Waste Management and Remediation Division
Waste and Underground Tank Management Bureau
Solid Waste Section
PO Box 200901
Helena MT 59620-0901

DRAFT ENVIRONMENTAL ASSESSMENT
For the
Proposed Class II Landfill Expansion Project
Northern Montana Joint Refuse Disposal District
Conrad, Montana

August 27, 2018

TABLE OF CONTENTS

1. PURPOSE AND NEED FOR ACTION

1.1. SUMMARY

Wastes are grouped by their physical and chemical characteristics which affect the degree of care required for handling and disposal and determine their potential to cause environmental degradation or public health hazards. Group II wastes, or MSW, include decomposable wastes and mixed solid wastes containing decomposable materials. Group III wastes include clean wood wastes and other clean non-water soluble or inert solids. This category largely includes, but is not limited to, unpainted brick or concrete, untreated, unpainted and unglued wood materials, and tires. Group IV wastes include construction and demolition wastes and asphalt. A Class II facility design requires the most stringent control to ensure the protection of human health and the environment. Special solid wastes have unique handling, transportation, or disposal requirements to ensure protection of the public health, safety, and welfare and the environment. All solid waste groups exclude regulated hazardous or Toxic Substance Control Act (TSCA) wastes and liquids.

The Northern Montana Joint Refuse Disposal District (NMJRDD) is licensed to currently operate a Class II Solid Waste Management System (SWMS) near Conrad, Montana. On July 7, 2016, NMJRDD submitted a SWMS license application to the Montana Department of Environmental Quality (DEQ), to expand the existing licensed facility boundary. The proposed expansion would add 139 years of 4,138,000 cubic yards of waste disposal capacity to the existing NMJRDD Class II landfill. The proposed expansion would include six separate landfill units developed in twelve phases on 160 acres of NMJRDD owned property.

The site for the proposed expansion abuts the southern boundary of the current facility. It is located approximately nine miles north of Conrad, with access south off Montana Highway 44 (Figure 1.1). The proposed expansion area encompasses 160 acres of NMJRDD-owned property in the SW1/4 of Section 3, Township 29 North, Range 3 West, Montana Principal Meridian, Pondera County, Montana. The expansion would involve a total of approximately 126 acres over the proposed life of the facility. The landfill disposal units would occupy 106 acres, and the remaining 20 acres would be utilized for the construction of the ponds, roads, soil stockpiles, ditches, and minor temporary storage areas. The maximum open area during the operational life of the facility would be 30 acres.

If the proposed expansion area is licensed by DEQ, construction of the new disposal units, soil stockpiles, and storm water detention pond areas is expected to commence in 30 years. NMJRDD would be required to submit (for DEQ's approval) updated construction and design documents prior to any new construction activity at the SWMS.

Figure 1.1 – General Location of the licensed North Montana Joint Refuse Disposal District Class II Facility (red) accessed from Montana Highway 44 (Valier Road) on the north. The proposed expansion (blue) expands the facility southward to Prairie View Road. *(Source: NMJRDD License Application, 2016)*

NOT TO SCALE

1.2. PURPOSE AND NEED

The Montana Integrated Waste Management Act (IWMA) establishes goals for waste reduction in the state through the development of a progressive approach to solid waste management. The IWMA's priorities for solid waste management are source reduction, reuse, recycling, and composting. Landfill disposal and incineration are the final options. Currently most MSW is landfilled at 32 licensed Class II facilities scattered across the state.

The Montana Solid Waste Management Act (SWMA) establishes the minimum requirements for the licensing, regulation, and development of SWMS facilities. The SWMA also addresses long range planning to ensure that available landfill capacity in Montana is sufficient to manage the increased waste generated by the state's growing population. The administrative rules adopted under SWMA's authority establish requirements for the licensing, fees, design, operation, financial assurance, closure, post-closure care, remediation, and enforcement of SWMS facilities.

NMJRDD has applied for an expansion of its existing Class II landfill operations. The applicant's main objective is to ensure that the environmentally protective disposal of Municipal Solid Waste (MSW) from Pondera, Glacier, and Toole Counties will continue in the future at the licensed facility.

DEQ's Solid Waste Program (SWP) has received an application for a major change to an existing SWMS and the agency is required under the Montana Environmental Policy Act (MEPA) to disclose the potential impacts to the physical and human environment that may result from its action. The goals of any environmental assessment are to:

1. report the results of a DEQ environmental review conducted in accordance with MEPA
2. determine the potential need for an Environmental Impact Statement (EIS)

A MEPA document assists DEQ in making balanced decisions and does not expand the regulatory authority invested to DEQ. It does not result in a certain decision, but rather serves to identify the potential effect of a state action taken in accordance with the SWMA, solid waste rules, and other laws and rules governing the proposed Facility activities. The final Environmental Assessment (EA) will document the decision and incorporate any changes found necessary by DEQ (in response to substantive comments received). All such DEQ responses will be issued in writing and distributed with the final EA document.

1.3. PROJECT LOCATION AND STUDY AREA

The active NMJRDD Class II facility is located approximately nine miles north of Conrad and two miles west of Interstate 15 on Montana Highway 44, (Valier Road) in Pondera County, Montana (Figure 1.1). The proposed expansion area abuts the southern boundary of this landfill facility and is in the SW1/4 of Section 3, Township 29 North, Range 3 West, Montana Principal Meridian. The property is owned by NMJRDD. The study area includes the proposed expansion site and adjacent areas within a one-mile radius of the proposed Facility perimeter fence. The size of the study areas evaluated in Section 3 of the EA may vary to help DEQ to identify and evaluate the potential impact on each resource analyzed Adjacent land uses are residential, agricultural, and recreational. All nearby airports are located more than 10,000 feet from the proposed site. The site is located within a seismic impact zone.

1.4. REGULATORY RESPONSIBILITIES AND REQUIREMENTS

In reviewing an application for a new license, or a major change to an existing license, DEQ must comply with the requirements of MEPA and the SWMA, including the administrative rules adopted pursuant to these laws. For DEQ to approve a SWMS application and issue a license, the SWP must first determine that the proposed SWMS complies with SWMA requirements. Before DEQ can reach a decision, however, MEPA also requires DEQ to then analyze for the potential environmental impacts of the SWMS proposal and publish its findings of significance in an EA for public review and comment.

Upon completion of the EA process DEQ may

1. deny the application as incomplete
2. approve the application as submitted
3. approve the application with agency mitigations
4. extend the EA review to further analyze and disclose potentially significant environmental impacts, or
5. initiate an EIS process to review potentially significant impacts identified in initial EA findings.

Table 1.1 provides a listing of agencies and their respective permitting/licensing responsibilities.

TABLE 1.1 Regulatory Responsibilities	
Solid waste management system license	DEQ – Waste and Underground Tank Management Bureau
Air quality permitting	DEQ – Air Quality Bureau
General permit for storm water discharge associated with industrial activity	DEQ – Water Protection Bureau
Montana pollutant discharge elimination system permit (MPDES)	DEQ – Water Protection Bureau
SWMS license validation by county health officer	Pondera County Health Officer
County road construction, maintenance and land use, weed plan approval	Pondera County

1.5. PUBLIC PARTICIPATION

As the lead agency, DEQ is releasing this draft EA to present the findings from its analysis of potential environmental impacts from the proposed action. The draft EA was published on August 24, 2018, beginning a 30-day public comment period which will end on September 23, 2018. Adjacent landowners and interested persons were sent a copy of the document for review.

DEQ will respond in writing to comments received during the 30-day public comment period, DEQ may then incorporate significant effects and/or mitigating aspects of the responses into the final EA.

2. DESCRIPTION OF ALTERNATIVES

2.1. INTRODUCTION

This chapter summarizes alternatives to the proposed plan, including the "No Action" alternative required by MEPA. MEPA requires DEQ to evaluate reasonable alternatives to the Proposed Action.

Section 75-1-220, Montana Code Annotated (MCA), states that unless a project is state sponsored, DEQ's review of an existing alternative facility or a modified alternative of the proposed project is not required. Therefore, DEQ only considers alternatives applicable to the proposed SWMS at the proposed location.

2.2. ALTERNATIVES CONSIDERED BUT DISMISSED

DEQ first considered two standard prescribed alternatives to the proposed design for the liner and final cover systems. DEQ rejected the alternatives as the applicant provided documentation demonstrating the equivalence of the proposed alternative design to the prescriptive standard designs. The alternative liner and final cover design demonstrations were approved by DEQ.

2.2.1. Prescriptive Liner Design

DEQ considered a modification of the proposed liner design as an alternative to the NMJRDD's proposed design.

According to the Administrative Rules of Montana (ARM) 17.50.1204, two options exist for Class II landfill units:

1. A design based upon liner performance that ensures that the concentration of ARM 17.50.1204 Table 1 constituents will not be exceeded at the relevant point of compliance in the uppermost aquifer. The list of Table 1 constituents is provided in Appendix C; or
2. A prescriptive design that utilizes a composite liner and a leachate collection and removal system designed and constructed to maintain less than a 12-inch (30-cm) depth of leachate over the liner.

DEQ considered the prescriptive design for the landfill liner as an alternative to the performance-based liner and final cover system design proposed by NMJRDD.

DEQ's evaluation of the requirements for a Class II liner design, as discussed in Section 2.3.2.2 determined that the performance-based design proposed by NMJRDD was equivalent to the prescriptive design. Therefore, DEQ's alternative, based on the prescriptive design, was dismissed from further evaluation.

2.2.2 Prescriptive Final Cover Design

DEQ considered a modification to the NMJRDD's proposed final cover design as an alternative.

According to ARM 17.50.1403, A Class landfill unit shall install a cover system shall be designed to minimize infiltration and erosion. Two options exist for Class II landfill final cover systems. The first option is a prescriptive design that utilizes a liner equivalent to the base landfill liner that is covered by an 18-inch infiltration layer topped with an erosion layer, consisting of at least six inches of topsoil. The second option is a design based upon performance. This option does not require the liner and includes an infiltration layer equivalent to the prescriptive design and an erosion layer equivalent to six inches of topsoil.

DEQ's evaluation of the requirements for Class II final cover system design, as discussed in Section 2.4.1.2 determined that the performance-based design proposed by NMJRDD was equivalent to the prescriptive design. Incorporation of the performance-based final cover design demonstration report into the proposed expansion application documents is justified because (i) all site investigations confirm that the geologic conditions beneath the expansion area correspond with the reported data, and (ii) the proposed liner performance would be identical to the liner in the demonstration. Therefore, DEQ's alternative for the prescriptive design was dismissed from further evaluation.

2.3. DEQ ALTERNATIVE 1 - NO ACTION ALTERNATIVE

Under the No Action alternative, the proposed landfill expansion would not be approved by DEQ and could not be built by NMJRDD. The management of district waste after closure of the existing SWMS would be done by hauling wastes to another licensed Class II landfill facility.

2.4. DEQ ALTERNATIVE 2 – PROPOSED ACTION

The Proposed Action is expansion of NMJRDD's currently licensed solid waste management system. The Proposed Action would consist of a l SWMS system depicted in Figure 2.1.

2.4.1. Landfill Design and Construction

2.4.1.1 Landfill Features

The proposed landfill design and operation includes construction of the following:

1. interior roads,
2. waste disposal units,
3. leachate removal system,
4. soil stockpiles,
5. stormwater control system,
6. stormwater ponds, and
7. perimeter fence and berms/ditches.

2.4.1.2 Landfill Liner Design

The landfill units in the proposed expansion would provide for the disposal of 4,138,000 cubic yards of waste, extending the life of the NMJRDD facility by an estimated 139 years. The sloping, corrugated base of the proposed 106-acre landfill unit is designed with a central swale in each phase that connects, at the toe sump, with a leachate removal manhole. According to ARM 17.50.1204, a new Class II landfill unit must be designed to protect groundwater from landfill contaminants. The regulations provide two options to meet this requirement: (1) directly adopting the liner design standard prescribed by rule, known as the prescriptive standard; or (2) submitting a demonstration that the proposed alternative liner is sufficiently protective of groundwater at the relevant point of compliance (RPOC).

NMJRDD selected an alternative landfill liner design based upon a demonstration that the proposed liner is protective of groundwater at the RPOC. The alternative liner consists of the scarification and re-compaction of the upper six inches of the natural clay till in place below the landfill base. This alternative liner design is based upon a No-Migration Demonstration (NMD). The NMD shows that the impermeable natural subsurface conditions and the depth to groundwater beneath the site combine to prevent the migration of contaminants to the RPOC during the landfill's active life, plus the 30-year post-closure care period. NMJRDD successfully demonstrated that there is no potential for the migration of contaminants from the landfill disposal units to the uppermost aquifer or drinking water source beneath the

facility during that period. The approved NMD requires the installation of a leachate removal system.

2.4.1.3 Landfill Unit Construction

Six Class II landfill units (Areas 4 through 9) would be developed in 12 phases; each phase would comprise one half of each landfill unit area (labelled Cells A and B). Topsoil removed during construction would be set aside in a separate stockpile for use as the topsoil component of the final cover during closure. Each unit would then be excavated, as needed, to an average depth of 20 feet. The base materials excavated during construction would be used for daily, intermediate, and final cover. The base grades of each cell within the disposal units would be constructed to maintain at least a 2% minimum slope towards a central swale, where Cells A and B (Figure 2.1) would join. During construction, the earthen material on the base of the landfill unit would be scarified and re-compacted in one 6-inch lift, rolled, and then inspected for adequate smoothness. Once construction of the landfill base has been completed, the leachate removal system would be constructed along the edge of each unit on top of the base (Section 2.4.1.4).

A berm would be constructed along the swale at the downslope margin between Cells A and B to divert leachate to a manhole installed at the toe of Cell A before lateral expansion into Cell B. Cell B would be constructed and tied to Cell A, as necessary, during each phase of construction, based on the rate of waste acceptance. As landfilling progresses, Cells A and B in Areas 4 through 9 would eventually be tied into the current landfill and closed as a single disposal unit (Figure 2.2). The maximum waste thickness in the proposed landfill units would be approximately 50 feet. With an average cut of 20 feet, the units would rise an average of 30 feet above the current land surface when each unit is filled.

An interior access road from the currently licensed Class II facility would be constructed along the expansion area's western boundary. A continuous final cover would be constructed as the landfill units and phases join along the center and will be capped as a single mounded disposal footprint tying together all the phases. Construction of the disposal units would generally develop from west to east and north to south. All landfill units would be constructed according to a DEQ-approved Construction Quality Assurance and Quality Control (CQA/CQC) Plan.

