INTRADEPARTMENTAL MEMORANDUM

FILE: Minn-Dak Farmers Cooperative (0150)

TO: Charles R. Hyatt, Director
    Division of Waste Management

THROUGH: Diana A. Trussell, Manager
         Solid Waste Program
         Division of Waste Management

FROM: Alexis A. Craig, Environmental Scientist
      Solid Waste Program
      Division of Waste Management

Michael P. Miller, Environmental Engineer
Solid Waste Program
Division of Waste Management

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 the renewal for Minn-Dak Farmers Cooperative's (Minn-Dak) solid waste management units. A revised permit application was submitted to the Department on March 4, 2022.

Minn-Dak currently owns and operates an inert waste landfill, temporary storage area, piling grounds, and coal ash storage pile, regulated under Permit 0150, on approximately 124 acres located in Section 20, Township 133 North, Range 47 West in Richland County, ND. Minn-Dak is proposing to renew their permit to continue operating an inert waste landfill, coal ash storage pile facility, temporary storage area, and piling grounds. 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 ground. The mud solids management area and surface impoundments will each be covered under a new permit. This review is only covering the inert waste landfill, temporary storage area, piling grounds, and coal ash storage pile. The facility was first permitted in 1994.
Design

Minn-Dak is a sugar beet processing cooperative located in Wahpeton, ND. The central processing facility in Wahpeton was constructed in the early 1970s and is located on more than 1,200 acres. Minn-Dak's Wahpeton facility is comprised of permitted solid waste management units, on-site beet storage grounds, a wastewater treatment system, ponds, surrounding agricultural fields owned by Minn-Dak, and factory buildings and structures. The solid waste management units encompassed in Permit 0150 are the inert waste landfill, coal ash storage pile, temporary storage area and piling grounds.

The inert waste landfill (spent lime, rocks and trash) was originally permitted in May 1994. At the time, the facility was only 25 acres and was only used for the disposal of lime. In 2001, the facility increased its acreage to 65 acres and added rocks and trash to the waste acceptance plan. The disposal capacity is 4,200,000 cubic yards (yd³).

The coal ash storage pile (the 'bunker') was established in the mid-1990s and expanded in 2002. The current size is 50,688 square feet (ft²) with 18-foot concrete side walls and a concrete floor. The maximum storage capacity is 34,132 yd³.

The temporary storage area and piling grounds were identified as waste piles by the Department during the review of the permit application. The temporary storage area is 10 acres with a maximum storage capacity of 81,000 yd³. The piling grounds are approximately 34 acres. A map was included which shows what will be stored in the temporary storage area and the piling grounds.

Operation

The inert waste landfill (spent lime, rocks and trash) accepts waste lime from beet operations, waste lime from the Wahpeton Water Treatment Plant (approximately 2,000 tons/year), and rocks and trash, which consists primarily of rocks, dirt clumps, incidental concrete from the piling grounds slabs, beet fragments, stems, and weeds. In Minn-Dak's sugar beet processing, high-quality hydrated lime is used to purify sugar and improve color. A lime kiln is used to hydrate lime for that purpose. Once the lime is used in the process, it is placed in the inert waste landfill as inert "spent" lime. The spent lime is mined for beneficial agricultural use.

The coal ash storage pile (the 'bunker') accepts fly ash waste. Coal ash consists of bottom ash and fly ash. Bottom ash is coarse ash particles which are too large to be carried up the smokestacks during combustion. Fly ash is a very fine powdery material composed mostly of silica, generated by burning finely ground coal in a boiler. According to Minn-Dak's Solid Waste Management Plan, dated March 2022, only fly ash is handled in the bunker. Minn-Dak has a private contractor load out fly ash from the boilers and pulp dryer on a regular basis and haul the fly ash to the bunker. The fly ash is periodically compacted by front-end loaders. Inspections are conducted weekly to observe the spreading and compaction and to confirm the ash remains below the sidewalls. After campaign (approximately August through May) concludes, the fly ash is beneficially used for soil stabilization projects at the beet piling grounds. Approximately 7,000 tons of fly ash is stored annually. The fly ash is loaded onto dump trucks and covered with tarps. Fly ash is spread and incorporated in the subgrade soils as soon as practical and typically within an eight-hour period.

