INTRADEPARTMENTAL MEMORANDUM

FILE: Minn-Dak Farmers Cooperative (New Permit) – Mud Solids Management Area

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SUBJECT: Permit Application Review

DATE: June 2, 2022

Introduction

On April 30, 2021, the North Dakota Department of Environmental Quality (Department) received a permit application for a new permit for a waste pile facility for Minn-Dak Farmers Cooperative’s (Minn-Dak) mud solids management area. A revised permit application was submitted to the Department on March 4, 2022.

Minn-Dak currently owns and operates a waste pile facility (mud solids management area), currently regulated under Permit 0150, on approximately 80 acres located in Section 17, Township 133 North, Range 57 West in Richland County, ND. At the Department’s request, Minn-Dak is proposing to separate the mud solids management area from Permit 0150 and establish the mud solids management area under a separate permit. In addition, this permit application and two other permit applications will separate existing solid waste management units, currently covered under Permit 0150, into separate permits which will be covered in separate permit application review memos. Permit 0150 will include the coal ash storage pile, inert waste landfill, temporary storage area, and piling grounds. The mud solids management area and surface impoundments will each be covered under a new permit. This review is only covering the mud solids management area. The facility was first permitted in 1994.
**Design**

The mud solids management area includes three (3) phases of construction. This area is located west of Minn-Dak's discharge reservoir and north of the on-site railroad spur loop. The total area for all of the phases covers 80 acres. Currently Phases I and II have been completed and cover approximately 55 acres. Phase III, the western approximate third of the area, has yet to be constructed.

The entire management area has an overall storage capacity of approximately 7,580,000 cubic yards (yd$^3$). Approximately 120,000 yd$^3$ of capacity was lost from Phase III with the construction of the railroad spur. The storage height is limited to approximately 100 feet above the surrounding grades and the side slopes are a maximum of 25%. Storage of mud solids may be long term until beneficial use depletes the stockpile, but mud solids will not be permanently closed in-place. Mud solids will be removed from the site prior to closure of the mud solids management area.

The original mud solids management area design had a holding pond located south and slightly east of Phase I. The construction of the railroad spur changed the pond's shape. The drainage now flows into what is currently listed as a Stormwater Pond located within the railroad spur and adjacent to the coal storage area. This holding pond will be further addressed in the surface impoundment permit application review.

**Operation**

The mud solids management area is a waste pile area for the long-term storage of mud solids and wastewater pond sludge and the mining of these materials for beneficial use. Materials are transported and managed by an independent contractor who spreads and periodically turns the material with a dozer/grader/agricultural equipment. Materials are typically conditioned over the course of one season.

The material is graded to form stable slopes and the area is filled from the northeast to the southwest. Access roads with the area are shifted as necessary to account for additional materials and changing elevations.

Dried/conditioned mud materials are excavated for land applications and may qualify for an unregulated byproduct designation in accordance with Minn-Dak's Solid Waste Management Plan dated March 2022. This allows for additional uses such as backfill, roadway corridor project topsoil, or augmenting tree row areas.

Minn-Dak personnel inspect the mud solids management area at least once every other week from March 1st through December 1st and at least monthly during the rest of the year. Inspections also occur after significant precipitation or runoff events.

**Closure**

Interim closure activities will be implemented as necessary to reduce the potential for erosion and groundwater impacts. Side slopes will be a maximum of 25% and decreasing to 5% near the top elevations. Areas that have reached maximum grades will be seeded as well as areas that are not planned to be active for more than two years.
Clean closure of this solid waste management unit is planned. Once the unit is no longer accepting additional material and all materials have been subsequently removed for beneficial use, the area will be tilled (including the clay liner) and planted with grasses or an agricultural crop.

**Compliance History**

The following items of noncompliance have been noted since 2016:

There have been numerous odor complaints against Minn-Dak over the years. While the primary odor issues have been associated with several of the surface impoundments, the mud solids management area does occasionally have an odor, and it may have been a contributing factor to some of the odor complaints.

The above items of noncompliance have been appropriately addressed by the facility.

A Notice of Violation (NOV) was issued to the facility on December 16, 2019. Minn-Dak responded to the NOV on January 20, 2020, and the Department and Minn-Dak signed an Administrative Consent Agreement (ACA) on October 12, 2020.

**Solid Waste Management Rules (NDAC Article 33.1-20)**

**NDAC Section 33.1-20-02.1-05. Record of notice.**

A record of notice is not required for waste piles that will be clean closed.

