Introduction

On April 18, 2022, the North Dakota Department of Environmental Quality (Department) received a permit application for modification and renewal for the Mandan Inert Waste Landfill facility. A permit application for renewal and modification was previously submitted on March 11, 2020 and a deficiency letter was sent to Mandan Inert Landfill on October 18, 2021.

The City of Mandan currently owns and operates an inert waste landfill facility, regulated under Permit 0167 on approximately 88 acres located in the NE1/4 of Section 35, Township 139 North, Range 82 West in Morton County, ND. The City of Mandan Inert Waste Landfill is proposing to modify their permit to expand the disposal area to the northeast of the current disposal cell. The facility was first permitted in 1994 as an inert waste landfill after the municipal waste landfill (SW-285), located west of the inert site, was closed.

Design

The facility has a 3-wired fence and in some places a high woven wire fence around the perimeter. The fence restricts access to the facility and prevents litter and windblown debris from leaving the site. A gate is located at the entrance/exit of the facility. This gate is closed and locked during non-operating hours to restrict vehicle access.

The site has 88 acres, with approximately 80 acres usable for solid waste management activities. The site includes an inert waste disposal area, transfer station ( Permit 0019), white goods/scrap metal stockpile, asphalt pile (crushed and not crushed), concrete piles (crushed and not crushed), compost area, finished compost area, waste oil collection area, burn pile, burn area using an air curtain incinerator, clay stockpiles, soil borrow area and lime sludge.
drying area. An expansion area composed of one future fill is proposed instead of two as initially planned.

The proposed expansion area is Fill Area #1. It is approximately 5.5 acres and will be broken down into four equally sized sub-areas (1A, 1B, 1C, and 1D). The new active site, excavated on-site, is the west half of Area 1A with a pit depth varying from 8 to 18 feet. This area will be filled and mounded until design elevations are met, then final closure will occur. Areas 1B, 1C, and 1D will have pits dug and mound constructed in the same manner as Area 1A.

**Operation**

The facility has the following solid waste management units:

- Inert waste landfill
- Closed municipal waste landfill
- Compost pile
- Scrap metal and appliance pile
- Lime sludge management area
- Clean wood pile
- Concrete and asphalt pile
- Tire pile

The plan of operation lists acceptable and unacceptable wastes. Any unauthorized disposal or inappropriate use of the facility is strictly prohibited. Any residential load is visually inspected for restricted waste at the scale house and after off-loading. Commercial loads are inspected monthly by visual observation through a slow off-loading process. Any load that has questionable waste or restricted waste will cause the inspection frequency to increase for that waste hauler and/or waste generator. Questionable waste that is determined not to be inert waste will be separated and returned to the generator or shipped to an approved disposal facility.

Composting takes place at the composting area. The finished material is stockpiled at a designated area until an area in the landfill is ready for final cover. The compost is then screened and used as topsoil.

An air curtain incinerator is used on-site to burn clean wood. The facility has Title V Air Permit No. T5104001 (initial) issued on June 20, 2020, and it expires on June 12, 2025.

Refrigerators, freezers, and air conditioners will be placed into a semi-trailer for proper collection of freon by qualified personnel. Once the freon is removed, refrigerators, freezers, and air conditioners are recycled for scrap metal.

Lime sludge waste from the City of Mandan's Water Treatment Plant is hauled to the landfill and dumped in an area where it is allowed to dry before being used as cover material.

Concrete and asphalt at the facility will be crushed and stockpiled for use by the City of Mandan in other projects.

Tires will be stockpiled until a truck load is accumulated. The facility will then contact an outside company to retrieve the tires for disposal. Tires will be disposed of every six months or sooner.
Closure

The Plan of Operation, dated April 2022, states final closure will consist of 12 inches or more of compacted clay-rich material, a second layer of 6 inches or more of clay-rich material over the compacted layer to serve as plant root zone, and then at least 6 inches of suitable plant growth material (SPGM) will be placed and seeded with adaptive grass. The total cover thickness will be at least 2 feet thick. The topsoil will be a mixture of existing soil and compost. The blended topsoil mixture will be tested to verify quality for intended use as SPGM prior to final cover placement.