The temporary storage area is for managing lime fines, unspent lime, bottom ash, and concrete from on-site construction projects. Minn-Dak and its independent contractors move materials
from the factory and pile sites to the storage area as needed. Separate piles are maintained for each material and/or waste type. The piles are generally created and then depleted on an annual basis according to Minn-Dak’s Solid Waste Management Plan, dated March 2022. Inspections occur at least once every other week from March 1st – December 1st, and at least monthly at other times. Additional inspections will occur after significant precipitation or runoff events.

- Lime fines are created throughout the year by screening the lime rock for use in the kiln(s). The approximate annual tonnage is 3,000 tons. The lime fines are stored for no longer than one year and exclusively used for maintenance of Minn-Dak roads which are illustrated on Figure 2 in Minn-Dak’s Solid Waste Management Plan, dated March 2022. Minn-Dak will need to submit a beneficial use determination for review and approval. Other options, should the fines not be utilized for road maintenance, include use in the beet process, delivery to the rocks and trash section of the inert landfill for disposal, or disposed of in a commercial landfill.

- Unspent lime is utilized to adjust the pH in the beet washing flume (small pieces and powdery portion) or reprocessed (large pieces) in the lime kiln according to Minn-Dak’s Solid Waste Management Plan, dated March 2022. Large pieces are also utilized for riprap as listed in Minn-Dak’s 2015 Permit Application. Approximately 1,000 tons is generated annually.

- Bottom ash generation per year is approximately 2,000 tons. It is stockpiled temporarily until it is utilized for beneficial use on facility roads and dikes. Minn-Dak will need to submit a beneficial use determination for review and approval.

Concrete from Minn-Dak site projects is occasionally placed in the temporary storage area. Usually Minn-Dak has the contractors remove it from the site. What is temporarily stored is used as riprap on future site construction projects.

Construction debris is listed in Minn-Dak’s Solid Waste Management Plan, dated March 2022. This document lists additional materials including asphalt, wood, gravel, plastic, or other miscellaneous construction material. Materials not utilized on-site in future projects are disposed of off-site in a commercial landfill.

The piling grounds may be used for storage of harvest waste - Tare 1 (factory), discarded sugar beets, pressed mud and pulp, rocks and trash, and piling grounds cleanup waste. Material requiring storage will be placed on impervious surface while the specific location within the area may vary depending on area availability.

**Closure**

The inert waste landfill will be closed with 25% side slopes which will decrease to 5% near the top. The cover will be four-foot thick, comprised of clay-rich earthen materials and suitable plant growth materials in accordance with NDAC Section 33.1-20-05.1-04. Seed and mulch will be installed and will follow the Department’s Guideline 24 for General Native Grass Seeding as stated within Minn-Dak’s Solid Waste Management Plan, dated March 2022. Additional information can be found in I. Demonstrations of capability to fulfill the closure standards section of this memo.
The coal ash storage pile (the 'bunker') will not be closed with materials in place. Final closure will not occur until all coal ash has been removed and properly disposed of or beneficially used. Closure details were provided as part of the 2015 Permit Application. Final closure will occur when all coal materials have been removed and either properly disposed of or recycled. Minn-Dak will clean all visible staining within the storage area. All litter and other materials will be removed from the facility grounds. Any equipment and space associated with the various types of processing or transfer will be cleaned once all the waste has been removed. Minn-Dak will inform the Department once the area has been closed.

The temporary storage area and piling grounds will not be closed with materials in place. Final closure will not occur until all materials have been removed and properly disposed of or beneficially used. Final closure of the temporary storage area will consist of grading to near pre-existing elevations with positive drainage to ditches along the southern perimeter of the temporary storage area. The final closure area will consist of 12 inches of soil from the mud solids management area or other suitable topsoil source. Minn-Dak will apply seed and mulch in accordance with the Department’s Guideline 24.

**Compliance History**

The following items of noncompliance have been noted since 2016:

- Slopes and cover of the inert waste landfill.
- There have been odor complaints against Minn-Dak. While the primary odor issues have been associated with several of the surface impoundments, freshly placed lime may have an odor, and it potentially may have been a contributing factor to some of the odor complaints.
- Wastes outside of permitted areas.
  - Windblown ash around the bunker.
  - Lime run-off/windblow accumulation around City of Wahpeton's pump/well building.
- Dust control issues.
- 2019 and 2020 Annual Groundwater Reports indicated issues locating and sampling wells.
- Use of unpermitted area as temporary storage.
- Training of personnel: not familiar with operations.

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 was filed with the Richland County Recorder’s Office on November 4, 2002. A copy was provided to the Department as part of a letter dated November 11, 2002.
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 an inert waste landfill.