**NDAC Section 33.1-20-02.1-06. Property rights.**

The 2015 Permit Application included plats showing that Minn-Dak owns the property and that the facility has local zoning approval. Also, a search of the Richland County’s Tax Information website also lists Minn-Dak as the property owner.

**NDAC Section 33.1-20-03.1-01. Preapplication procedures.**

A preapplication is not required for waste pile facilities and the Mud Solids Management Area is currently permitted under Permit 0150.

**NDAC Section 33.1-20-03.1-02. Permit application procedures.**

**NDAC Subsections 33.1-20-03.1-02(1) – (3)**

Minn-Dak submitted a signed application and supporting documents to the Department on April 30, 2021. A revised permit application was submitted on March 4, 2022. An application fee of $20,000 was received on April 30, 2021.

**NDAC Subsection 33.1-20-03.1-02(4)**

A public notice by the facility is not required for a permit renewal and no major modifications are being proposed.
NDAC Subsection 33.1-20-03.1-02(5)

Notification to the North Dakota Public Service Commission is not required as the facility is not proposing to dispose of coal processing wastes in a mining permit area.

NDAC Subsection 33.1-20-03.1-02(6)

Applications for a solid waste management unit or facility permit must include the following information where applicable:

a. A completed application form, subsection 1;

Minn-Dak submitted a signed application and supporting documents to the Department on April 30, 2021. A revised permit application was submitted on March 4, 2022. An application fee of $20,000 was received on April 30, 2021.

b. A description of the anticipated physical and chemical characteristics, estimated amounts, and sources of solid waste to be accepted, including the demonstration required by North Dakota Century Code section 23.1-08-14;

Muds solids are created when the beets from Minn-Dak are dumped by truck into a flume at the factory where soils are washed off the beets in pH adjusted (via the addition of unspent lime) water. The resulting soil-filled water is clarified, and the clarifier underflow is referred to as 'mud'. The mud is dewatered in the factory's belt press and are considered 'pressed mud solids' which are trucked to the mud solids management area to be conditioned/dried until the materials return to a texture resembling agricultural soil. According to Minn-Dak's Solid Waste Management Plan, dated March 2022, approximately 140,000 tons of mud solids are produced annually.

Chemical characteristics of the mud solids are determined with a composite sample which is collected in accordance with agricultural field methods as the materials originally come from agricultural fields. Parameters are outlined in the Sampling, Analysis, and Field Equipment Calibration (SAFEC) Plan located in Minn-Dak's Nutrient Management Plan dated March 2022.

Wastewater sludge is created when solids precipitate out of the liquids in the wastewater surface impoundments (Ponds 3 and 4). The wastewater system at the facility handles only factory wastewater. It does not handle any sanitary sewer output from the facility. According to Minn-Dak's Solid Waste Management Plan, dated March 2022, Waste Stream Details and Description Table, wastewater sludge is dredged approximately every five years. Some sludge from the Pond 3 anaerobic digester is sent to be clarified in the aerobic treatment system and the clarifier underflow is sent to the mud presses at which point it becomes comingled with the mud solids.
c. The site characterization of section 33.1-20-13-01 and a demonstration that the site fulfills the location standards of section 33.1-20-04.1-01;

The location of the facility was previously reviewed by the North Dakota State Water Commission, North Dakota Geological Survey, and the North Dakota Department of Health's Division of Water Quality and Division of Waste Management (now the North Dakota Department of Environmental Quality). While the reviews concluded the location may not be the best possible location, the site could be used if waste management facilities and practices were significantly upgraded. Many upgrades have taken place over the last permit period.

According to the Earth Tech report entitled "Mud Solids Management Area," the entire surface of Richland County is covered with Pleistocene glacial drift ranging from 150 to 490 feet thick. Near-surface deposits are predominately silty and sandy clay which were deposited as glacial till or glacial lake sediments. Deeper deposits consist of interbedded sandy clay tills and glacial outwash deposits of sand and gravel. The outwash deposits are designated as local aquifers as described in the following section. Regionally, the glacial drift overlies bedrock of Cretaceous age (Baker, 1967). The surficial deposits encountered during hydrogeologic investigations generally consisted of topsoil/fill and glacial deposits. The glacial deposits occur as discontinuous seams as well as distinctive units that include resedimented till and fine- to coarse-grain sand, all associated with ice-marginal deposition.