Although some of the infrastructure would be constructed over the life of the landfill, certain infrastructure would be necessary at the onset of operations. They include:

- Operations area
- Interior perimeter access roads
- Initial disposal cells
- Storm water ponds
- Gas monitoring probes

Figure 2.1: Proposed NMJRDD Class II Landfill Expansion Facility Features showing landfill units 4 to 9. The sloping base of each unit area (green) shows the axis (Cell 5A red) and lateral pipes (both dashed, Cell 5B yellow) where leachate flows to a manhole sump at the low point.
(Source: NMJRDD License Application, 2016) NOT TO SCALE

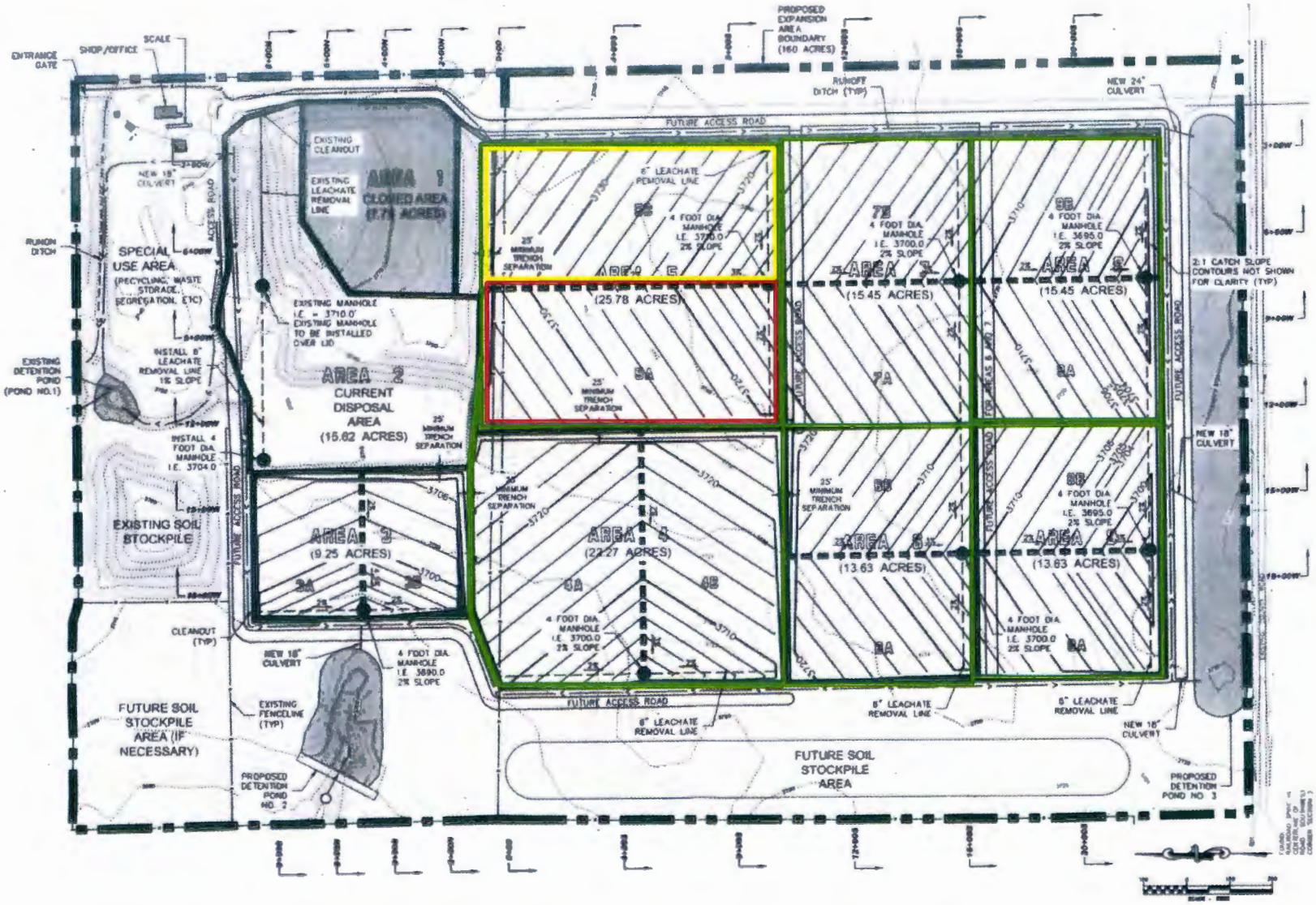
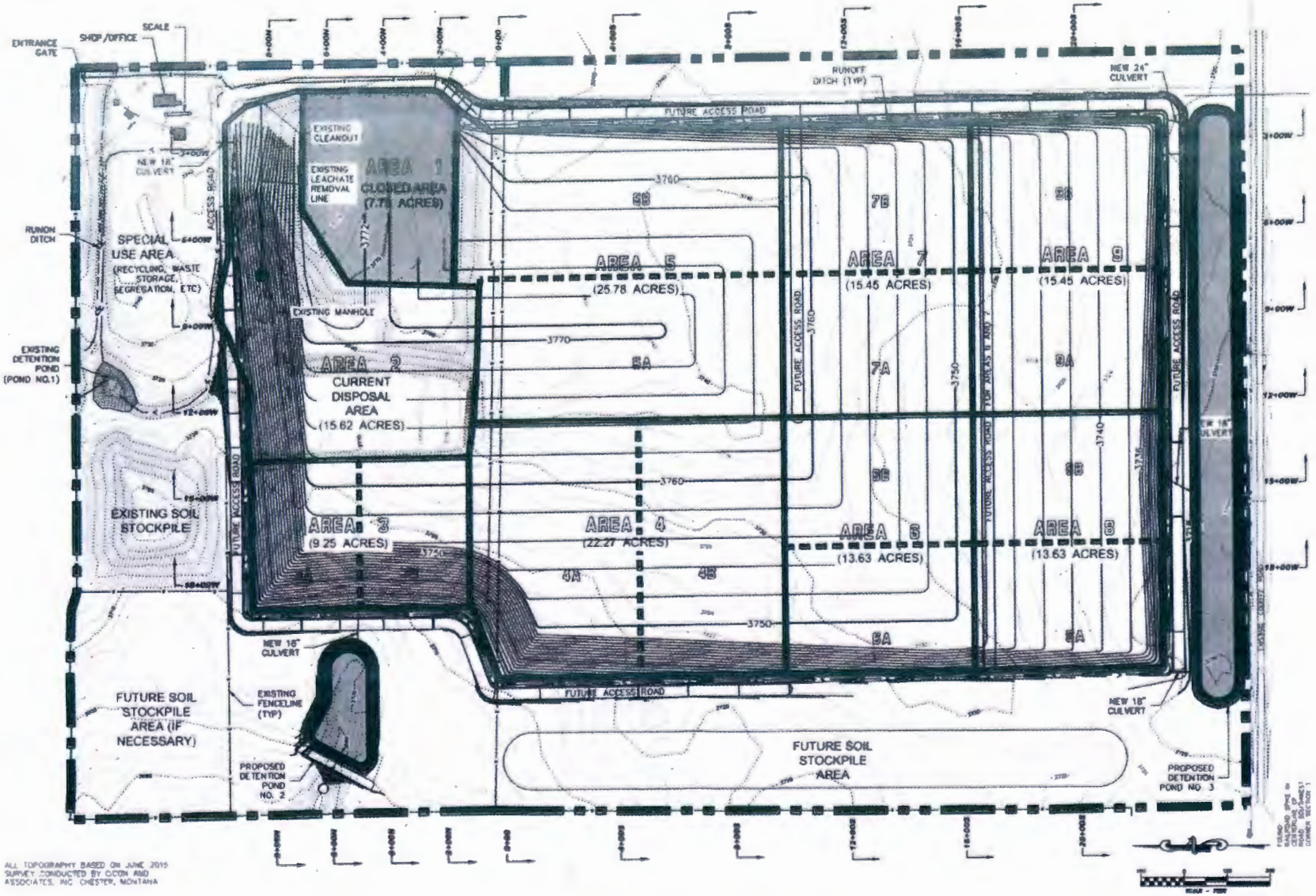


Figure 2.2: Proposed NMJRDD Class II Landfill Expansion Facility Final Cover Contours
(Source: NMJRDD License Application, 2016) NOT TO SCALE0



Additional infrastructure, including storm water control channels and access to ponds, would be constructed as phased landfill unit development continues.

2.4.1.4 Leachate Removal System Construction

A leachate collection system is not required, because as noted in Section 2.4.5.13. The proposed leachate removal system would consist of a 4-foot diameter manhole sump installed two feet below the landfill base at the toe of each unit, where Cells A and B meet on the axis of each unit. A slotted 6-inch PVC pipe bedded in gravel would then be placed laterally at a 2% slope towards the sump, across the lower toe of each unit area (areas 4 through 9), so that leachate generated from the landfill would flow into the manhole. The leachate manhole will be extended vertically as landfilling progresses. The leachate removal system would be constructed according to a DEQ-approved CQA/CQC Plan.

2.4.1.5 Stormwater Controls Construction

All stormwater runoff from the proposed expansion area, would be routed to one of two stormwater ponds (Figure 2.2). Perimeter rip-rap ditches designed to convey the maximum runoff from a 25-year, 24-hour storm event (1.8 inches/hour), would be constructed to convey runoff to the stormwater ponds. The ponds are designed to detain stormwater resulting in the settlement of suspended solid. If water is released from the ponds, the discharge would not contain suspended solids, a pollutant normally found in stormwater runoff.

Detention Pond 2 would be constructed in the existing landfill west of the landfill disposal units. This 1.8-acre pond, would be 9 ft. deep, and contain 4.2 million gallons. Pond 2 is designed to not only capture stormwater from the current landfill after it has been closed and capped, but also stormwater from Areas 4 and 6 in the proposed expansion.

Detention Pond 3 would be located along the southern boundary of the proposed expansion area. This 7.7-acre, 8-ft deep pond would contain 17 million gallons and capture the stormwater from Areas 5 and 7 through 9.

During routing, stormwater runoff would be managed using standard best management practices (BMPs). Stormwater BMPs are control measures used to manage changes in the quality and quantity of stormwater runoff, and are designed to reduce the stormwater volume, peak flows, and sediment quantity of through evaporation, infiltration, detention, and filtration. Both ponds would have a spillway, and a general stormwater industrial discharge permit would be obtained from DEQ's Water Protection Bureau prior to releasing any collected stormwater. Proper notification and testing

for total dissolved solids and total iron would be conducted before discharging water from the ponds to state waters.

2.4.2 Scale House and Equipment Building

Access to the proposed landfill expansion would continue to through the existing facility's entrance gate and past the scale house. Landfill personnel would continue to screen, weigh, and record the wastes according to waste type and classification. The existing buildings would remain to support the ongoing operations in the expansion area. These buildings include the district manager's office, equipment storage/maintenance shop. The cardboard recycling area would also remain. Landfill personnel would direct incoming loads to the appropriate areas area(s).

2.4.3 Soil Stockpiles

As noted in Section 2.4.1.3, topsoil removed during construction would be stockpiled and used to provide topsoil for the final cover. The earthen material below the topsoil removed as each landfill unit is excavated would be stockpiled within the disposal footprint area, near the active disposal cells. Earthen materials from these sources would be used as needed for daily and intermediate cover, and as a component of the final cover. All runoff from stockpiles located outside the waste disposal cells would be routed to the stormwater ponds. BMP (like revegetation) may allow runoff from some of these stockpiles to be routed off site if necessary.

2.4.4 Final Closure

Final closure of the facility would be required after the waste disposal units have reached full capacity and wastes are no longer accepted. The final cover of the proposed landfill expansion units would be constructed in phases, as shown in Figure 2.2. As each unit reaches final grade during a phase of filling, final cover would be applied in a progression that follows the sequence of construction from Areas 4 through 9.

When all landfill cells in the proposed expansion area are full, the final cover, installed in phases over the previously filled units, including the current landfill, would be tied together into a single continuous cap (Figure 2.2).

The final cover approved for the existing landfill would be used for closure of each landfill phase in the proposed expansion area. The final cover profile for the proposed expansion area, as depicted in Figure 2.3, would consist of the following field-tested components (listedfrom top to bottom):

- Native local vegetation
- Minimum 12-inch thick topsoil layer
- Minimum 18-inch thick frost protection layer
- Minimum 18-inch compacted clay liner of select tested and approved soil

The intermediate covered waste would provide the base for the final cover system. The topsoil would be seeded with appropriate native species and fertilized accordingly. The final cover would be installed according to the DEQ-approved Closure Plan, material specifications, and the approved CQA/CQC Plan requirements. The proposed end use for the closed expansion area is range land.

Figure 2.3: Proposed North Montana Joint Refuse Disposal District Class II Landfill Expansion Facility Final Cover Profile Features

Depiction of final cover profile	
	Native local vegetation
	Minimum 12-inch-thick topsoil
	Minimum 18-inch-thick frost protection layer
	Minimum 18-inch compacted clay liner

Stormwater from the final cover would be controlled by a network of terraces and down chutes constructed above the final cover elevations. Precipitation that does not run off the landfill will infiltrate through the upper layers of the final cover system, be stored in the frost protection layer, and released to be used by vegetation.

The landfill's perimeter would be surrounded by an access road and stormwater channels. When final closure is complete, final cover would extend approximately 11 feet beyond the landfill boundary, leaving a road width of approximately 34 feet. At specific locations around the boundary, the road width may narrow to allow for manholes and headwalls to be placed between the landfill boundary and the perimeter road.

2.4.5 Landfill Operations, Monitoring, Closure, and Maintenance

The NMJRDD landfill would continue to operate as a licensed Class II SWMS and follow a DEQ-approved operation and maintenance (O&M) Plan. Current regulations require solid waste facilities to obtain DEQ approval prior to beginning operations, or before making operational changes. The Facility must comply with applicable Solid Waste Management Act and associated Administrative Rules requirements, including payment of fees and submitting an annual renewal application. Failure to follow these

requirements could result in enforcement actions, license revocation, or denial of a renewal application.

2.4.5.1 Personnel

The proposed expansion Facility would continue to be operated by at least three NMJRDD employees. Personnel would continue to inspect incoming loads, review incoming waste load records, operate landfill equipment, monitor stormwater and leachate, control litter, and apply daily and intermediate soil cover.

2.4.5.2 Operating Hours

The licensed NMJRDD landfill is open Monday through Friday from 8:00 a.m. to 4:30 p.m. The facility is closed on New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day.

2.4.5.3 Site Access

The existing entrance is located approximately 2 miles west of Interstate 15. The landfill is accessed from Montana Highway 44 (Valier Highway), which runs east to west. There are no planned access changes. Landfill traffic would continue to enter the site through the existing, gated entrance.

2.4.5.4 Landfill Equipment

NMJRDD owns and operates equipment at the facility to handle and process waste. NMJRDD is responsible for training personnel to operate the equipment. Available equipment includes:

- A 1155 case track loader
- Two 2-wheel loaders
- An 826 Caterpillar compactor
- An Al John compactor (for backup)
- Two Terex scrapers
- A grader
- A skid steer
- A water truck

2.4.5.5 Acceptable Wastes

The proposed expansion area will be licensed as a Class II SWMS, and will continue to accept Group II, III, and IV wastes, including:

- Putrescible municipal solid waste
- Bulky waste
- Wood waste
- Friable and non-friable asbestos
- Contaminated soil
- Non-water-soluble solids (brick, dirt, rock, rebar-free concrete)
- Brush, lumber, and vehicle tires, as defined in ARM 17.50.503(1)(b)

- General construction and demolition waste
- Waste asphalt

2.4.5.6 Waste Screening and Acceptance

The landfill staff would continue to perform random load inspections to prevent prohibited wastes from entering the facility. The loads would be inspected visually at the scale, and when unusual or prohibited wastes are noticed, the driver would be questioned, and the waste rejected if necessary. For rejected loads, the gate attendant or inspector would document the date, time, driver's name, license plate number, company name and address, size of the load, reason load was rejected, and inspector's name. If appropriate, the gate attendant would supply the driver with a contact at DEQ, or at a suitable company, for assistance in finding a suitable disposal facility. If regulated hazardous waste, regulated PCB or TSCA waste, or regulated infectious waste is found during the gate check, NMJRDD would notify DEQ within 24 hours of discovery.

