

CAFO Engineering Lightning Topics

2024 Wis. CAFO Workshops

DNR CAFO Engineering Team:

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In-Place Earth Manure Storage Engineering Evaluations

- Leakage commonly evaluated by measuring liner permeability
- Measurements conducted on difficult to collect “Shelby” tube samples
- The Department developed an alternate method in response to feedback from the Engineering Consultant Working Group
- This alternate method uses the common soil parameters, percent fines (P200) and plasticity index (PI)
- Soil P200 and PI measurements are easier to collect than “Shelby” tube samples and are often in design documentation
- Method based on permeability measurements from ~15 manure lagoons in 8 Counties

Feed Storage Runoff Storage Separation Criteria

- Process wastewater (PWW) = leachate, feed storage runoff
- CAFO code requires PWW storages to follow NR 213 Wis. Adm Code
- NR 213 differs from NRCS Design Standards in significant ways
 - Lacking concrete design option
 - Lesser clay liner and HDPE thickness
 - Greater required distance of bottom to groundwater and bedrock
- Most existing manure storages built to NRCS criteria
- Through consultant outreach, decided to accept NRCS separation criteria, rather than more stringent NR 213 criteria (decision in 2022)

Reminders for Engineering Plan Submittals

- Some commonly missed NRCS Standard Requirements
- Reception Tanks in Subsurface Saturation
 - Provide not just buoyancy calculations but concrete structural design to withstand hydrostatic pressure on floor and sides
- Increase constructed manure storage embankment height by 5% to allow for settlement
 - This is required for all types of manure storage liners, including concrete
- Screen for locations of sinkholes and karst features within 1000 ft of manure storages
 - In areas with carbonate bedrock, screen using SNAP+ mapping or other available mapping (i.e. County level)

CONNECT WITH US

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