The facility meets the location standards and additional information is included in Minn-Dak's 2015 Permit Application that was received by the Department on December 21, 2015.

d. Soil survey and segregation of suitable plant growth material;

A soil survey and segregation of suitable plant growth material is not required for waste pile facilities.

e. Demonstrations of capability to fulfill the general facility standards of section 33.1-20-04.1-02;

- **Training:** Training programs and schedule are outlined in Minn-Dak's Solid Waste Management Plan dated March 2022. The facility provides its own internal training as well as attends some Department trainings when available. Documentation is handled on an internal online system which can provide information for the annual reports.

- **Water Protection Provisions:** The facility has been covered by a groundwater monitoring plan under the original permit 0150 and will continue to be covered.

- **May not cause discharge of pollutants into waters of the state:** All facility stormwater is recycled through the facility processes and then routed through the wastewater treatment system.
• Ambient Air Quality Standards or Odor Rules: Odor masking machines have been utilized by the facility to assist with controlling intense odors from the site. A copy of the facility's Odor Management Plan was submitted with the permit application.

• Fugitive Dust and Windblown Debris: In the event that excessive dusting occurs, or windblown debris is observed, the working face will be covered with fresh damp waste or irrigated to suppress dust. To reduce fugitive dust on roads, vehicle speed limits are reduced. If fugitive dust occurs on the roads, water or dust suppressant chemical will be applied. Suppression of the dust will be completed at the earliest time practicable but must be completed within two days of reporting.

• Open Burning: Not applicable as the facility is not proposing to burn any wood waste.

• Permanent Sign: The facility is not required to have a sign as the site is secured and only for Minn-Dak's use. It is not open to the public.

• Inspections: Weekly inspections are outlined in Minn-Dak's Solid Waste Management Plan dated March 2022.

f. Facility engineering specifications adequate to demonstrate the capability to fulfill performance, design, and construction criteria provided by this article and enumerated in this subdivision;

1) Transfer stations and drop box facilities, section 33.1-20-04.1-06.

The requirements of this section are not applicable as the facility is not proposing a transfer station or a drop box facility.


The mud solids management area is a waste pile area for the long-term storage of mud solids and wastewater pond sludge and the mining of these materials for beneficial use. Materials are transported and managed by an independent contractor who spreads and periodically turns the material with a dozer/grading/agricultural equipment. Materials are typically conditioned over the course of one season.

The material is graded to form stable slopes and the area is filled from the northeast to the southwest. Access roads with the area are shifted as necessary to account for additional materials and changing elevations.

Dried/conditioned mud materials are excavated for land applications and may qualify for an unregulated byproduct designation in accordance with Minn-Dak's Solid Waste
Management Plan dated March 2022. This allows for additional uses such as backfill, roadway corridor project topsoil, or augmenting tree row areas.

Minn-Dak personnel inspect the mud solids management area at least once every other week from March 1st through December 1st and at least monthly during the rest of the year. Inspections also occur after significant precipitation or runoff events.

Interim closure activities will be implemented as necessary to reduce the potential for erosion and groundwater impacts. Side slopes will be a maximum of 25% and decreasing to 5% near the top elevations. Areas that have reached maximum grades will be seeded as well as areas that are not planned to be active for more than two years.

Clean closure of this waste management unit is planned. Once the unit is no longer accepting additional material and all materials have been subsequently removed for beneficial use, the area will be tilled (including the clay liner) and planted with grasses or an agricultural crop.

3) Resource recovery, section 33.1-20-04.1-08.

The requirements of this section are not applicable as the facility is not proposing any resource recovery activities.

4) Land treatment, section 33.1-20-04.1-09 and chapter 33.1-20-09.

The requirements of this section are not applicable as the facility is not proposing a land treatment facility.

5) Non-CCR surface impoundments, section 33.1-20-04.1-09 and chapter 33.1-20-08.1.

The requirements of this section are not applicable as the facility is not proposing any surface impoundments.

6) Any disposal, section 33.1-20-04.1-09.

The requirements of this section are not applicable as the facility is not proposing any disposal activities.

7) Inert waste landfill, chapter 33.1-20-05.1.

The requirements of this section are not applicable as the facility is not proposing an inert waste landfill.
8) Municipal waste landfill, chapter 33.1-20-06.1.
The requirements of this section are not applicable as the facility is not proposing a municipal waste landfill.

9) Industrial waste landfill, chapters 33.1-20-07.1 or 33.1-20-10.
The requirements of this section are not applicable as the facility is not proposing an industrial waste landfill.