2.4.5.7 Prohibited Wastes

The following materials would not be accepted for disposal at the facility:

- Mercury-containing devices
- Hazardous materials/hazardous waste
- Un-rinsed pesticide containers
- Regulated infectious waste
- Electronic waste
- Waste oil
- Batteries
- Septic tank pumpings
- PCB contaminated materials or TSCA wastes
- Liquid wastes

2.4.5.8 Landfilling Procedures

The proposed expansion would add six landfill areas (Areas 4 through 9). Each disposal area would be excavated to a 20-foot depth and filled in two subsections (Cells A and B). In each area, Cell A would be excavated and filled first with leachate collected in the sump manhole. Materials excavated during cell construction, would be used as soil cover for the wastes.

2.4.5.9 Wet Weather Operations

Temporary berms and ditches would be constructed to divert runoff from the working and traffic areas to outside the active disposal area. Temporary access roads to the working areas would be maintained to keep them passable. Stockpiles of aggregate would be kept onsite to improve interior roads as necessary during inclement weather events. No wet weather storage of waste is

proposed. Waste haulers would be contacted to stop hauling if wet conditions make the internal haul roads impassable or prevent the proper placement and compaction of waste in the cell. The operator may have to temporarily halt normal operations during wet weather.

2.4.5.10 Litter Control

Wastes would continue to be compacted and covered at the end of each working day in the active waste disposal unit. Whenever possible, the active working face would be oriented to the downwind side of prevailing winds and kept to the smallest practical area to minimize exposure and reduce blowing litter. Landfill personnel would continue to patrol the landfill perimeter daily and pick up litter blown from the working face. Additionally, portable litter fences may be placed downwind of the working face. Litter caught on the fences is removed daily (or as necessary). All open truck loads must be secured with a tarp. NMJRDD also has a portable vacuum that would continue to be used to clean the litter screens and fences.

2.4.5.11 Dust Control

The operator is required to control fugitive dust on the facility roads. Water would be applied as a dust suppressant on an as-needed basis, using a water truck. Water would be applied in a manner that would not cause runoff, erosion, or leachate.

2.4.5.12 Stormwater Control

Stormwater is water that originates from precipitation events, and snow and ice melt. Stormwater can soak into the ground, be held on the surface to evaporate, or run off downstream towards other bodies of water. Exterior ditches or berms would intercept and route all exterior natural runoff away from the Facility.

Two additional stormwater detention ponds would be constructed to retain stormwater for sediment control. Stormwater ponds would be constructed according to the facility's Stormwater Pollution Prevention Plan (SWPPP). The detention ponds are designed to retain collected runoff from the Facility so that the solids settle to the base of the pond and any necessary discharge would not contain solid particles normally found in stormwater during runoff events. All stormwater runoff from the facility that does not contact waste and that falls outside any of the waste disposal areas, but inside the facility boundary, would be routed to a stormwater detention pond. During routing, this stormwater runoff would be managed using standard BMPs. Stormwater BMPs are control measures used to manage changes in the quality and quantity of stormwater runoff and are designed to reduce the volume, peak flows, or quality of stormwater through evaporation, infiltration, detention, and filtration. BMPs, including establishment

and maintenance of vegetation on closed areas and on soil stockpiles, would be implemented as needed. Areas receiving final cover would be contoured for positive drainage so that surface runoff would be routed away from the active disposal area. Runoff from fully re-vegetated and closed areas of the landfill final cover may discharge naturally off the site.

Perimeter rip-rap ditches would be constructed to convey all interior runoff from the facility to the ponds, and would carry, as the regulations require, the maximum runoff from a 25-year, 24-hour storm event (1.8-inches/hour) to control site erosion.

Stormwater Pond 2 would be located in the existing landfill, west of the current landfill disposal units. This 4.2-million-gallon pond would not only capture stormwater from the current landfill after it has been closed and capped, but also from Areas 4 and 6 of the proposed expansion. The discharge calculated from a 25-year, 24-hour storm event for the 83.2-acre area captured by this pond is only 4.1 million gallons. The pond's outlet will be constructed with a riprap plunge pool to further minimize erosion impacts.

Stormwater Pond 3 would be located along the southern boundary of the proposed expansion area. This 17-million-gallon pond would capture the stormwater from Area 5 and Areas 7 through 9. The discharge calculated from a 25-year, 24-hour storm event for the area captured by this pond is only 5.7 million gallons. This pond would only discharge through a spillway when a peak event exceeded this storm event capacity by a factor of three.

If a discharge is necessary from any onsite stormwater pond, NMJRDD would obtain a general stormwater industrial discharge permit from DEQ's Water Protection Bureau and sample the stormwater for total dissolved solids (TDS) and total iron before any discharge would be allowed.

2.4.5.13 Leachate Removal System Management

As noted in Section 2.4.1.4, a leachate collection system is not required, however, a leachate removal system would capture drained leachate. The proposed leachate removal system would consist of a 4-foot diameter manhole sump installed two feet below the landfill base and located on the axis at the toe of each unit area where Cells A and B meet (Figure 2.2). A slotted six-inch PVC pipe bedded in gravel extends laterally at a 2% slope across the lower toe of each unit towards the sump, so that leachate generated from the landfill would flow into the sump. The leachate pipes would be accessed at the 12-inch PVC riser pipes located at the surface on the outside margins of the expansion units. The leachate manhole will be extended vertically as landfilling progresses.

NMJRDD would measure the depth of liquids accumulated in the manhole on a quarterly basis and after high precipitation events (0.5 or more inches of rain). These measurements would be recorded in the facility's operating record. If the leachate level rises one foot above the slotted pipe, the leachate would be sampled and pumped, then hauled to a wastewater treatment facility or sprinkled to recirculate over the active or closed waste areas. Sprinkling would require DEQ's approval.

2.4.5.14 Erosion control

The facility would implement short-term and long-term erosion control features, and employ practices preventing damage to constructed grades. Short-term erosion control features such as mattes, mulch, silt fences, straw bales, and waddles would be installed to prevent topsoil erosion until adequate vegetation has been established. Prior to construction, a Notification of Intent (NOI) to discharge stormwater from construction activities would be submitted to obtain a Montana Pollutant Discharge Elimination System (MPDES) Construction Permit. A Construction SWPPP would be prepared in accordance with the MPDES permit. SWPPP would specifically address erosion control. Development of a SWPPP to protect against erosion and other surface water impacts is required as part of an MPDES Construction Permit.

Areas of final constructed grade, intermediate cover slopes, and final cover slopes would be seeded to establish vegetation. They would also be contoured for positive drainage, so that surface runoff would be routed away from the active disposal area. Runoff from fully re-vegetated and closed areas of the landfill final cover may discharge naturally to adjacent, offsite areas. Routine visual inspection would be used to assess the condition of the vegetation. Seeded areas that fail to establish dense cover would be reseeded. If warranted, a soil test would be performed to determine the need for fertilizers or amendments. Areas with high erosion potential due to concentrated flow would be inspected after less significant rain events (typically greater than 0.25 inches). Eroded areas would be repaired and/or re-seeded promptly. Fiber blankets, mulch, or other erosion control methods would be used as needed until vegetation is re-established.

2.4.5.15 Fire Prevention and Protection

Fire control consists of prevention and protection. Landfill personnel would continue to remain alert for any indication that a load may be smoldering or about to ignite. If a smoking or smoldering load is observed at or on the landfill, the waste would immediately be pushed away and isolated from the active working face. A thick layer of soil would then be spread over the waste and compacted, to smother the fire. Water from the water truck may also be used to help extinguish the fire. The waste would not be

incorporated into the working face until the fire is extinguished. If a smoking or smoldering load is observed in a transport vehicle, the driver would be directed to the gravel parking lot away from the building and instructed to unload. DEQ would be contacted if any large fires break out and cannot be extinguished within 24 hours.

2.4.5.16 Methane Monitoring

Prior to the construction of a waste unit in the expansion area, a series of landfill gas monitoring wells would be installed along the perimeter of the waste disposal unit at locations and depths approved by DEQ. NMJRDD would monitor methane levels on a quarterly basis to ensure that the concentration of methane gas generated by the facility does not exceed 25% of the lower explosive limit (LEL) for methane in facility structures, or the LEL for methane at the property boundary. Any exceedance of these specified levels of methane would be reported at once to DEQ, followed by the submittal of a landfill gas remediation plan for approval for implementation.

2.4.5.17 Final Closure

Once all landfill disposal cells have been filled to their final elevation, and the Closure/Post Closure and CQA/CQC Plan updates approved by DEQ, final closure activities would start. NMJRDD would submit an NOI to DEQ at least 30 days prior to final closure activities, and unless otherwise approved, all closure activities would be completed within 180 days following DEQ's approval of the NOI. The intermediate soil cover over each of the remaining exposed landfill phases would be tied together and then capped with a continuous final cover as a single, mounded disposal unit.

The final cover approved for the existing licensed landfill would be used for closure of units in the proposed expansion area. The standard final cover profile, shown in Figure 2.3 for the proposed expansion area landfill, would consist of the same field-tested components.

The daily or intermediate covered waste would provide the base for the final cover system. The final cover components would then be installed the prepared intermediate cover according to the methods and testing specified in the DEQ-approved Closure Plan The projected final use of the closed expansion area is range land. Buildings and ponds may be demolished as necessary. Vegetation would also be restored over the entire licensed boundary area with a seed mixture approved by the local soil conservation district, and then monitored annually by NMJRDD to ensure that re-vegetation occurs.

2.4.5.18 Financial Assurance

In accordance with ARM 17.50.540, all Class II SWMS must provide and maintain financial assurance (FA) to cover costs associated with facility closure and post-closure care. Financial assurance ensures that work associated with the facility's closure, and post-closure care are completed if the operator cannot or would not do it. FA would be required for the NMJRDD expansion.

NMJRDD has proposed the continued use of trust funds as the mechanism for providing the required FA for closure and post-closure care. The current projected total closure cost for FA is $178,864 and would be accumulated over the first 38 years. The current projected annual post-closure care cost for FA is $1,800. The facility would update the closure and post-closure care costs annually, and provide additional monies as needed to ensure the trust is adequately funded. DEQ would be the beneficiary of the trust funds and would control all funds released.

2.4.5.19 Post-Closure Care

Once all final closure activities have been completed and approved by DEQ, the 30-year post-closure care period for the facility would begin. Post-closure care would be conducted according to the DEQ-approved Post-Closure Care (PCC) Plan. The PCC Plan identifies required operational, inspection, maintenance, and monitoring activities, and identifies how often they will be conducted.

A report describing PCC inspections, conditions observed, methane control operations, corrective actions, maintenance activities, and monitoring activities performed at the closed facility would be submitted to DEQ annually. NMJRDD would perform quarterly methane monitoring during the post-closure care period in accordance with DEQ-approved Methane Monitoring Plan.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES BY RESOURCE

3.1 INTRODUCTION

Section 3 describes resources that could be affected by the Proposed Action and discusses the environmental consequences of the No Active Alternative and the Proposed Action.

3.2 LOCATION DESCRIPTION AND STUDY AREA

The project location and associated study area for the Proposed Action includes all lands and resources in the proposed project area, plus areas identified by technical disciplines as "resource analysis areas" that are beyond the project area. Resource analysis areas are identified for each technical discipline

3.3 TERRESTRIAL AND AQUATIC LIFE AND HABITATS

3.3.1 ANALYSIS AREA AND METHODS

The analysis area for wildlife is the proposed boundary of the 160-acre NMJRDD Class II Landfill facility expansion site and due to the lack of species observed in a one-mile radius of the surrounding perimeter the analysis area was expanded to include the entire Township 29 North, Range 3 West. The analysis methods included DEQ's research of the Montana Natural Heritage Program (MNHP) and the US Fish and Wildlife Service (USFWS) databases (to determine the presence of threatened, listed, and/or endangered plant and animal species), review of topographic maps, and a site visit (to determine the presence of aquatic systems within and adjacent to the proposed expansion area).

3.3.2 AFFECTED ENVIRONMENT

The proposed landfill expansion project area is located on a plateau, and adjacent to the south of the existing landfill. The topography of the area surrounding the site is a combination of buttes, plateaus, and coulees. The parcel is currently idle but was once a dryland wheat field. There are no rivers, wetlands, or permanent water bodies in the immediate vicinity. There are no surface water features, including drainages or wetlands, on or within the proposed expansion area.

A search of the MNHP and USFWS databases indicated that there are no listed, threatened, endangered, or species of concern, and one potential species of concern in the study area. DEQ-SWP made a site visit in February of 2018 and observed over a dozen Mule Deer. A search of these databases for Township 29 North, Range 3 West, indicated no threatened or endangered species in the area. (See Table 3.1 for species listed in Township 29 North, Range 3 West).

The Marias River is located approximately five miles north of the current NMJRDD Class II landfill. The current landfill and proposed expansion site are not located within a 100-year floodplain.

3.3.3 ENVIRONMENTAL CONSEQUENCES

3.3.3.1 No Action Alternative

Under this alternative, because the proposed expansion area would not be developed, there would be no additional impacts to terrestrial and aquatic life and habitats.

Table 3.1-Montana Natural Heritage Program: All species listed for Township 29 North, Range 3 West (Accessed August 1, 2018)

Species Group	Species Common Name	Species Scientific Name	Montana Status	Origin	Number Observed
Fish	Brook Stickleback	Culaea inconstans	Potential Species of Concern	Native	2
Fish	Fathead Minnow	Pimephales promelas		Native	2
Fish	Lake Chub	Couesius plumbeus		Native	2
Fish	Longnose Dace	Rhinichthys cataractae		Native	2
Fish	Spottail Shiner	Notropis hudsonius		Exotic	2
Fish	White Sucker	Catostomus commersoni		Native	2
Invertebrates	Two Form Bumble Bee	Bombus bifarius		Native	2
Invertebrates	Central Bumble Bee	Bombus centralis		Native	1
Invertebrates	Yellow Bumble Bee	Bombus fervidus		Native	1
Invertebrates	Yellow-head Bumble Bee	Bombus flavifrons		Native	1
Invertebrates	Brown-belted Bumble Bee	Bombus griseocollis		Native	1
Invertebrates	Indiscriminate Cuckoo Bumble Bee	Bombus insularis		Native	1
Invertebrates	Nevada Bumble Bee	Bombus nevadensis		Native	1
Invertebrates	American Bumble Bee	Bombus pensylvanicus		Native	1
Invertebrates	Red-belted Bumble Bee	Bombus rufocinctus		Native	1
Invertebrates	Forest Bumble Bee	Bombus sylvicola		Native	1
Invertebrates	Tri-colored Bumble Bee	Bombus ternarius		Native	1
Invertebrates	Half-black Bumble Bee	Bombus vagans		Native	1
Vascular Plants	Russian Knapweed	Acroptilon repens		Exotic	52
Vascular Plants	Spotted Knapweed	Centaurea stoebe		Exotic	68
Vascular Plants	Canada Thistle	Cirsium arvense		Exotic	68
Vascular Plants	Field Bindweed	Convolvulus arvensis		Exotic	55
Vascular Plants	Leafy Spurge	Euphorbia esula		Exotic	55
Vascular Plants	Whitetop	Lepidium draba		Exotic	61
Vascular Plants	Dalmatian Toadflax	Linaria dalmatica		Exotic	12

3.3.3.2 Proposed Action

Transient avian and terrestrial wildlife populations occupy habitat near the current NMJRDD landfill facility. While they also likely occupy, or pass through, the proposed expansion area, they are not likely to occupy this parcel permanently because of the ongoing human activity in the area. Transient, by definition, means "lasting only for a short time" or "impermanent". Wildlife exhibits transient behavior, relocating regularly, and rarely remaining in one area for long periods. This is especially true in areas with regular, recurring human activity. Although the displacement of avian and terrestrial wildlife caused by construction and operation of the facility may alter the movement of local wildlife, it would not be considered critical because it is not a unique or rare wildlife environment. The prosed action would likely result in shifts in species composition from wildlife that is less tolerant of disturbance to species that adapt more readily to disturbance and increased human presence. Considering the vast amount of similar habitat surrounding the proposed expansion area, the impact to wildlife would be minimal.