Compliance History

The following items of noncompliance have been noted since 2017:

1. Windblown debris outside the disposal area and on neighboring properties
2. Erosion of intermediate cover
3. Lime sludge stockpiled outside of the disposal area with no stormwater control
4. Large disposal area
5. Prohibited waste in disposal area and burn pile
6. Lack of compaction and covering
7. Steep slopes
8. Fire of undetermined origin

The above items of noncompliance have been appropriately addressed by the facility. No formal notices of violations had been issued to the facility.

Solid Waste Management Rules (NDAC 33.1-20)

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

A notarized Landfill Affidavit of the record of notice dated April 5, 2022 was submitted to the Department on April 18, 2022. The Landfill Affidavit was filed with the county recorder in Morton County under file 509621.

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

A plat showing property ownership was included with the application.

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)

A completed and signed application form along with supporting documents were received by the Department on March 11, 2020. The plan of operation was submitted on January 30, 2020. A deficiency letter was sent to Mandan Inert Landfill on October 18, 2021. A revised application, dated April 5, 2022, was completed and signed. Supporting documents and a revised plan of operation were provided along with the revised application and were received by the
Department April 18, 2022. An application fee is not required as the estimated waste acceptance is less than 40 tons per day.

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

A public notice is required as a major modification is being proposed. It was not included in the permit application. On April 18, 2022, during a meeting with Toman Engineering Co., the Department requested that the public notice be published twice in the official county paper in accordance with NDAC Subsection 33.1-20-03.1-02(4). The permit application review was put on hold on April 18, 2022. The Department followed up with Toman Engineering Co. in a phone call and via e-mail on May 4, 2022 regarding the status of the public notice. On May 18, 2022, the Department followed up with Toman Engineering Co. and the City of Mandan regarding the status of the public notice. The City of Mandan stated that the public notice had been scheduled to run.

The public notice was published twice in the Mandan News on May 20, 2022 and May 27, 2022. An affidavit of publication for the public notice was submitted to the Department on June 2, 2022.

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;

Toman Engineering Co. submitted a revised application, signed by James Neubauer, City Administrator and Mitch Bitz, Director of Public Works, both authorized agents for the City of Mandan. The application is for the modification of the City of Mandan’s inert waste landfill permit.

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;

The Plan of Operation lists acceptable wastes for the Mandan Inert Waste Landfill as follows:

1. Clean-burning waste such as trees, lumber, demolition lumber, and wooden furniture.
2. Concrete, bricks, mortar, plaster, asphalt roofing, tires, shingles, upholstered furniture, and other inert wastes that cannot be burned can be disposed of in a trench.
3. Bulk pesticide containers which have been triple-rinsed and punctured can be disposed of in the trench.
4. Metal wastes such as automobiles, major appliances, and demolition metals may be stockpiled in a designated area for recycling.
5. Yard waste (grass and leaves) may be placed in a compost pile at a designated area.
6. Bottom ash and waste coal fines may be accepted if approved by the Department.

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;

Data from the Natural Resources Conservation Service shows that the soil of the site is mainly composed of well drained loam. At the northeast part of the site, sandstone and unconsolidated sand are encountered. A report from the North Dakota Geological Survey, dated July 14, 1980, states that the entire site is acceptable with respect to groundwater contamination but unacceptable with respect to topography and relief. The water bearing stratum is at 350 feet below ground surface. The report was in reference to the municipal waste landfill (SW-285) that was closed prior to 1994. The site was deemed acceptable for an inert landfill due to the nature of the non-putrescible wastes accepted at inert landfills. After the municipal waste landfill was closed, an inert landfill was permitted. The inert landfill is located east of the closed municipal waste landfill.