10) TENORM waste landfill, chapters 33.1-20-07.1 or 33.1-20-10 and 33.1-20-11
The requirements of this section are not applicable as the facility is not proposing a TENORM waste landfill.

11) Special waste landfill, chapter 33.1-20-07.1;
The requirements of this section are not applicable as the facility is not proposing a special waste landfill.

12) CCR unit, chapter 33.1-20-08;
The requirements of this section are not applicable as the facility is not proposing a CCR unit.

13) Municipal solid waste ash landfills, chapter 33.1-20-10;
The requirements of this section are not applicable as the facility is not proposing a municipal solid waste ash landfill.

14) Regulated infectious waste unit, chapter 33.1-20-12;
The requirements of this section are not applicable as the facility is not proposing a regulated infectious waste unit.

g. The plan of operation of section 33.1-20-04.1-03;
The plan of operation is outlined in Minn-Dak's Solid Waste Management Plan dated March 2022. Muds solids are hauled to the mud solids management area during each campaign where the independent contractor manages spreading operations. The mud solids are dried and conditioned during the summer following the campaign. Typically, the mud solids can be conditioned in one season. Material is graded to a maximum of 25% slopes. Mud solids that have been dried and conditioned are mined for beneficial use. The active excavation areas will be kept as small as practical to minimize wind and water erosion. The entire management area has an overall storage capacity of approximately 7,580,000 yd³. Approximately 120,000 yd³ of capacity was lost from Phase III with the construction of the railroad spur.
h. Demonstration of the treatment technology of section 33.1-20-01.1-12;

The requirements of this section are not applicable as the facility is not proposing to treat waste.

i. The place where the operating record is or will be kept, section 33.1-20-04.1-04;

The operating record is kept on site in the office of Minn-Dak's plant manager.

j. Demonstration of capability to fulfill the groundwater monitoring, sections 33.1-20-08-06 or 33.1-20-13-02;

Groundwater monitoring is not always required for waste pile facilities. However, based on the geological location of the facility, other solid waste units covered under Solid Waste Management Permits, previous impacts to the groundwaters of the area from process water spills, and the facility's location within a wellhead protection area, a groundwater monitoring plan was reviewed and approved by the Department.

k. Construction quality assurance and quality control;

The application states that Quality Assurance/Construction Reports were prepared for Phase I (Interstate Engineering in 2003) and Phase II (Interstate Engineering in 2006). Any additional construction will be covered by a separate QAQC report if applicable.

l. Demonstrations of capability to fulfill the closure standards, section 33.1-20.1-04.1-05 and otherwise provided by this article;

Clean closure of this area is outlined in the 2015 Permit Application. Additional information can be found in the Closure section of this memo.

m. Demonstrations of capability to fulfill the postclosure standards, section 33.1-20-04.1-09 and otherwise provided by this article; and

The requirements of this section are not applicable for clean closure of a facility.

n. A disclosure statement as required by North Dakota Century Code section 23.1-08-17.

A disclosure statement that meets the requirements of this section was submitted to the Department on April 30, 2021.
Site Specific Conditions

It is recommended that the following conditions from the current Permit 0150 be included in the new permit (they have been renumbered in accordance with the new permit):

G.1. Waste disposed of in the mud solids management area shall be restricted to harvest tare soil from the on-site piling grounds; soils derived from the initial washing of the sugar beets; pressed solids derived from wastewater treatment process and, only as necessary, pond cleanings from Pond 3 and Pond 4. The latter two wastes, due to the elevated nutrient value, shall be managed through the facility’s Nutrient Management Plan should their disposal in the mud solids management area create compliance problems.

G.2. Soil sampling will be done, at minimum, once every permit period or during any change of waste stream (i.e., during cleanout of any pond). The sample will be representative of all necessary parameters.

Conclusion

Based on the submitted application and items discussed above, the Minn-Dak Farmers Cooperative has shown that the renewal meets the requirements of the North Dakota Solid Waste Management Rules. It is proposed that the Department grant Minn-Dak Farmers Cooperative a permit with the conditions listed in the draft permit. The proposed permit length is for a period of 6 years because it is an existing waste pile facility which is being separated from the current Permit 0150 due to past compliance problems at the facility, the waste streams have not changed, there is an approved Nutrient Management Plan, and the permit length reflects consideration to future permit workload.

CRH:DAT:AAC:MPM
Attachment