Construction of landfill units and associated features of the proposed expansion area would not impact any wetlands or surface water features in the area, there are none on, or within the vicinity of, the site. Operation of the proposed landfill could pose concerns if leachate were to enter drainages downgradient of the facility. The leachate collection system would be designed to capture and isolate all leachate, thereby eliminating the possibility of wastewater entering surface water in the area. Additionally, NMJRDD would continue to implement storm water controls using standard BMPs to control erosion and sediment from storm water runoff at the facility. Perimeter riprap ditches would be constructed to convey all storm water to the storm water ponds.

3.4 HYDROLOGY

3.4.1 ANALYSIS AREA AND METHODS

The analysis area for hydrology is the proposed NMJRDD Class II Landfill facility expansion site and a one-mile radius of the surrounding perimeter. Some discussion of regional geology, based upon published reports, is provided. The analysis methods for hydrology included: reviewing on-site drilling information, publications of the Montana Bureau of Mines and Geology (MBMG) and the MBMG's Groundwater Information Center (GWIC), United States Geological Survey, the Hydrogeological and Soils Characterization Report for the proposed NMJRDD expansion and published topographic maps of the area.

3.4.2 AFFECTED ENVIRONMENT

3.4.2.1 Surface Water

The proposed NMJRDD Class II expansion site is located twelve miles east of the Town of Valier, just south of Montana State Highway 44

and two miles west of Interstate 15. The site is characterized as relatively flat, tilled agricultural land that gently slopes towards the northwest and the south. A gentle ridge that runs from the southwest to the northeast transects the central portion of the expansion. The nearest surface water drainages, Schulz Coulee and Big Flat Coulee, are located approximately one-mile due west of the expansion area, where Showdown Lane crosses the coulees. Schultz Coulee, located west of the expansion area, drains north toward the Marias River. Big Flat Coulee, located south of the landfill expansion area, drains to the south towards the Dry Fork of the Marias River.

3.4.2.2 Ground Water

The distribution and physical properties of the underlying geologic units affect the availability, movement, and quality of ground water. Glacial deposits, and soils derived from glacial deposits, cover virtually all the bedrock in the area, except for exposures in the side slopes of some coulees, gullies, streams, and road cuts. Glacial deposits were formed by continental glaciers during late Wisconsin and Illinoisan glaciations, and consist of predominantly till or drift (typically pebbly clay loam), which accumulated in ground moraines with occasional outwash deposits

Regional stratigraphy is summarized in Table 3-1 and is described as "typical of the northern Montana plains; nearly flat-lying Cretaceous beds partly covered with till deposited by the continental ice sheet." Near NMJRDD, bedrock consists of flat-lying, Upper Cretaceous shales of the Telegraph Creek and Marias River Formations. These shales overlay are in thick sequences (3,000 feet or greater) that overlay dolomite and limestone of the Madison formation.

Regionally and locally, groundwater in the area is limited, due to the general low permeability of the majority of the glacial deposits and underlying shale bedrock, and the excessive depth (greater than 3,000 feet) to the permeable Madison Group. The water-bearing characteristics of till deposited in the area by continental glaciation are described as clayey or loamy tills with low permeability, that yields little or no water to wells. Other studies indicate that the Colorado Shale [locally renamed Marias River Shale] is not a potential source of groundwater because no water-bearing beds are found in it, and any small amount of water that might be obtained would be too highly mineralized for most uses. Similarly, water found in the Telegraph Creek Formation would be limited and highly mineralized, making it inadequate for most uses. The Montana Groundwater Atlas describes the area as lacking bedrock aquifers, presumably due to the great depth of the dolomite and limestone of the Madison Group in the area.

Due the lack of groundwater in the bedrock units underlying the area, information on regional potentiometric surface and flow direction

within the shallow units of less than 1,000 feet deep is limited. Regional flow of deeper units, including the permeable Madison Group, is known to be to the east-northeast. There are no known water supply wells that utilize the regional aquifer system near NMJRDD. The nearest public water supply well is the Town of Valier water supply. This water supply well (GWIC ID # 85046) is relatively shallow (90 feet) and reported to be completed in the Eagle Sandstone, which is situated stratigraphically above the Telegraph Creek Formation, this formation is not present at the NMJRDD site. Wells shown in Figure 3.2 are soil borings and monitor wells completed as part of the existing landfill investigation, or shallow Montana Salinity Control Association wells. Table 3.2 lists nearby wells in a one-mile radius.

3.4.3 ENVIRONMENTAL CONSEQUENCES

3.4.3.1 No Action Alternative

Under this alternative, because the site would not be developed, there would be no additional impacts to the site's surface or ground water.

3.4.3.2 Proposed Action

3.4.3.2.1 Surface Water

Surface water at the proposed site is from rain or snow, melting of accumulated snow, or seepage from groundwater springs. Discharge from those sources flows freely over the land's surface and into the intermittent drainages.

Surface water flow may occur because of bare rock or ice, when the soil is saturated and ponding capacity is exceeded, when precipitation falls more quickly than the soil can absorb it, or, more typically, from a combination of these conditions. Storm water runoff can cause erosion and may transport sediments some distance from their source, depending upon the intensity of the runoff, vegetative cover, soil characteristics, and topography.

As discussed in the stormwater controls construction Section 2.4.1.5, the overall design of the proposed NMJRDD expansion includes constructing two perimeter ditches, and berms, along the north side of the existing landfill. The ditches and berms will divert run-on from entering any waste area. Surface water drainage within the proposed expansion's boundary has been designed to divert runoff from the waste areas to one of three detention ponds. Pond 1 is in use by the landfill, and Ponds 2 and 3 have not been built yet. Perimeter ditches would be installed along the east, west, and south boundaries outside of the active waste disposal areas to convey any storm water runoff to one of the two new ponds (Ponds 2 and 3). The storm water retention ponds are designed to retain, as required, the total volume of runoff generated from a 25-year, 24-hour storm event. Pond 2

would be constructed first, prior to the placement of waste in the proposed expansion area. A drain down valve would be installed in this pond to discharge storm water, if necessary. Pond 3 would be located on the southern border of the expansion area and would not have a drain down valve since the topography will not allow it. As a result, the pond has been designed to hold 2.9 times the volume of runoff from a 24-hour, 25-year storm event, and would essentially function as an evaporation pond. The pond will have a spillway, in the event the pond becomes full. If a discharge from any of the storm water detention ponds is necessary, a General Industrial Storm Water Discharge permit would be obtained from DEQ's Water Protection Bureau. If a discharge occurs, the discharge permit requires that the storm water be sampled for total suspended solids and iron to ensure that the waters do not deposit sediment downstream.

Due to the relatively small watershed, containing the intermittent drainages, the low precipitation the area receives, the effectiveness of the perimeter ditches, and the proposed storm water controls, impacts to surface water from the proposed expansion are expected to be minor. The controlled release of storm water from any of the ponds would not contain the suspended sediment load that unmanaged runoff from heavy precipitation or snowmelt contains. Thus, the quality of the storm water released could be better than the storm water quality that currently flows unmanaged from the undeveloped site.

TABLE 3.2: REGIONAL STRATIGRAPHIC UNITS

(Source: Hydrometrics Inc. NMJRDD Soils and Hydrogeology report, June 2016)

Unit Name (Map Symbol)	Geologic Age	Description	Typical Thickness in Area (feet)
Glacial Deposits (Qg)	Pleistocene	Unsorted deposits of clay-to-boulder-size material. Clast composition is exotic with respect to local bedrock; predominant lithologies are pink granite, quartz-biotite schist, granite 1meiss, and quartzite.	0 to 100
Telegraph Creek Formation (Ktc)	Upper Cretaceous	Interbedded medium-brownish gray sandy shale and brown, fine-grained, thin-bedded, argillaceous sandstone. Proportion of sandstone relative to shale increases upward in stratigraphic section.	150
Marias River Formation-Kevin Member (Krnk)		Medium-dark-gray to brownish gray, calcareous, fissile shale. In the subsurface the informal name, First White Specks, IS commonly applied because of the characteristic white specks (calcite) visible on shale partings. Thin, light-gray bentonite beds, gray limestone septarian concretions, and fossil bivalves *(Inoceramus prisms)* are common in this member.	620
Marias River Formation-Ferdig Member (Krnf)		Dark-gray, fissile shale, with scattered laminae and very thin beds of sandstone and siltstone in the lower part. Reddish brown, gray, and brownish gray septarian concretions usually less than 1 foot in diameter are common.	220
Blackleaf and Kootenai Formations	Lower Cretaceous	Mudstone and sandstone.	1,500
Mount Pablo/ Morrison Formation and Ellis Group	Lower Cretaceous to Middle Jurassic	Siltstone, sandstone, shale.	1,500
Madison Group	Mississippian	Dolomite and limestone	1,200

Figure 3.1: Summary of wells and soil borings in a one-mile radius
Source: Montana Bureau of Mines and Geology Ground Water Information Center, November 2016 (GWIC) ***Not to scale***

3.4.3.2.2 Groundwater-No Migration Determination

The hydrogeological and soils investigation was conducted in February of 2015. The field work consisted of drilling and excavating; 12 exploratory borings and 38 test pits. Eleven of the 12 test borings, ranging in depth from 57 to 132 feet below ground surface (bgs), terminated in the Marias River shale. The one boring that did not terminate in the Marias River shale terminated at 50 feet bgs in the overlying glacial till. Two of the borings (TB-20 and TB-21) encountered limited groundwater between 104 and 128 feet bgs. The 38 test pits were excavated to a minimum depth of approximately 10 feet bgs. Figures 3.2 and 3.3 show the locations of test pits and soil borings.

The subsurface profile in the exploratory borings generally consisted of a thin layer of topsoil overlying interbedded layers of glacial till, to approximately 49 feet bgs, with interbedded silt, sand, and gravel. The Marias River shale was encountered at depths of 47 to 82 feet bgs, depending on the boring location.

Table 3.3: Nearby Well Information *(Source: Montana Bureau of Mines and Geology, GWIC database)*

Gwic Id	PDF	Township	Range	Section	Type	Total Depth	Static water level	Date	Use
151581		29N	03W	2	WELL	38		2/2/1995	
151580		29N	03W	2	WELL	38		2/2/1995	
158725		29N	03W	2	WELL	45		6/12/1996	UNUSED
141380		29N	03W	2	WELL	48		3/11/1994	
125501		29N	03W	3	WELL	128	116.13	10/23/1991	MONITORING
125502		29N	03W	3	WELL	65	25.25	10/23/1991	MONITORING
146412		29N	03W	3	WELL	30		11/9/1994	MONITORING
125503		29N	03W	3	WELL	23	7.08	10/23/1991	MONITORING
146419		29N	03W	3	WELL	18		11/9/1994	MONITORING
125505		29N	03W	3	WELL	24	10.29	9/6/1991	MONITORING
125504		29N	03W	3	WELL	15	11	9/6/1991	MONITORING
125506		29N	03W	3	WELL	55	49.33	10/23/1991	MONITORING
125508		29N	03W	3	WELL	63	56.21	10/23/1991	MONITORING
125507		29N	03W	3	WELL	124	94.68	9/6/1991	MONITORING
125509		29N	03W	3	WELL	200	92.83	10/23/1991	MONITORING
146410		29N	03W	3	WELL	20		8/22/1994	MONITORING
146411		29N	03W	3	WELL	20		8/22/1994	MONITORING
157544		29N	03W	4	BOREHOLE	47.5	31	9/12/1995	GEOTECH
203428		29N	03W	4	WELL	18		10/2/2002	MONITORING
151812		30N	03W	33	BOREHOLE	26.5		10/4/1989	GEOTECH
157548		30N	03W	33	BOREHOLE	32.4		9/12/1995	GEOTECH
204178		30N	03W	33	WELL	38		10/2/2002	MONITORING
917789		30N	03W	34	PETWELL				
151595		30N	03W	34	WELL	13		2/2/1995	
151594		30N	03W	34	WELL	28		2/2/1995	
166534		30N	03W	34	WELL	30		2/20/1997	MONITORING
204180		30N	03W	34	WELL	28		10/2/2002	MONITORING
204182		30N	03W	34	WELL	28		10/2/2002	MONITORING
120169		30N	03W	34	WELL	13		6/2/1990	
141417		30N	03W	34	WELL	23		12/10/1993	
923209		30N	03W	34	PETWELL				
288680		30N	03W	34	WELL	150	112		MONITORING

FIGURE 3.2: LOCATION OF 2015 SOIL BORINGS

(Source: Hydrometrics Inc. NMJRDD Soils and Hydrogeology report, June 2016)

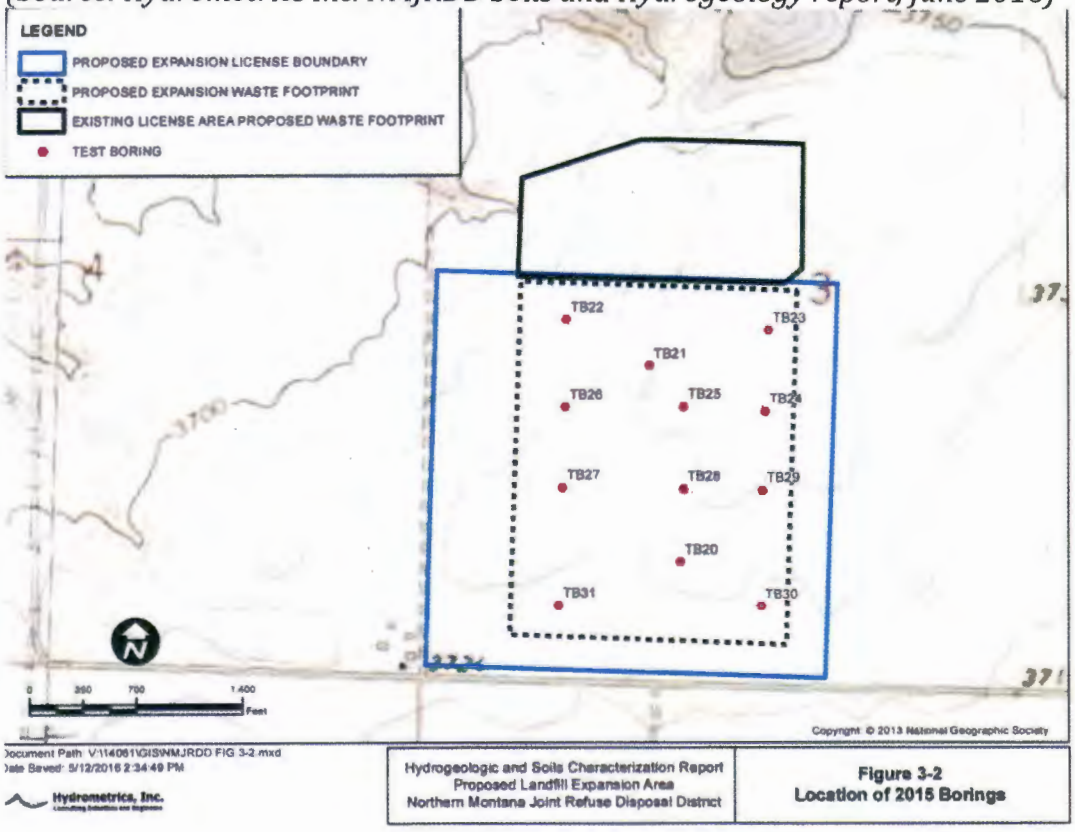
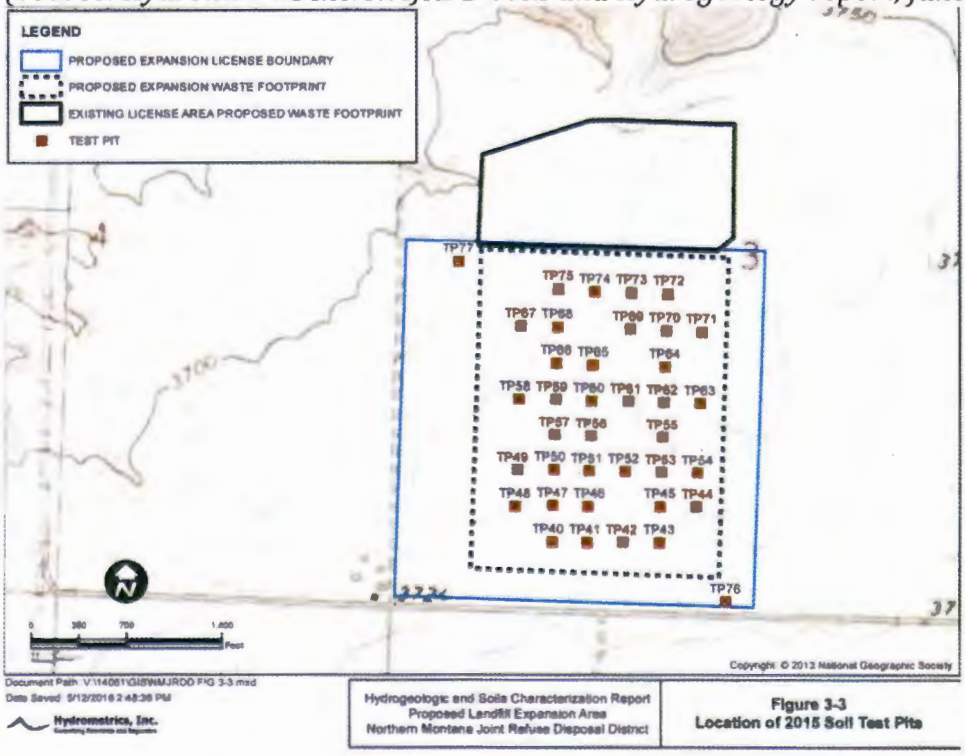