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

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

On April 30, 2021, the Department received an application form and supporting documents that were either provided and/or referenced with dates by Minn-Dak. The application packet was prepared by Barr, the applicant’s consulting engineer. One of the primary references, the Application for Permit Renewal dated December 21, 2015, was prepared by SEH. A revised permit application was submitted to the Department on March 4, 2022.

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;

On April 30, 2021, the Department received an application form and supporting documents that were either provided and/or referenced with dates by Minn-Dak. The application packet was prepared by Barr, the applicant’s consulting engineer. One of the primary references, the Application for Permit Renewal dated December 21, 2015, was prepared by SEH. An application processing fee of $2,000 was included with the application. A revised permit application was submitted to the Department on March 4, 2022.
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;

- Inert Waste Landfill
  - Total capacity: 4,200,000 yd$^3$
  - Remaining capacity (as of permit application): 2,850,000 yd$^3$.
  - Sources of both materials are from sugar beet processing.
  - Based on the average yearly waste volume for the previous 5 years provided in the application, and if spent lime beneficial use is halted, the remaining life of the landfill is approximately 15 years.
  - Spent lime is calcium carbonate which precipitates during the purification process. Spent lime has shown a reduction in production in the last three years (72,400 yd$^3$; 56,100 yd$^3$; 35,500 yd$^3$). Spent lime can be mined and utilized for agricultural purposes.
  - Rocks and trash: Minn-Dak defines it as rocks, dirt clumps, incidental concrete chunks from piling grounds, beet fragments, stems, weeds, generated from initial washing of sugar beets. Rocks and trash have shown a significant increase in the last three years (25,300 yd$^3$; 72,500 yd$^3$; 153,700 yd$^3$).

- Coal Ash Storage Pile (the 'bunker'): Waste characteristics of the fly ash are provided in Minn-Dak's 2015 Permit Application. They cover analytical information from 2010-2015. This information has been utilized to allow for beneficial use of the materials as a cementitious binder for soil stabilization. A high pH is typical of this material. The source of this waste is from Min-Dak's boiler system. They generate approximately 4,800 tons of fly ash per year.

- Temporary Storage Area
  - Total Capacity: 81,000 yds$^3$
  - The following waste streams are managed at the temporary storage area: Lime fines, unspent lime, bottom ash, tare dirt, construction debris generated from on-site. The construction debris may come from damaged or worn concrete that is removed and replaced. Rebar is removed before placement.

- Piling Grounds Storage Area
  - Total area is approximately 34 acres
  - The piling grounds may be used for storage of harvest waste -Tare 1 (factory), discarded sugarbeets, pressed mud and pulp, rocks and trash, and piling grounds cleanup waste. Material requiring storage will be placed on impervious surface while specific location within the area may vary depending on area availability.
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 landfill 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 reseated till and fine- to coarse-grain sand, all associated with ice-marginal deposition.

The landfill 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;

Soils from the mud solids management area or comingled material will provide suitable plant growth material (SPGM) as well as temporary and final closure for solid waste management units. Minn-Dak produces pressed mud solids annually from their belt filter press during sugar beet processing.

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 the facility’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 and will continue to be covered by the same plan.
• **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. However, the May 27, 2021 Minn-Dak letter discussing the eastern stormwater ponds propose to change this. The stormwater that is in the eastern stormwater ponds will not be routed through the wastewater treatment system and will be discharged as stormwater as allowed by the Department’s Division of Water Quality.

• **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.

• **Fugitive Dust and Windblown Debris**: Dust and Windblown debris control is outlined in Minn-Dak’s Solid Waste Management Plan dated March 2022.

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

• **Permanent Sign**: The landfill 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 the Solid Waste Management Plan dated March 2022. Inspections following severe weather events are also outlined.

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.

2) **Waste piles**, section 33.1-20-04.1-07.

**Temporary Storage Area**

Lime fines, unspent lime, bottom ash, concrete, and other miscellaneous construction debris.

**Piling Grounds Storage Area**

Harvest waste – Tare 1 (factory), discarded sugarbeets, pressed mud, pulp, rocks and trash, and piling ground cleanup waste as shown in Figure 3 of Minn-Dak’s Solid Waste Management Plan dated March 2022.
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.**

Minn-Dak's Solid Waste Management Plan dated March 2022 fulfills the requirements of this section. It includes information regarding facility description, material management, operation and closure for solid waste management units, training, contingency plans, post-closure plans, and reporting/recordkeeping.

