 136.3 for pollutant monitoring may be used. Requests to use test procedures not promulgated under 40 CFR Part 136 must be submitted to EGLE and shall be made in accordance with the Alternate Test Procedures regulations specified in [40 CFR 136.4](https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-136/section-136.4) ([ecfr.gov/current/title-40/chapter-I/subchapter-D/part-136/section-136.4](https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-136/section-136.4)). Verification of methods used at the contracted laboratory should be made prior to analysis to confirm compliance with the permit.

Laboratories, Bottles, and Field Supplies

Potential laboratories may be found at the links listed below. Please contact a laboratory prior to delivery of samples to verify they can analyze for the required parameters. The required bottles and field supplies should be obtained from the laboratory contracted to complete the sample analysis.

- [Certified Chemistry Laboratories](#)
- [Microbial Laboratories](#)
- [Michigan Environmental Laboratory Association \(Michlabs.org\)](#)

Table 2. Sampling, Preservation and Hold Times

Parameter	Sample Bottles	Preservation Chemical	Hold Time
Total Phosphorus	500 mL plastic	Sulfuric acid (H ₂ SO ₄) Ask the contracted laboratory for preservative amount	28 days
Ammonia Nitrogen (as N)	500 mL plastic	Sulfuric acid (H ₂ SO ₄) Ask the contracted laboratory for preservative amount	28 days
5-Day Carbonaceous Biological Oxygen Demand (CBOD ₅)	1 Liter plastic	NA	2 days
Total Suspended Solids (TSS)	500 mL plastic	NA	7 days
Escherichia coli (<i>E. coli</i>)	sterile 125 mL	NA	6 hours

All sample bottles should immediately be refrigerated or placed on ice until taken to lab. Contact the contracted laboratory prior to sampling to determine if special labels, different sampling protocols, and preservation techniques are required.

Data Submission

Sampling results must be submitted using the “CAFO Discharge Monitoring Report” form in [MiEnviro](#). If sampling results are not returned prior to the deadline to submit this form, the form must be submitted by the time specified in the permit and revised when information becomes available.

EGLE Contacts

Questions regarding the groundwater discharge permitting process can be directed to the [Groundwater Permits Unit](#), Permits Section, Water Resources Division at 517-284-5570.

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