FIGURE 3.3: LOCATION OF 2015 TEST PITS

(Source: Hydrometrics Inc. NMJRDD Soils and Hydrogeology report, June 2016)



The Marias River shale in the area is reported to be at least 620 feet thick and overlain by the upper Cetaceous Telegraph Creek formation. The upper Cetaceous Telegraph Creek formation is approximately 150 feet thick, and consists of sandstone and shale units, along with approximately 100 feet of glacial deposits from the Pleistocene glacial periods. Groundwater was encountered in two of the drilled borings, in minimal quantities and in isolated zones.

The overall conclusion drawn from the investigation is that the property proposed for the landfill expansion (and surrounding areas) does not present an identifiable connecting groundwater system that would allow for the placement of background or downgradient wells. These conditions are well evidenced and supported by the fact that there are no water supply wells in the area. Of the 31 wells and/or borings identified in the GWIC database that are located within a mile of the proposed expansion site, they are either borings for the Montana Department of Transportation, wells for the Montana Salinity Control Association, or wells and borings from the earlier hydrogeologic investigation for the current landfill. None of these wells are used for water supply. Therefore, due to the lack of groundwater resources beneath and within the immediate vicinity of the facility, it's unnecessary to develop o a groundwater monitoring network and plan.

The speed of movement of leachate migration, and landfill gas diffusion, within the till and shale located beneath the expansion, and in the existing landfill, was calculated using the Hydrologic Evaluation of Landfill Performance (HELP) model, version 3.07, developed by the Army Corps of Engineers. The model uses landfill construction and operation parameters, soil physical properties, and climate data to predict one-dimensional moisture flow through the user-specified landfill geometry. HELP model results, using site specific data, estimated that it would take a minimum of 340 years for leachate and gas to migrate through the glacial till and reach the Marias River shale. This estimate is well beyond the expected life of the proposed expansion (including the required 30-year post-closure period).

Finally, the combination of the re-compacted in-place native soils, in-place subgrade base liner, and the highly impermeable glacial till veneer over and the Marias River shale of the subgrade provides an exceptional barrier to potential of leachate migration. This would also likely prevent the lateral and vertical migration of contaminants to points of potential impact for a period well beyond the operational life and post-closure period of the proposed facility. The extreme probable

migration times for leachate fall well below the range required to trigger the need for a contaminant fate and transport demonstration. Neither a composite landfill liner nor a leachate collection system is required, so an analysis of earthquake stability is not necessary for the landfill even though the site is located within a seismic impact zone.

DEQ's conclusion is that there is no potential for migration of contaminants to the uppermost aquifer during the proposed 115-year operational life and 30-year post-closure period of the proposed landfill expansion area. Therefore, groundwater would not be impacted, and monitoring would not be required.

3.5 GEOLOGY AND SOILS

3.5.1 ANALYSIS AREA AND METHODS

The analysis area for geology is the proposed NMJRDD Class II Landfill facility expansion site and a one-mile radius of the perimeter. Some discussion of regional geology, based upon published reports, included. The analysis methods for geology included: reviewing onsite drilling information from the Hydrogeological and Soils Characterization Report for the proposed expansion, the Montana Bureau of Mines and Geology publications, the U.S. Geological Survey (USGS), USGS Seismic Hazard Maps and earthquake analysis tools, and the U.S. Department of Agriculture's Natural Resource Conservation Service (along with their associated geology and soil maps), and topographic maps.

3.5.2 AFFECTED ENVIRONMENT

Glacial deposits, and soils derived from glacial deposits, cover virtually all the bedrock in the area except for exposures in the side slopes of some coulees, gullies, streams, and road cuts. Glacial drift at the site is primarily clay till, except for sandy clay that occurs in the northern half of the existing landfill.

The predominant soil type at the proposed expansion is the Scobey-Kevin clay loams (map unit "164B") and are found on 0 to 4 percent slopes (Figure 3.2). These soils are characterized as well-drained, loamy clay soils, with a moderately low to moderately high capacity to transmit water. A typical profile of the Scobey-Kevin clay loams, from top to bottom, consists of 0 to 6 inches of clay loam, 6 to 15 inches of clay and 15 to 79 inches of clay loam.

Figure 3.4 – Proposed North Montana Joint Refuse Disposal District, Class II Landfill – Soil Types *(Source: NRCS Soil Survey Pondera County, 2016)*

Table 3.4: Summary of Major Soil Properties at NMJRDD, Class II Landfill Facility

Soil Type	Depth profile	Drainage	Saturated Hydraulic Conductivity (Ksat)	Available Water Capacity	Erosion Hazard	Soil Compaction Resistance
Scobey-Kevin clay loams	0 to 6 inches: Clay loam. 6 to 15 inches: Clay 15 to 79 inches: Clay loam	Well Drained	Moderately Low to Moderately High (0.06 to 0.20 in/hr.)	High	Medium	Low Resistance

3.5.3 ENVIRONMENTAL CONSEQUENCES

3.5.3.1 No Action Alternative

Under this alternative, because the site would not be developed, there would be no impacts to the site's soils or geology.

3.5.3.2 Proposed Action

The site would be excavated to accommodate the proposed landfill disposal units, roads, and storm water control features. Excavation to a maximum depth of 20 feet below the natural grade to establish the landfill expansion footprint would yield 2,936,000 cubic yards of

loose soil and geologic material. These materials would be used to provide subgrade fill to establish base elevations for the landfill units, and provide the compacted soil component of the landfill, final cover, and leachate pond liners.

The material beneath the base of all areas within the proposed expansion's excavation provide a good in-situ source of cohesive, clay-rich, natural liner material. As demonstrated for saturated flow, this native material will meet the maximum allowable standard by restricting the gravity seepage rate to less than 1.242 inches per year (as required). The proposed lower soil barrier will enhance existing subgrade conditions that combine to control any potential leachate migration. Testing of samples obtained from the native subsurface formation also yielded a consistently lower seepage rate than required in the regulations. No continuous uppermost aquifer was found at the 134-foot maximum depth below ground surface during the site investigations. If a release occurred from the disposal unit into the underlying natural clay and shales, it would not reach this depth for 340 years (or possibly longer).

Construction and operation of the proposed expansion would result in disturbing 131 acres of the 160-acre parcel. The native soil and subgrade materials would be stockpiled and used to construct berms, landfill liner components and cover, and roadways.

Impacts to geology and soils are anticipated to be minor, there will be some soil exposure by the landfill excavation after removal of soils and placement in cover stockpiles. Because the top soils are well drained, and berms and ditches, would be constructed minimizing erosion, construction and operation of the proposed expansion would not result in soil erosion or substantial loss of topsoil. The natural clayey subgrade materials have a hydraulic conductivity of not less than 1.0×10^{-7} cm/sec, meaning that any liquids passing through the scarified and recompacted clay liner would pass through at a rate of 0.0000001 cm/sec, or 0.00028 feet per day.

3.6 VEGETATION

3.6.1 ANALYSIS AREA AND METHODS

The analysis area is the proposed expansion site and a one-mile radius of the surrounding perimeter. This area is identified as Lowland Prairie Grassland and Great Plains Mixedgrass Prairie. The analysis methods used to identify vegetation included reviewing published reports from the MNHP, the U.S. EPA, USFWS, and Pondera County.

3.6.2 AFFECTED ENVIRONMENT

The common vegetation in this area includes rough fescue, Idaho fescue, western wheatgrass, green needlegrass, blue grama, and needle and thread. Near the Canadian border, these prairies grade into rough fescue and Idaho fescue grasslands. Remnants of shortbristle needle and thread

dominated vegetation are found in northernmost Montana, and are associated with productive sites, now mostly converted to farmland. Previously cultivated acres that have been revegetated with non-native plants have been transformed into associations such as Kentucky bluegrass/western wheatgrass, or into pure crested wheatgrass stands. In grazing areas, the predominant species include Kentucky bluegrass, smooth brome, and Japanese brome.

3.6.3 ENVIRONMENTAL CONSEQUENCES

3.6.3.1 No Action Alternative

Under this alternative, because the site would not be developed, there would be no additional impacts to vegetation.

3.6.3.2 Proposed Action

Construction and operation of the facility would result in disturbing 131 acres of the 160-acre parcel. The native soil and subgrade materials would be stockpiled. Topsoil removed during the proposed expansion will be stockpiled separately for placement on the final cover.

A search of MNHP's database revealed that there are no records of plant species of concern in the area surrounding the proposed expansion site. During construction vegetation would be removed to build roads, buildings, and stormwater control features. Earthen materials taken from beneath the topsoil would be stockpiled and used as needed for soil cover.

Existing vegetation within the proposed expansion is not unique or limited, considering the extensive amount of similar land and vegetation surrounding the area. Further, at final closure, the final topsoil component of the cap will be revegetated with native plant species. Therefore, construction and operation of the proposed expansion would, after final closure have a minor positive impact on existing vegetation.

3.7 AIR QUALITY

3.7.1 ANALYSIS AREA AND METHODS

The area for the air quality analysis is the proposed expansion site, adjacent to the current NMJRDD landfill. The analysis method included considering information provided by the applicant, and DEQ's experience with other major Class II landfill facilities. All facilities are required to comply with air quality rules.

3.7.2 AFFECTED ENVIRONMENT

The proposed expansion site is along the southern border of the active NMJRDD landfill. NMJRDD owns the property. There has been agricultural activity occurring on the land, producing fugitive dust emissions. Air quality impacts from landfill operations will include fugitive dust

emissions from roads, the landfill's operating face, soil stockpiling. and operation.

3.7.3 ENVIRONMENTAL CONSEQUENCES

3.7.3.1 No Action Alternative

Under this alternative, because the site would not be developed, there would be no additional impacts to existing air quality beyond the current agricultural activities of the property.

3.7.3.2 Proposed Action

Air quality impacts associated with landfill activities typically include fugitive dust generated from construction, excavation, vehicle traffic, day-to-day operations, and closure activities. Gas emissions, generated from the biological breakdown of waste, also impact air quality. Landfill gas is mainly a mixture of methane and carbon dioxide, but can also include nitrogen dioxide, oxygen, ammonia, sulfides, hydrogen, and other volatile organic compounds released within each cell of a MSW landfill. Landfill gas is generated as soon as waste is deposited in the landfill. Gas continues to be generated through the operation of the landfill and after the landfill is closed, until all the waste is degraded. Although rare, another air quality impact is from landfill fires. NMJRDD attempts to prevent landfill fires through waste inspections and proper landfill waste deposits.

Fugitive dust is created from disturbing the ground, moving dirt, and vehicle activity during construction and excavation activities. Blowing winds increase fugitive dust from these activities and can pick up additional material from stockpiles and the daily cover over the waste. If fugitive dust from construction, excavation, and cover material becomes a problem, dust control measures, such as watering the work surfaces before working, shall be initiated. Watering work surfaces is required during construction activities such as road construction. During closure of the landfill, more cover material is placed on the waste pile, generating fugitive dust from moving the material and from the vehicles used to place it. Dirt roads generate fugitive dust, particularly during dry and windy times. NMJRDD intends to control dust by watering on an as-needed basis and by minimizing activity during windy periods. Water, or a chemical dust suppressant, would be applied at a rate that would not cause runoff, erosion, or water/waste interaction. NMJRDD may halt material handling operations to mitigate fugitive dust emissions if the operator is unable to control emissions. Fugitive dust levels are expected to remain as they are at the current landfill.

Local meteorological conditions affect the impact of fugitive dust. The nearest meteorological data collected by the National Weather Service is from Cut Bank, located about 27.9 miles northwest of the landfill. The terrain between Cut Bank and the landfill is mainly open and flat, used in agricultural production. The Cut Bank meteorology

is considered representative of that experienced at the landfill since there are no significant topographical features that would alter the winds.

The meteorological data from Cut Bank, as shown in Figure 1, indicates winds in the area generally blow from the west southwest. The average wind speed is 12.3 mph, with gusts well above 25 mph at times. Great Falls' National Weather Service meteorological station is about 55.8 miles to the south and shows similar winds blowing from the southeast, but not quite as strongly.

Temperature and precipitation data collected by the National Weather Service in Conrad from 2000 to present (April 2018) is shown in Tables 1 and 2. This weather data indicates the warmest temperatures occur in the summer, during July and August. Precipitation rates are above 1 inch for the spring months of April, May and June, and then again in September. Winter months experience some of the lowest levels of rainfall. The average annual rainfall for Conrad is 12.89 inches. The warm dry summers are likely to be the time when fugitive dust is highest. Windy conditions during dry periods can generate the most fugitive dust if control methods are not used. Application of water and chemical dust suppressant could reduce the fugitive dust emissions by 50-80 percent, if correctly applied.

Some landfills request an air quality burn permit, allowing the burning of untreated wood waste (reducing the volume of material to be landfilled). NMJRDD's application did not mention plans for open burning at the facility.

ARM require that all facilities comply with applicable air quality requirements. These include restrictions on particulate matter emissions to not exceed an opacity of 20 percent or more, averaged over 6 consecutive minutes, whether from fugitive dust sources or from combustion sources (per ARM 17.8.304 and ARM 17.8.308). ARM 17.8.308 also requires facilities to take reasonable precautions to control emissions of airborne particulate matter from the production, handling, and storage of any material, and to apply reasonable precautions to any street, road, or parking lot. As described above, NMJRDD proposes to control fugitive dust by applying water to roadways. Watering roads is an effective method for reducing fugitive dust emissions during construction and operation.