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

A high intensity soil survey and evaluation of several soil stockpiles was conducted at the facility in 2017 to locate SPGM for future closure operations. Several areas with viable SPGM resources were located; however, excavation must address potential erosional hazards. Stripping areas that are not prone to extreme erosional hazards will yield approximately 18,486 cubic yards (yd³) of SPGM and 52,393 yd³ of subsoil. The facility would have enough SPGM for revegetating approximately 23 acres and enough subsoil for revegetating approximately 32 acres (not including existing stockpiles of SPGM or subsoil). The facility is also planning to use a mixture of compost and existing soil as SPGM to ensure there is enough SPGM for closure.

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

Access to the facility is restricted to the hours of operation which are posted on the facility sign. The facility uses fencing around the site to contain litter which was picked up monthly. More frequent cleanup is needed as windblown debris has been an ongoing issue at the facility. The plan of operation has been updated to state that staff will inspect the fences after windy events and as debris is collecting on the fences. The facility should continue to mandate waste haulers cover their loads and not allow disposal on windy days as litter has been an on-going issue at this facility.

Blowing dust will be controlled by utilizing a water truck or on-site water hoses to sprinkle water over area generating dust. The facility uses an air curtain incinerator to burn clean wood and it is permitted by the Department’s Division of Air Quality.

The facility has a stormwater pollution prevention plan that it follows. There are only a few erosion controls present at the site, however, corrective action efforts to fix eroded areas and install stormwater controls have improved in the last few years.
A stormwater diversion berm will be constructed to divert the drainage from all the undisturbed areas along the west side of the county road into the structure. The structure inlet will be raised as filling operations continue.

Straw wattles and terracing intermediate cover areas are the proposed stormwater management practices to be implemented. Based on the facility's past erosion problems and that the facility had not satisfied current permit Condition E.15. related to the development of an erosion and sediment control handbook, any earth moving activities must be coupled with erosion control measures. While the facility had not developed their own erosion and sediment control handbook, the plan of operation was updated to state that the facility will follow the North Dakota Department of Transportation's NDDOT Erosion and Sediment Control Handbook and provided a link to where the handbook can be obtained. This satisfies the requirement.

The facility will be conducting quarterly self-inspection during the active period of the landfill.

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 facility has a composting unit. The water from the composting area is collected in a stormwater retention pond. This water is used in the composting process or for dust control. According to the current permit, condition H.2., the facility may use the water from the compost retention pond for dust control if a plan is submitted to the Department and approved. The plan shall include analytical results of the leachate, application procedures, and other applicable information.

The plan of operation discusses plans to relocate the composting area from its current location to a temporary cover area at the top of the landfill mound. This will occur when the filling operation moves to the north and will encroach onto the present composting area. Discussions about future site development determined that this would be an acceptable alternative if the following conditions are met:

- The compost pad will require a base of extra compacted clay (at least 18 inches of compacted and tested clay-rich soil to form a barrier to water infiltration)
- An additional 12 inches of compact fill to form a base plus gravel or crushed concrete/asphalt for traction
- Slopes of 3 to 5%, erosion and stormwater controls.
The plan of operation includes a description of these base layers for future development of the relocated composting area. However, the detailed plans must be submitted for review and approval prior to relocating the composting area. Any sedimentation pond may not be located over a landfill area.

Scrap tires will be stockpiled until a truck load is accumulated. The facility will then contact an outside company to retrieve the tires for disposal.

Clean wood waste will be stockpiled before they get burned in the air curtain incinerator.

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

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

4) Land treatment, sections 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, sections 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 plan of operation addresses the requirements of this section. See 2) Waste piles, d. Soil survey and segregation of suitable plant growth material, Closure and 7) Inert waste landfill of this memo for additional information.