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

- **Access:** Facility is controlled with fencing and lockable gates.
- **Disposal prohibited:** The facility only accepts their own waste materials (Spent lime and rocks and trash).
- **Compaction and drainage:** Wastes are spread and compacted to promote drainage of surface water.
- **Wastes must be covered at least two times per year:** The landfill has not placed the biannual earthen cover on either the spent lime or rocks and trash areas. As the spent lime is "mined" for beneficial use, and the rocks and trash are primarily composed of earthen material, the change in twice a year cover requirement was approved through the facility's Nutrient Management Plan, dated November 2021 and the facility's Solid Waste Management Plan, dated March 2022. The landfill must still comply with outer final cover requirements.
- **Area limited to no larger than necessary:** During any time where there is beneficial use for spent lime, there will be no cover requirement for the area to help facilitate the approved
process. As such, the maximum open area of the landfill is 80 acres. As of March 2022, there is approximately 70 acres open with roughly 10 acres of temporary cover in place.

• **Lime sludge:** Lime sludge from the City of Wahpeton’s water treatment plant, as per Minn-Dak’s Solid Waste Management Plan, is accepted at the 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 application included a Solid Waste Management Plan which fulfills the requirements of this section. It includes information on waste placement and mining, fugitive dust and windblown debris control, worker inspections/frequency, and response to inspection findings.
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;  
   The requirements of this section are not applicable as the landfill is an inert waste landfill and groundwater monitoring is not required. However, based on the geological location of the landfill, other solid waste management units covered under Solid Waste Management Permits, previous impacts to the groundwaters of the area from process water spills, and the landfill'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 landfill has been working on the sequential closure of areas above the rocks and trash area and the lime inert waste landfill for the past two years. A QA/QC report has not been submitted to the Department yet, however, the landfill will be required to submit one in order for the area to be considered formally closed.

I. Demonstrations of capability to fulfill the closure standards, section 33.1-20.1-04.1-05 and otherwise provided by this article;  
   The inert landfill original engineer plans, dated March 2001 and included as part of the 2015 Permit Application, illustrate a three (3) foot final cover at a 25% slope for the inert landfill. According to a letter dated May 12, 2003, that was submitted to the Department, a more conservative cover design, at a four (4) foot thickness, was agreed upon.

   Final cover of the inert landfill will consist of 48 inches of soil from the mud solids management area or other suitable topsoil source, and then seed and mulch installed per the Department's Guideline 24. The Department's landfill cover closure standards require that surface soil loss not exceed one-tenth of 1% for the first year following construction and for subsequent years not to exceed one-hundredth of 1%. Soil loss calculations were performed in 2003 which show that the final cover design meets the Department's landfill cover closure standards.

   The facility proposed to clean close the coal ash storage pile. Closure details were provided as part of the 2015 Permit Application. Final closure will occur when all coal materials have been removed and either properly disposed of
or recycled. Minn-Dak will clean all visible staining within the storage area. All litter and other materials will be removed from the facility grounds. Any equipment and space associated with the various types of processing or transfer will be cleaned once all the waste has been removed. Minn-Dak will inform the Department once the area has been closed.

The temporary storage area and piling grounds will not be closed with materials in place. Closure details were provided to the Department in Minn-Dak’s Solid Waste Management Plan dated March 2022. Final closure will not occur until all materials have been removed and properly disposed of or beneficially used. Final closure of the temporary storage area will consist of grading to near pre-existing elevations with positive drainage to ditches along the southern perimeter of the temporary storage area. The final closure area will consist of 12 inches of soil from the mud solids management area or other suitable topsoil source. Minn-Dak will apply seed and mulch per the Department’s Guideline 24.

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

The post-closure period will begin on the date the Department approves final closure certification. Post-closure care will continue for at least 5 years following final closure. Spring and fall inspections of the landfill will be conducted along with follow-up inspections after severe weather events. Corrective measures, for any post-closure problems noted during inspections, will be performed within 30 days of discovery.

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.

Conclusion

Minn-Dak will need to submit a beneficial use determination to the Department for review and approval for each of the following items prior to use:

1. Lime fines for maintenance of Minn-Dak roads
2. Bottom ash for stabilization of Minn-Dak’s roads and dikes

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 Permit 0150. The proposed permit length is for a period of 7 years because it is comprised of units which have not had major compliance issues, the waste streams have not changed, and the permit length reflects consideration to future permit workload for the Department.