Figure 3.5 Cut Bank, Montana – Wind Rose, 2013 – 2017

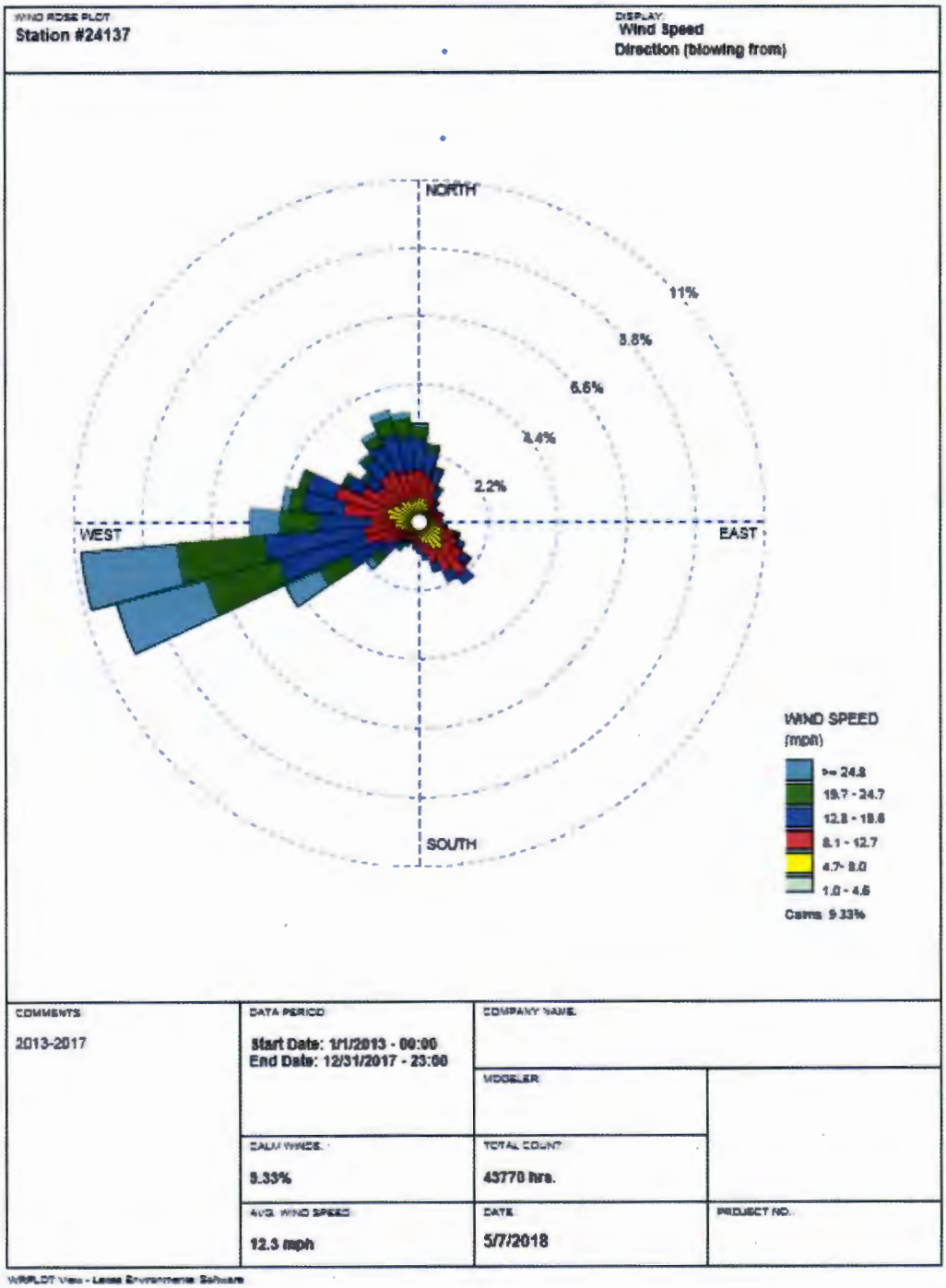


Table 3.5– Conrad, MT Temperature Data, January 2000 – April 2018

Monthly Mean Avg Temperature for CONRAD, MT

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2000	21.7	25.2	36.8	45.8	52.8	57.5	68.1	65.7	54.2	43.7	25.3	14.9	42.6
2001	27.6	14.9	35.6	42.3	55.1	59.1	66.8	67.8	59.0	45.0	36.2	22.4	44.3
2002	25.1	30.2	15.6	38.3	50.3	58.9	68.9	59.6	56.0	37.8	38.9	27.9	42.3
2003	27.9	23.6	30.3	45.3	50.6	60.0	70.0	69.3	55.3	48.6	23.1	27.5	44.3
2004	15.7	27.8	39.2	46.2	49.0	56.4	66.8	63.3	53.8	43.2	35.3	29.1	43.8
2005	18.0	M	34.5	M	50.9	57.6	67.6	62.6	54.3	46.0	36.1	22.7	45.0
2006	34.8	24.9	30.4	46.4	53.7	61.5	70.0	64.3	55.5	42.1	26.5	28.6	44.9
2007	25.2	20.7	41.4	40.4	53.8	61.5	73.6	65.0	54.5	46.5	M	24.3	46.1
2008	20.3	26.2	33.9	39.7	52.4	58.0	66.4	65.1	54.0	45.5	39.3	14.8	43.0
2009	24.2	26.3	30.0	41.9	50.9	58.4	65.8	64.8	62.3	38.3	37.8	9.8	42.5
2010	21.9	25.4	40.1	42.4	50.1	59.8	65.5	64.5	55.0	49.6	25.5	17.7	43.1
2011	18.4	17.5	28.0	M	49.8	57.1	66.7	68.3	59.8	45.8	32.5	29.1	43.0
2012	24.8	27.3	39.2	46.6	51.5	59.8	70.2	67.7	59.1	40.4	33.7	21.5	45.2
2013	25.8	31.2	33.3	39.7	53.4	59.5	68.0	68.1	59.6	42.8	30.7	20.5	44.4
2014	28.6	14.3	26.1	44.0	52.6	57.8	68.2	66.0	56.7	49.9	25.2	24.0	42.8
2015	25.9	29.4	42.2	45.3	49.9	65.0	67.1	66.8	56.5	48.6	30.6	23.4	45.9
2016	24.0	37.3	40.0	47.6	51.9	62.0	65.4	64.2	55.0	43.2	40.5	13.8	45.4
2017	16.1	23.0	34.4	43.4	55.3	62.8	71.1	65.5	55.4	42.4	29.9	19.6	43.2
2018	21.1	9.7	24.5	38.8	M	M	M	M	M	M	M	M	23.5
Mean	23.5	24.2	33.5	43.2	51.9	59.6	68.1	65.5	56.4	44.4	32.2	21.8	42.9
Max	34.8 2006	37.3 2016	42.2 2015	47.6 2016	55.3 2017	65.0 2015	73.6 2007	69.3 2003	62.3 2009	49.9 2014	40.5 2016	29.1 2004	46.1
Min	15.7 2004	9.7 2018	15.6 2002	38.3 2002	49.0 2004	56.4 2004	65.4 2016	59.6 2002	53.8 2004	37.8 2002	23.1 2003	9.8 2009	23.5

Note: M means missing data.

Federal Prevention of Significant Deterioration regulations have classified states and local areas to let states plan for local land use. Each classification allows for different amounts of development and changes to the ambient air quality. Areas designated Class I are the most restrictive, allowing the least amount of change to the ambient air. Class II areas can accommodate normal, well-managed industrial growth. Areas designated as Class I include our national parks, several wilderness areas, and certain Native American Indian Reservations. All other areas in the region are Class II areas, which includes Conrad the existing landfill and proposed expansion. The nearest Class I area to the proposed project site is the Bob Marshall Wilderness in the Rocky Mountains to the east. The wilderness area is about 40.3 miles to the east-southeast. As described earlier, winds generally blow from the east southeast. Air quality impacts are not expected from the NMJRDD landfill 40.3 miles away at the Bob Marshall Wilderness.

Table 3.6 – Conrad, MT Precipitation Data, January 2000 – April 2018

Monthly Total Precipitation for CONRAD, MT.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2000	0.24	0.57	0.42	0.26	2.02	1.67	0.32	0.10	0.83	0.65	0.46	0.57	M
2001	0.33	0.40	0.27	1.51	0.21	1.94	2.53	0.47	0.45	0.08	0.69	T	8.88
2002	0.15	0.39	1.00	0.54	2.13	5.43	1.07	1.66	1.67	0.32	0.12	0.16	14.64
2003	0.08	0.27	0.75	2.18	1.44	M	0.23	0.28	1.05	1.45	0.57	0.44	M
2004	0.53	0.02	0.20	0.92	3.53	1.87	0.47	2.02	1.08	1.08	0.05	0.65	M
2005	0.36	M	1.28	M	0.52	4.82	0.19	1.74	1.03	1.24	0.63	0.32	M
2006	0.09	0.76	1.19	1.65	1.89	3.03	0.98	0.82	0.99	0.77	0.43	0.32	12.92
2007	0.45	1.05	0.03	2.35	2.21	1.35	0.29	0.23	2.22	0.85	M	0.11	M
2008	0.53	0.42	0.48	0.79	3.96	2.05	1.49	0.99	1.85	0.04	0.24	1.43	14.27
2009	0.78	0.43	0.73	2.69	M	1.49	1.50	0.76	0.46	0.92	0.00	1.06	M
2010	0.90	0.10	0.15	2.88	3.10	2.47	2.00	1.72	1.38	0.15	0.83	1.05	16.73
2011	0.26	1.26	0.51	M	M	4.19	0.67	0.43	0.37	M	0.33	0.14	M
2012	0.36	0.08	0.77	M	1.60	M	0.92	0.95	0.04	1.80	1.01	0.35	M
2013	0.75	0.20	0.31	0.96	1.31	2.69	0.81	0.93	1.02	0.47	0.74	0.65	10.84
2014	1.07	0.53	0.68	1.64	0.62	3.19	0.71	1.64	0.91	0.31	1.18	0.71	13.19
2015	0.64	0.31	0.37	0.15	2.71	0.15	1.29	0.54	2.01	0.62	1.29	0.43	10.51
2016	0.21	0.00	0.16	2.46	2.53	1.02	1.46	1.16	1.56	1.45	0.08	0.68	12.77
2017	1.06	0.78	0.88	2.34	1.44	2.10	0.00	0.05	1.89	1.39	0.72	1.50	14.15
2018	0.15	1.61	1.09	1.85	M	M	M	M	M	M	M	M	M
Mean	0.47	0.51	0.59	1.57	1.95	2.47	0.94	0.92	1.16	0.80	0.55	0.59	12.89
Max	1.07 2014	1.61 2018	1.28 2005	2.88 2010	3.96 2008	5.43 2002	2.53 2001	2.02 2004	2.22 2007	1.80 2012	1.29 2015	1.50 2017	16.73 2010
Min	0.08 2003	0.00 2016	0.03 2007	0.15 2015	0.21 2001	0.15 2015	0.00 2017	0.05 2017	0.04 2012	0.04 2008	0.00 2009	T 2001	8.88 2001

Note: T means trace amount.
M means missing data.

Montana has several areas that are designated as nonattainment areas by the EPA, which means they have experienced air quality impacts above the national ambient air quality standards (NAAQS). Although many areas have not exceeded the NAAQS in years, they still carry the nonattainment designation. The nearest nonattainment area is Columbia Falls. Columbia Falls is about 150 kilometers east of the NMJRDD landfill and is designated 'nonattainment' for the Particulate Matter 10-micron NAAQS. Columbia Falls is on the opposite side of the Rocky Mountains from the landfill and predominantly upwind of the landfill. Air quality impacts from the NMJRDD landfill would not reach Columbia Falls given the terrain features, distance, and predominant wind direction.

ARM 17.8.743 requires a facility to obtain a Montana air quality permit (MAQP) before installing an incinerator (landfill flare), or before constructing a facility that has the potential to emit 25 tons per year (tpy) of a regulated air pollutant. The NMJRDD landfill currently does not hold an MAQP because it does not operate an incinerator, nor exceeds the emissions threshold limit. NMJRDD will need a MAQP

if change to the landfill includes the construction of a landfill gas flare (incinerator), or the facility has the potential to emit 25 tpy of a regulated air pollutant.

Federal regulations require that new or expanded MSW landfills comply with the New Source Performance Standards (NSPS) of 40 Code of Federal Regulations (CFR) Part 60, Subparts WWW and XXX. The proposed expansion would make the NMJRDD landfill an affected facility for 40 CFR Part 60 Subparts WWW and XXX.

If NMJRDD's landfill design capacity would be equal to or greater than both qualifying design thresholds for applicability of 2.5 million cubic meters and 2.5 million metric tons. Then the landfill is required to install a gas collection and control system (GCCS) if the non-methane organic compound (NMOC) emission rate is 50 metric tons per year. Or if it is more and 34 metric tons per year or more, respectively. Information submitted with the application indicates the proposed landfill will be designed for 5,011,000 cubic yards (3.83 million cubic meters of waste) and based on the in-place density of waste at 1,000 pounds per cubic yard, a mass of 2.27 million metric tons of waste is anticipated for the landfill. Therefore, the NMJRDD landfill is not required to monitor for NMOC. NMJRDD is required to have initial design capacity reporting requirements upon commencing construction.

Fires are infrequent events at landfills in Montana. If a fire were to occur at the proposed expansion, the fire would contribute to poor air quality in the surrounding area near the proposed action. Since fires at landfills are infrequent and extinguished, it would be a short-term impact to air quality.

Landfill fires are typically attributable to the placement of a hot load in the working face. It is important to note that the different landfill dynamics, characteristics, and regulations, and the fires that occur in them, require different tactics to extinguish them. Efforts would vary depending upon waste characteristics, a surface fire versus an underground fire, the depth of the fire if it's an underground fire, and the ignition source. Surface fires generally burn at relatively low temperatures and are characterized by the emission of dense white smoke and products of incomplete combustion. To access waste below the landfill surface or move burning waste away from the landfill, it may be necessary to use heavy equipment (such as bulldozers).

Fires would be handled by prevention and extinguishing Operators would inspect for hot loads. Hot loads would be isolated and extinguished before placed in the landfill. If a fire occurs on the active fill, the operators would use their equipment to push the burning waste away from the active fill, if they can do so safely. Once the

waste is isolated, it would be extinguished. In the event of a larger or more persistent fire, the local fire department would be summoned. In the event of a larger fire, the landfill would notify DEQ and their engineering consultant.

The wastes proposed for disposal at the site will generate methane and non-methane organic compounds. As the landfill units are developed, a series of landfill gas monitoring wells would be installed, at locations and depths approved by DEQ (prior to construction of each waste unit). Methane levels would continue to be monitored on a quarterly basis to ensure the concentration of methane gas generated by the facility does not exceed 25% of the LEL for methane in facility structures. The monitoring would also ensure the LEL for methane is not exceeded at the facility's boundary. Any exceedance of specified levels of methane in the soil will be reported immediately to DEQ, and a landfill gas remediation plan would be submitted to DEQ for approval (prior to implementation).