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

The facility disposes of inert waste. The following are prohibited wastes for disposal: special waste, industrial waste, municipal waste (household garbage), asbestos, infectious waste, radioactive waste, waste grain, elevator screenings, treated grain, animal wastes, carcasses, sewage wastes, pesticide cans, batteries, hazardous wastes, greases, oil filters, solvents or any liquids. Other prohibited wastes are bulk chemical containers with free product or residue, PCB waste, rendering and slaughterhouse waste, foundry waste, slugs, spent activated carbon filters, oil and gas exploration and production waste, waste containing free liquids, contaminated soil waste, combustible waste (damp grain, grain dust, damp hay or straw, oily rags); paint residue, lead-based paint, fiberglass, urethane, polyurethane, epoxy resin, and lead found in conjunction with inert waste.

The application is proposing an expansion of the permitted disposal area to fill areas 1A, 1B, 1C and 1D.
The facility will provide an intermediate closure layer of one foot of compacted earthen material with every ten to fifteen feet of inert waste in pit areas and eight to ten feet when building the mounded areas. Covering of waste will restrict scavenging. Sequential partial closure will be implemented during these fill areas operation. Intermediate or temporary closures will be done twice annually.

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 meets the requirements of this section. Also see Sections b., e. and 7) of this memo for additional information.

As a contingency, cover soil will be stockpiled near the disposal area. If fire were to occur within the landfill or as waste is unloaded, soil berms will be placed around the
fire location to prevent the spread of fire off-site. Fire extinguishers are placed on all facility equipment and will be used for small fires. The City of Mandan Rural Fire department will respond if the fire cannot be contained.

In the event of a leak, temporary berms can be constructed around leaking equipment to restrict drainage from any leak moving off-site. Absorbents may also be applied if a leak occurs in a working area to prevent spreading.

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 at the City of Mandan Inert Waste Landfill.

j. Demonstration of capability to fulfill the groundwater monitoring, section 33.1-20-13-02;

The requirements of this section are not applicable as the facility is an inert waste landfill and groundwater monitoring is not required.

k. Construction quality assurance and quality control;

The facility will follow the Department's "Guideline 5: Quality Assurance for Construction of Landfill and Surface Impoundment Liners, Caps, And Leachate Collection Systems".

l. Demonstrations of capability to fulfill the closure standards, section 33.1-20-04.1-05 and otherwise provided by this article;

Under the present plan, the anticipated landfill life is 40.55 years. The area that remains open at any one time is approximately 2.75 acres.

The west side of Area 1A will be constructed at a 5:1 (20%) slope and the north and east sides at a 5:1 (20%) slope. The south side will be constructed against the existing mound. This grade will allow more inert material to be disposed of as Fill area #2 was removed from the Plan of Operations, significantly decreasing landfill life calculations from 71.25 years to 40.55 years. A surface soil loss calculation for the area based on a 61-foot-high mound at a 20% slope yielded a soil loss total of 0.061 tons per acre per year. This is below the 2 tons per acre per year soil loss limit.

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

The facility will conduct annual inspections for a period of five years after closure to address the integrity of the final cover and make post closure corrective action if necessary.
n. A disclosure statement as required by North Dakota Century Code section 23.1-08-17.

A disclosure statement dated April 5, 2022, that meets the requirements of this section, was submitted to the Department on April 18, 2022.

**Site Specific Conditions**

It is recommended that the following condition from the current permit be included:

G.1. Inert waste shall not be disposed in sandy sediments excavated or exposed in the permitted landfill area. If sandy sediments or soft sandstone are exposed during site excavation, the areas of sand shall be covered with two (2) feet of compacted, fine-textured soil prior to disposal of inert waste.

**Conclusion**

Based on the submitted application and items discussed above, the City of Mandan Inert Waste Landfill has shown that the proposed modification meets the requirements of the North Dakota Solid Waste Management Rules. It is proposed that the Department grant the City of Mandan a permit with the conditions listed in Permit 0167. The proposed permit length is for a period of 6 years because even though the facility has addressed their noncompliance issues, the facility continues to have compliance issues with windblown debris.

CRH:DAT:MPM