In summary, fugitive dust from the landfill can be minimized through good operating practices and using abatement techniques that include applying water during construction and excavation, and on roads, storage piles and the active landfill. Impacts from the generation of methane and NMOCs will be monitored, and a remediation plan developed as necessary. Air quality impacts from the landfill expansion are not expected to change significantly from those produced by current operations. Therefore, DEQ expects minor air quality impacts to the analysis area.

3.8 INDUSTRIAL, COMMERCIAL, AND AGRICULTURAL ACTIVITIES

3.8.1 ANALYSIS AREA AND METHODS

The analysis area for industrial, commercial, and agricultural activities is the site of the proposed expansion and surrounding properties. The analysis methods for these activities included: a review of the Montana Cadastral database, studying aerial photographs of the proposed expansion site and surrounding vicinity, and site visits verifying current land use.

3.8.2 AFFECTED ENVIRONMENT

The property proposed for the NMJRDD Class II Landfill expansion site presently encompasses approximately 160 acres. The parcel is currently idle: it was purchased in 2014 for future expansion. The site of the proposed expansion area is designated agricultural property and there are no local land use restrictions or special designations prohibiting location of the proposed expansion at the selected site (selected by the applicant). There are no known commercial or industrial uses of the property.

3.8.3 ENVIRONMENTAL CONSEQUENCES

3.8.3.1 No Action Alternative

Under this alternative, because the NMJRDD Landfill would not be expanded as proposed, there would be no additional impacts to existing industrial, commercial, and agricultural land use activities.

3.8.3.2 Proposed Alternative

Construction and operation of the proposed NMJRDD Class II Landfill expansion would increase industrial activity in the area, due to the need for contractors, associated materials, machinery, and machinery repairs. Once construction is complete, industrial activities in the area will be like those currently occurring at the active NMJRDD Class II Landfill. Therefore, the impact from construction would be minor. There were no other commercial activities identified at the proposed expansion site or in the immediate vicinity. Because the 160 acres proposed for expansion have no livestock grazing activities taking place, there will be no impact to agricultural activities. However, upon closure, the proposed post-closure use is livestock grazing. The final cover for the landfill units would be seeded with native vegetation and would likely provide better forage grasses than currently exist at the site.

3.9 TRAFFIC AND UTILITIES

3.9.1 ANALYSIS AREA AND METHODS

The analysis area for traffic and utilities includes the site of the current landfill, the proposed expansion area, and the current entrance off Montana Highway 44 (two miles west of Interstate 15). The analysis methods for these activities included: a site visit to identify the impacts of potential traffic, and research conducted by NMJRDD and their engineering consultants.

3.9.2 AFFECTED ENVIRONMENT

The affected environment for traffic and utilities includes the current facility and immediate vicinity. Montana Highway 44 accommodates vehicles going to the landfill, and to residential and agricultural properties in the area.

3.9.3 ENVIRONMENTAL CONSEQUENCES

3.9.3.1 No Action Alternative

Under this alternative, because the site would not be developed, there would be no impacts to traffic. The 160-acre parcel is currently idle. There are no other known commercial or industrial uses of the property that would result in an increase in traffic in the area. As a result, traffic accessing the facility would continue to vary, as it does presently, and would continue to be dependent upon road maintenance needs, and the need to access the landfill, residential, and agricultural properties in the area.

3.9.3.2 Proposed Alternative

The current landfill is accessed via Montana Highway 44. Presently, vehicles travel east and west on Highway 44, turning into the landfill's entrance. The existing entrance is approximately two miles west of Interstate-15. There would be a slight increase during closure of the current landfill and construction of waste disposal units, roads, and other site features in the proposed expansion area. However, the increase in traffic would be short-lived compared to the projected facility's life. There are no proposed access changes, therefore no changes or modifications to Montana Highway 44 would be required. As a result, impacts due to the proposed expansion would be minor.

3.10 VISUALS

3.10.1 ANALYSIS AREA AND METHODS

The analysis area for visuals is the site of the proposed expansion and immediate vicinity. The analysis methods for these activities included a site visit to identify potential visual impacts.

3.10.2 AFFECTED ENVIRONMENT

The affected environment for visuals in the 160-acre parcel proposed for the landfill expansion, owned by the applicant, and property in a one-mile vicinity.

3.10.3 ENVIRONMENTAL CONSEQUENCES

3.10.3.1 No Action Alternative

Under this alternative, because the site would not be developed, the current landfill would be closed and capped when it reaches final grade, and the landscape would blend in with the surrounding landscape. The impacts to the visual landscape from the no action alternative would be minor.

3.10.3.2 Proposed Alternative

The proposed expansion is located within a 160-acre parcel, owned and controlled by the applicant, abutting the southern boundary of the existing facility. The applicant selected the site location. There are no local restrictions that prohibit expanding the facility at the selected site.

The landscape affected by the proposal is not locally or regionally unique; it is typical of the area. The proposed expansion is adjacent to the existing landfill. The proposed expansion area property is not currently used for anything; it is idle. The property was purchased in 2014 in anticipation of future landfill expansion. The dominant color of the land is tawny brown, except for a few months in late spring and early summer, when there is enough moisture and plant growth to cover the land in varying shades of green.

Construction and operation would change the landscape in the area. This change would occur within the licensed boundary, and throughout the facility's projected life. However, such a change would not have a major impact on the landscape in the area because it is adjacent to the current landfill. Operation of the proposed landfill expansion would not commence until the current landfill reaches final grade and is closed. Now, the current landfill is not visible from Montana Highway 44, as the entrance is on a hill that blocks the facility from view. The proposed expansion extends south, away from Montana Highway 44. The expansion area will not be visible from State Highway 44, because higher topography shields the area next to the road. As areas of the expansion are closed, capped, and revegetated, the visual landscape will gradually improve in the area. Therefore, the impacts of construction, operation, and closure of the proposed expansion on the view shed are negligible.

3.11 NOISE

3.11.1 ANALYSIS AREA AND METHODS

The analysis area for noise is the site of the proposed expansion. The analysis methods included a site visit and inspections of the current facility.

3.11.2 AFFECTED ENVIRONMENT

Presently, the applicant owns the 160-acre proposed expansion parcel. The affected environment includes the proposed site and adjacent properties.

3.11.3 ENVIRONMENTAL CONSEQUENCES

3.11.3.1 No Action Alternative

Under this alternative there would be no impacts from noise.

3.11.3.2 Proposed Alternative

Noise generated from heavy equipment within the proposed expansion area would not be expected to increase. Daily operations in the proposed expansion area will not fully commence until the current landfill has reached capacity. There may be an increase in noise generated by construction, which would be temporary. Therefore, the impact of construction, operation, and closure of the proposed expansion to noise is negligible.

3.12 DEMANDS FOR GOVERNMENT SERVICES

3.12.1 ANALYSIS AREA AND METHODS

The analysis area is the site of the proposed expansion. The analysis methods included researching the community's infrastructure, and state services.

3.12.2 AFFECTED ENVIRONMENT

The 160-acre proposed expansion parcel is owned by the applicant. The undeveloped site is not inspected by DEQ's SWP. Current landfill personnel occasionally drive through the property to ensure fences and gates are in good working order.

3.12.3 ENVIRONMENTAL CONSEQUENCES

3.12.3.1 *No Action Alternative*

Under this alternative, because the site would not be developed, there would be no additional impacts to the demands for government services.

3.12.3.2 Proposed Alternative

The potential impact of the proposed expansion is expected to be minor. DEQ's SWP would continue to perform inspections of the site during and after construction, which is a typical and routine activity for all licensed facilities. The Pondera County Environmental Health Department may also conduct inspections of the site during and after construction.

City services, equipment operation, and maintenance for the proposed facility would continue to be provided at the same level they are provided for the current landfill.

During the construction phases, there may be a slight increase in traffic on the roads leading to the landfill. This would likely result in a minor impact to traffic enforcement. The additional traffic associated with construction would be short-term, relative to the operational life of the facility.

Once the proposed expansion is operational, DEQ's SWP would continue to be responsible for performing inspections and providing compliance assistance. Resources from the County, and/or State, may be required for road maintenance.

The Pondera County Sanitarian, the Montana Department of Transportation's (MDT) Motor Carrier Services Division, and DEQ's SWP and Enforcement Division may be called upon to respond to complaints, or spills on county roads and state highways. Spills of any size may be reported to the Pondera County Sanitarian. Spills exceeding 25 gallons must be reported to DEQ's spill hotline. The cleanup of spills occurring during transportation will be overseen by the Pondera County Sanitarian, and/or DEQ's Enforcement Division. Cleanup must be completed in accordance with state and/or federal requirements. Individual haulers, and hauling contractors, are responsible for expenses and cleanup due to spills that occur hauling materials to or from the facility.

3.13 CULTURAL UNIQUENESS AND DIVERSITY

3.13.1 ANALYSIS AREA AND METHODS

The analysis area is the site of the proposed expansion. The analysis methods included research conducted by the State Historic Preservation Office (SHPO).

3.13.2 AFFECTED ENVIRONMENT

The 160-acre proposed expansion parcel is owned by the applicant. The parcel is currently unused.

3.13.3 ENVIRONMENTAL CONSEQUENCES

3.13.3.1 No Action Alternative

Under this alternative, because the site would not be developed, there would be no additional impacts to the cultural uniqueness and diversity of the area.

3.13.3.1 Proposed Alternative

SHPO conducted a cultural resource file search for Section 3, Township 29 North, Range 3 West. The results of the search indicated there have been no previously recorded historic sites within the area. Based upon previous ground disturbances associated with the current landfill, agricultural activities, and residential development in the area, combined with the fact that cultural properties had not been identified with such development, SHPO determined that there is a low likelihood that cultural properties would be impacted. Therefore, SHPO determined that a cultural resource inventory is unnecessary. The area does not contain any unique quality, or culturally unique or diverse areas, so the proposed project would have no impact on cultural uniqueness or diversity.

3.14 TAX BASE

3.14.1 ANALYSIS AREA AND METHODS

The analysis area is the site of the proposed expansion and the adjacent properties. The analysis method consisted of DEQ's examination of aerial photos, and the evaluation of data collected from the application for licensure

3.14.2 AFFECTED ENVIRONMENT

The 160-acre proposed expansion parcel is owned by the applicant. There are no residential subdivisions located near the current facility or proposed expansion.

3.14.3 ENVIRONMENTAL CONSEQUENCES

3.14.3.1 No Action Alternative

Under this alternative, because the site would not be developed, there would be no impacts.

3.14.3.2 Proposed Alternative

Operation of the landfill would move from the current landfill into the expansion area once the current disposal units reach final grade and are closed. DEQ is not aware of any subdivisions planned adjacent to the proposed facility. There are no reasons to believe that population growth would lead to subdivision growth. DEQ has no basis for determining that property values would change because of the proposed expansion (if operated according to the proposed action and regulations). DEQ believes that the potential impacts to adjacent property values would be negligible. There would be a minor increase in local employment due to the need for construction employees. The long-term employment requirements would not result in the addition of employees. Therefore, operation of the proposed expansion would continue to have a minor impact on the local tax base and to business revenues.

3.15 SOCIOECONOMIC

3.15.1 ANALYSIS AREA AND METHODS

The analysis area for the proposed landfill is the site of the proposed expansion and adjacent properties. Data was collected from NMJRDD's application, landfill staff, and engineering consultant.

3.15.2 AFFECTED ENVIRONMENT

The current landfill manages all wastes generated by residents of Pondera County, eastern Glacier County, the City of Browning, and the eastern portion of Glacier National Park. Four county employees operate the existing landfill.

3.15.3 ENVIRONMENTAL CONSEQUENCES

3.15.3.1 No Action Alternative

Under this alternative, because the site would not be developed, landfill staff and contractors would be forced to find similar employment elsewhere after the existing landfill closes. This would likely result in relocation to other communities for employment.

Current landfill users would be forced to obtain waste disposal services elsewhere. The nearest licensed Class II landfill is in Shelby, approximately 20 miles north of NMJRDD. Transporting wastes currently managed at the NMJRDD landfill would result in a cost increase to cover transportation costs. Transportation would also result in an increase of vehicle emissions. Cost increases would result from the transportation fees and from the landfill tipping fees at the City of Shelby landfill since they would likely need to add additional staff to manage the increased waste volumes. The remaining capacity of the Shelby landfill is approximately 336,000 tons; with the addition of NMJRDD's waste, the Shelby landfill would be at full capacity in a

year's time. If that occurred, the City of Shelby could close and seek disposal services elsewhere or expand their landfill.

3.15.3.2 Proposed Alternative

During the construction phases of the expansion, (especially during the initial startup of the expansion area operations) there would be a minor increase in local employment due to the additional need for contractors, site operators, and associated support. Construction activities would employ approximately 15 people as construction workers for about six months. However, because this would occur only during construction, the impact to employment is short-term (compared to the life of the landfill). Operations would move from the current landfill to the expansion area once the site features are constructed; existing landfill staff would move at the same time. The long-term employment requirements will remain the same.

3.16 CUMULATIVE EFFECTS

Cumulative impacts are the collective effects on the human environment when a specific action is considered, in conjunction with other past, present, and future actions by location and type. Cumulative impact analysis under MEPA requires an agency to consider all past and present state and non-state action. Related future actions must also be considered, when these actions are under concurrent consideration by any state agency, through pre-impact statement studies, separate impact statement evaluation, or permit process procedures. Cumulative impact analyses help determine whether an action, combined with other activities, would result in significant impacts.

According to MDT, Montana Highway 44 is under the jurisdiction of the Montana Transportation Commission.

The Pondera County Planning Department and county commissioners indicated that there are no projects anticipated within the vicinity of the proposed expansion area.

The construction of the expansion, would assumptively, occur concurrent with the final landfill activities and closure. This would result in an increase in construction related activities such as fugitive dust and noise. Landfilling activities would simply move from the current landfill to the proposed expansion area (abutting the southern boundary) once the current landfill reaches capacity. As the population grows, demands on the landfill may increase. The proposed expansion is designed to accommodate anticipated demand.

3.17 UNAVOIDABLE ADVERSE EFFECTS

Residual impacts from the proposed action would include the reuse of developed soil from approximately 106 acres of the 160-acre site for use on roads, as cover soil, and for the construction of berms or other landfill features. Topsoil would be used as the topsoil component in the final cap during final

closure of the facility; it would be seeded with native vegetation. Some sediment control structures would remain, and the capped landfill units would look like man-made features. Post-closure land use would be restricted to animal grazing. No structures that require the placement of footings or foundations are allowed over the closed landfill units. Any disturbance of the closed landfill final cover would have to be approved by DEQ.

Disturbed plant communities would be replaced, using native plants. Noxious weeds would increase from the soil disturbance, and weeds would be controlled (as required by the county weed control program) to ensure revegetation of the native grasses. The disturbed areas would be reclaimed by reseeding. A program to inventory and treat noxious weeds would be implemented.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 A listing and evaluation of mitigation, stipulations, and other controls enforceable by the agency or another government agency:

The proposed licensure of the proposed expansion would meet the requirements of the Montana Solid Waste Management Act, and associated administrative rules regulating solid waste management. Adherence to the solid waste, water, and air quality regulations, along with the facility's approved Operation and Maintenance Plan, would mitigate the potential for harmful releases, and impacts to human health and the environment, by the proposed expansion.

4.2 Other groups or agencies contacted or contributing to this EA:

Montana Natural Heritage Program
State of Montana Historic Preservation Office
Barry Damschen Consulting, L.L.C.
Hydrometrics, Inc.
U.S. Geological Survey
Montana Bureau of Mines and Geology
U.S. Department of Agriculture - Natural Resource Conservation Service
Montana Department of Transportation
Pondera County Planning Department

4.3 Authors:

Draft EA prepared by:
Mary Louise Hendrickson, Tim Stepp, John Collins, Fred Collins and David Sanborn
Montana DEQ, Solid Waste Section

Date: August 27, 2018

5 REFERENCES:

Alt, David and Hyndman, Donald W., 1986, Roadside Geology of Montana: Mountain Press Publishing Company, Missoula MT.

Alt, David and Hyndman, Donald W., 1995, Northwest Exposures: Mountain Press Publishing Company, Missoula MT.

Anna, Lawrence O., 1986, Geologic framework of the ground-water system in Jurassic and Cretaceous rocks in the northern Great Plains, in parts of Montana, North Dakota, South Dakota, and Wyoming - Regional aquifer system analysis: U.S. Geological Survey Professional Paper 1402-B, 36 p.

Cannon, M.R., 1996, Geology and Groundwater Resources of the Blackfeet Indian Reservation, Northwestern Montana. USGS Hydrologic Investigations Atlas HA-737.

Downey, Joe S., 1986, Geohydrology of bedrock aquifers in the northern Great Plains, in parts of Montana, North Dakota, South Dakota, and Wyoming - Regional aquifer system analysis: U.S. Geological Survey Professional Paper 1402-E, 87 p.

Ecoregions of Montana, U.S. EPA, Interactive Map, http://www.plantmaps.com/interactive-montana-ecoregions-l4-map.php

Environmental Laboratory, 1987, Wetlands Research Program Technical Report Y-87-1 (on-line edition), Corps of Engineers Wetland Delineation Manual, 143 p.

Larry N. Smith, Montana Ground-Water Assessment Atlas No. 1, Part B, Map1, Montana Bureau of Mines and Geology, October 1998, Revision 1 – Dec. 21, 1998

Lopez, D. A., 2000, Geologic map of the NMJRDD 30' x 60' quadrangle, Montana: Montana Bureau of Mines and Geology Geologic Map Series Number 59, MBMG, Butte, Montana, one sheet.

Montana Field Guide, http://fieldguide.mt.gov/speciesDetail.aspx?elcode=ABNRB02020, download 2/29/2016.

Montana Natural Heritage Program: Montana Species Snapshot All Montana Species found in Township: 029N003W
Retrieved on August 1, 2018, from http://mtnhp.org/SpeciesSnapshot/

Montana Tech of the University of Montana, 2016, Montana Bureau of Mines and Geology, Groundwater Information Center, http://mbmggwic.mtech.edu/ Downloaded November 2016.

Noble, R.N., et al., 1982, *Occurrence and characteristics of ground water in Montana*: Montana Bureau of Mines and Geology Open File Report 99, 214 p.

Olson, J.L., and Reiten, J.C., 2002, Hydrogeology of the west: Impacts of land-use changes on water resources, Series RI 10, 32 p.

Pondera County Planning Department, personal communication, August 16, 2017.

Rowe, R.K., 2005, Long term performance of contaminant barrier systems, Geotechnique, 55(9), pp.631-678.

Rowe, R.K., S. Rimal, and H. Sangam, 2009, Ageing of HDPE geomembrane exposed to air, water and leachate at different temperatures, Geotextile and Geomembranes, 27, pp.131-151.

Swenson, F.A., 1957. Geology and Groundwater Resources of the Lower Marias Irrigation Project, Montana. USGS Water Supply Paper 1640-B.

United States Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey, http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm, Downloaded November 2016.

U.S. Fish and Wildlife Service (USFWS). 2014a. Endangered, Threatened, Proposed and Candidate Species Montana Counties. Available at: http://www.fws.gov/montanafieldoffice/Endangered_Species/Listed_Species/countylist.pdf. Accessed June 2018.

APPENDIX A: DEFINITONS

DRAFT ENVIRONMENTAL ASSESSMENT
For the
Proposed Class II Landfill Expansion Project
Northern Montana Joint Refuse Disposal District
Conrad, Montana

"Active life" means the period of operation beginning with the initial receipt of solid waste and ending at completion of closure activities

"Active portion" means that part of a facility or unit that has received or is receiving wastes and that has not been closed.

"Aquifer" means any geologic formation, group of formations, or part of a formation capable of yielding significant quantities of ground water to wells or springs.

"Class II landfill facility" means a facility licensed to operate as Class II solid waste management system that is capable of receiving Group II, Group III, and Group IV wastes but not regulated hazardous wastes. Group III and Group IV waste may be managed in Class II units or separate units at the facility. Household waste, although it may contain some household hazardous waste or other non-regulated hazardous waste, may be disposed of at Class II landfills.

"Closure" means the process by which an owner or operator of a facility closes all or part of a facility in accordance with a department-approved closure plan and all applicable closure requirements.

"Composite liner" means a system consisting of two components. The upper component must consist of a minimum 30-mil flexible membrane liner (FML), and the lower component must consist of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1×10^{-7} cm/sec. FML components consisting of high density polyethylene (HDPE) must be at least 60-mil thick. The FML component must be installed in direct and uniform contact with the compacted soil component.

"Construction and demolition waste" means the waste building materials, packaging, and rubble resulting from construction, remodeling, repair, and demolition operations on pavements, houses, commercial buildings, and other structures, once municipal, household, commercial, and industrial wastes have been removed.

"Contaminated soil" means soil, rocks, dirt, or earth that has been made impure by contact, commingling, or consolidation with organic compounds such as petroleum hydrocarbons. This definition does not include soils contaminated solely by inorganic metals, soils that meet the definition of hazardous waste under ARM Title 17, chapter 53, or regulated PCB (polychlorinated biphenyls) contaminated soils.

"Dispose" or "disposal" means the discharge, injection, deposit, dumping, spilling, leaking, or placing of any solid waste into or onto the land so that the solid waste or any constituent of it may enter the environment or be emitted into the air or discharged into any waters, including ground water.

"Endangered or threatened species" means any species listed as such pursuant to section 4 of the federal Endangered Species Act of 1973.

"Facility" means property where solid waste management is occurring or has occurred. It includes all contiguous land and structures, other appurtenances, and improvements on the land used for management of solid waste.

"Groundwater" means water below the land surface in a zone of saturation

"Group II wastes" means decomposable wastes and mixed solid wastes containing decomposable material but exclude regulated hazardous wastes. Examples include, but are not limited to, the following: (i) municipal and household solid wastes such as garbage and putrescible organic materials, paper, cardboard, cloth, glass, metal, plastics, street sweepings, yard and garden wastes, digested sewage treatment sludges, water treatment sludges, ashes, dead animals, offal, discarded appliances, abandoned automobiles, and hospital and medical facility wastes, provided that infectious wastes have been rendered non-infectious to prevent the danger of disease; and (ii) commercial and industrial solid wastes such as packaging materials, liquid or solid industrial process wastes that are chemically or biologically decomposable, contaminated soils, crop residues, manure, chemical fertilizers, and emptied pesticide containers that have been triple rinsed or processed by methods approved by the department.

"Group III wastes" means wastes that are characterized by their general inert nature and low potential for environmental impacts. Group III wastes include wood wastes and non-water-soluble solids.

"Group IV wastes" mean construction and demolition wastes, and asphalt, except regulated hazardous wastes.

"Industrial solid waste" means solid waste generated by manufacturing or industrial processes that is not a hazardous waste regulated under subtitle C of the federal Resource Conservation and Recovery Act of 1976 (RCRA). The definition includes, but is not limited to, waste resulting from the following manufacturing or industrial processes:
(a) electric power generation;
(b) fertilizer/agricultural chemicals;
(c) food and related products/byproducts;
(d) inorganic chemicals;
(e) iron and steel manufacturing;
(f) leather and leather products;
(g) nonferrous metals manufacturing/foundries;
(h) organic chemicals;
(i) plastics and resins manufacturing;
(j) pulp and paper industry;
(k) rubber and miscellaneous plastic products;
(l) stone, glass, clay, and concrete products;
(m) textile manufacturing;
(n) transportation equipment; and
(o) water treatment.

"Landfill" means an area of land or an excavation where wastes are placed for permanent disposal and that is not a land application unit, surface impoundment, injection well, or waste pile.

"Leachate" means a liquid which has contacted, passed through, or emerged from solid waste and contains soluble, suspended, or miscible materials removed from the waste.

"Leachate collection system" means an engineered structure, located above a liner and below the refuse in a landfill unit, designed to collect leachate.

"Leachate removal system" means an engineered structure that allows for the removal of leachate from a landfill unit. A leachate removal system may be, but is not necessarily, used in conjunction with a leachate collection system.

"Licensed boundary" means the perimeter of the area within a solid waste management facility that the department has approved for solid waste management.

"Licensee" means a person who has, or persons who have, been issued a license by the department to operate a solid waste management system.

"Liquid waste" means any waste material that is determined to contain "free liquids" as defined by Method 9095 (Paint Filter Liquids Test), as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (EPA Pub. No. SW-846).

"Lower explosive limit" means the lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at 25° C and atmospheric pressure.

"Major Class II facility" means a Class II facility with a planned capacity of more than 25,000 tons per year.

"Municipal solid waste landfill" means any publicly or privately-owned landfill or landfill unit that receives household waste or other types of waste, including commercial waste, non-hazardous sludge, and industrial solid waste. The term does not include land application units, surface impoundments, injection wells, or waste piles.

"Operator" means the person responsible for the overall operation of a facility or part of a facility.

"Owner" means the person who owns a facility or part of a facility.

"Person" means an individual, firm, partnership, company, association, corporation, city, town, local governmental entity, or any other governmental or private entity, whether organized for profit or not.

"Post-closure care" means the activities required at a landfill after the completion of closure in which all aspects of the landfill containment, extraction, control, and monitoring systems must be inspected, operated, and maintained in accordance with a department-approved post-closure plan and all applicable requirements.

"RCRA" means the federal Solid Waste Disposal Act, as amended by and hereinafter referred to as the Resource Conservation and Recovery Act of 1976 and subsequent amendments, codified at 42 USC 6901 through 6992k.

"Regulated hazardous waste" means a solid waste that is a hazardous waste, as defined in 40 CFR 261.3, that is not excluded from regulation as a hazardous waste under 40 CFR 261.4(b) or was not generated by a conditionally exempt small quantity generator as defined in 40 CFR 261.5.

"Remediation" means the act of reducing contamination to a level that is protective of human health and the environment.

"Run-off" means any rainwater, leachate, or other liquid that drains over land from any part of a facility.

"Run-on" means any rainwater, leachate, or other liquid that drains over land onto any part of a facility.

"Saturated zone" means that part of the earth's crust in which all voids are filled with water.

"Sludge" means any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility, exclusive of the treated effluent from a wastewater treatment plant.

"Solid waste" means all putrescible and nonputrescible wastes including, but not limited to, garbage; rubbish; refuse; ashes; sludge from sewage treatment plants, water supply treatment plants, or air pollution control facilities; construction and demolition wastes; dead animals, including offal; discarded home and industrial appliances; and wood products or wood byproducts and inert materials. "Solid waste" does not mean municipal sewage, industrial wastewater effluents, mining wastes regulated under the mining and reclamation laws administered by the department, slash and forest debris regulated under laws administered by the department, or marketable byproducts.

"Solid waste management system" means a system which controls the storage, treatment, recycling, recovery, or disposal of solid waste. Such a system may be composed of one or more solid waste management facilities. This term does not include hazardous waste management systems.

"Structural components" means liners, leachate collection systems, final covers, run-on/run-off systems, and any other component used in the construction and operation of a Class II or lined Class IV landfill unit that is necessary for protection of human health and the environment.
"Unit" means a discrete area of land or an excavation used for the landfilling or other disposal of solid waste.

"Uppermost aquifer" means the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within a facility's property boundary.

"Waste" means useless, unwanted, or discarded materials in any physical form, i.e., solid, semi-solid, liquid, or gaseous. The term is not intended to apply to by-products or materials which have economic value and may be used by the person producing the material or sold to another person for resource recovery or use in a beneficial manner.

"Wetlands" means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

APPENDIX B: ACRONYMS

DRAFT ENVIRONMENTAL ASSESSMENT
For the
Proposed Class II Landfill Expansion Project
Northern Montana Joint Refuse Disposal District
Conrad, Montana

ARM – Administrative Rules of Montana

AADT – Annual Average Daily Traffic

BMP's – Best Management Practices

CFR – Code of Federal Regulations

CQA/CQC – Construction Quality Assurance/Construction Quality Control

DEQ – Montana Department of Environmental Quality

EA – Environmental Assessment

EIS – Environmental Impact Statement

E&P – Exploration and Production

ESA – Endangered Species Act

FA – Financial Assurance

FML – Flexible Membrane Liner

FWP – Montana Department of Fish, Wildlife, and Parks

GCCS – Gas Collection and control System

GWIC – Ground Water Information Center

HDPE – High Density Polyethylene

HELP – Hydrologic Evaluation of Landfill Performance

IWMA – Integrated Waste Management Act

LCRS – Leachate Collection and Removal System

LEL – Lower Explosive Limit

LFG – Landfill Gas

LLDPE – Low Linear Density Polyethylene

MBMG – Montana Bureau of Mines and Geology

MCA – Montana Code Annotated

MDT – Montana Department of Transportation

MEPA – Montana Environmental Policy Act

MNHP – Montana Natural Heritage Program

MPDES – Montana Pollutant Discharge Elimination System

MSL – Montana State Library

MSW – Municipal Solid Waste

NMJRDD – Northern Montana Joint Refuse Disposal District

NMOC – Non-Methane Organic Compound

NMD – No-Migration Demonstration

NOI – Notification of Intent

NRCS – Natural Resource Conservation Service

O&M – Operation and Maintenance

OHWM – Ordinary High-Water Mark

PCB – Polychlorinated Biphenyls

PCC – Post-Closure Care

RCRA – Resource Conservation and Recovery Act

RPOC – Relevant Point of Compliance

SHPO – State Historic Preservation Office

SpW – Special Waste

SWMA – Montana Solid Waste Management Act

SWMS – Solid Waste Management System

SWP – Montana DEQ Solid Waste Program

SWPPP – Storm Water Pollution Prevention Plan

SWS – Montana DEQ Solid Waste Section

TDS – Total Dissolved Solids

TENORM – Technologically Enhanced Naturally Occurring Radioactive Material

TSCA – Toxic Substance Control Act

USACE – United States Army Corps of Engineers

USEPA – United States Environmental Protection Agency

USFWS – United States Fish and Wildlife Service

USGS – United States Geological Survey

APPENDIX C: ARM 17.50.1204 Table 1 Constituents

DRAFT ENVIRONMENTAL ASSESSMENT
for the
Proposed Class II Landfill Expansion Project
Northern Montana Joint Refuse Disposal District
Conrad, Montana

ARM 17.50.1204 - Table 1
Groundwater Protection Standards

Chemical	MCL (mg/l)	Chemical	MCL (mg/l)
Arsenic	0,05	Lindane	0.004
Barium	1.0	Lead	0.05
Benzene	0.005	Mercury	0.002
Cadmium	0.01	Methoxychlor	0.1
Carbon tetrachloride	0.005	Nitrate	10
Chromium (hexavalent)	0.05	Selenium	0.01
2,4-Dichlorophenoxy acetic acid	0.1	Silver	0.05
1,4-Dichlorobenzene	0.075	Toxaphene	0.005
1,2-Dichloroethane	0.005	1,1,1-Trichloromethane	0.2
1,1-Dichloroethylene	0.007	Trichloroethylene	0.005
Endrin	0.0002	2,4,5-Trichlorophenoxy acetic acid	0.01
Fluoride	4	Vinyl Chloride	0.002