



**APPLICATION FOR FINAL RELEASE OF BOND FOR SURFACE COAL MINING AND RECLAMATION OPERATIONS**

PUBLIC SERVICE COMMISSION  
RECLAMATION DIVISION  
SFN 19813 (1-2004)

Date	9-29-2017
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Name of Permittee Leonardite Products, LLC	Bond Release Number Final Bond Release No. 1	Permit Number GRGR-0501	
Post Office Address PO Box 548	City Williston	State ND	Zip Code 58802

Pursuant to the provisions of NDCC 38-14.1-17, the above named Permittee hereby makes Application for Final Release of Bond for Surface Coal Mining and Reclamation Operations for the above Bond Release Number and Permit Number.

Final release of bond is requested for the tracts clearly delineated on the attached map, **Attachment I**, which are particularly described by the attached metes and bounds descriptions, **Attachment II**, and as follows:

TRACT NUMBER	ACRES	LOCATION			
		SEC.	TWP.	RANGE	COUNTY
FBR-0501-154-100-8	15.49	8	154	100	Williams
<b>TOTAL ACRES</b>	15.49				

Final release of bond for the completion of **all** reclamation requirements set forth by NDCC Chapter 38-14.1 and NDAC Article 69-06.2 in the amount of \$ **\$181,359.00** for the above-described tracts is requested for the following reasons (identify each tract number and provide separate reasons and the amount for each tract):

All commercial leonardite removal operations have been completed. A separate entity, Eco Park Landfill, LLC, desires to develop and operate an inert waste landfill in the area of the proposed bond release. The North Dakota Department of Health has issued a permit for operation of the inert waste landfill. All surface mining operations on 15.49 acres of Industrial land in Permit GRGR-0501 have been completed and ECO Park Landfill, LLC is utilizing the bond release area for construction of an inert waste landfill.

5 RC-17-369 Filed 02/06/2018 Pages: 109  
Revised application form  
Leonardite Products LLC  
Cherie Harms

Attached to this final bond release application is the following information:

- Attachment III** is a copy of the proposed advertisement required by NDCC 38-14.1-17(1)(a). (The affidavit of publication must be submitted within 30 days of this request.)
- Attachment IV** consists of copies of all letters sent pursuant to NDCC 38-14.1-17(1)(b).
- Attachment V** is an aerial photo based map (or other pre-approved map) that delineates and identifies each tract contained in the bond release application.
- Attachments VI through VIII** \_\_\_\_\_, which contain the detailed information for each tract as listed on the Addendum to this application form. (Include separate attachments for each tract contained in the bond release application.)

**VERIFICATION**

Name of Official Cherie Harms

I, the above named official, am authorized to represent the Permittee for the foregoing bond release application, have read the complete application and certify that all applicable reclamation activities have been accomplished in accordance with North Dakota Administrative Code Article 69-05.2, North Dakota Century Code Chapter 38-14.1, and the approved reclamation plan. All statements contained in the bond release application and attachments are true and correct to the best of my knowledge and belief.

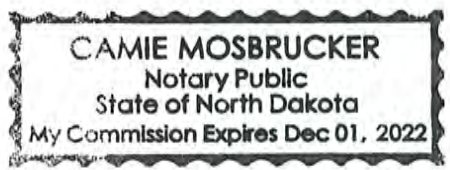
Dated and signed this 4 day of October, 20 17.

By <u>Cherie Harms</u>	Title President
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STATE OF North Dakota )  
COUNTY OF Williams Burleigh )ss.

The foregoing instrument was acknowledged before me this 10/4/17 (date) by Cherie Harms  
known to me to be the President of Leonardite Products. LLC  
\_\_\_\_\_ a corporation, on behalf of the corporation.

(SEAL)



Camie Mosbrucker  
Notary Public  
My Commission Expires December 1, 2022

## ADDENDUM TO FINAL BOND RELEASE APPLICATION

## ATTACHMENT \_\_\_\_\_

Bond Release Number Final Bond Release	Permit Number GRGR-0501	Tract Number FBR-0501-154-100-8
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Attached is the following information for the above Bond Release Tract Number (check applicable types of information that is attached):

- A brief history of the approximate dates of: a) initial mining related disturbance, b) coal removal, c) grading within the tract, and d) law liability period. If more than one law liability period occurs in a tract, delineate the different reclamation law liability lines on a map and refer to the attachment.
- A postmining topographic map of the tract (**attach a separate map or refer to the attachment containing this information**).
- An aerial photo based map (or other pre-approved map) that delineates the tract, ownership boundaries, reclamation site types, topsoil and subsoil respread thicknesses, sampling locations for data collection, and any reference areas with soil mapping units identified (**attach a separate map or refer to the attachment containing this information**).
- Dates of all seedings within the tract, including identification of the date of the last augmented seeding.
- Species seeded and rates.
- Complete history of all management on the tract, including:
- a) Fertilizer use - types, rates and date of application.
  - b) Herbicide and other pesticide use - types, rates and date of application.
  - c) Grazing history - number of head and dates grazed.
  - d) Breaking of pre-cropland grass/legume stand - date and type of equipment used.
  - e) Crops harvested - types of crops, dates harvested and yields.
- Soil test results from the reclaimed tract and any reference areas.
- Details of the procedures used to develop the revegetation success standards for the tract, including:
- a) Soils map of the premine area used to derive the standard that also includes premine land use and property ownership boundaries.
  - b) Acreages of soil mapping units or range sites and calculations used to derive the standard.
- Establishment and management history of any reference areas.
- Methods (sampling or entire tract harvest) used to obtain vegetation data for the tract and any reference areas, including the following if sampling was done:
- a) Location of samples and delineation of sample units (site types).
  - b) Method used for sampling (e.g., first hit, ten-point frame).
  - c) Number of samples taken.
  - d) Calculation of sample adequacy with supporting raw data.
- Required vegetation data (as appropriate for the postmining land use, yield, cover, seasonality, diversity, woody species density, etc.) and evaluations (statistical calculations) for demonstrating reclamation success for the postmining land use of the tract.
- For recreational, residential, and institutional and commercial land uses, a discussion that shows the land use has been implemented (refer to county land use zoning approvals, any other required permits, current construction and use, written commitments by the landowner, etc. that are included in the permit). If these documents have not been incorporated into the permit, copies must be included in the bond release application.
- If bond release for vegetation establishment (Stage 3) has not been previously obtained for a tract containing a permanent impoundment, a discussion of how plans for sound future management of the impoundment have been implemented by the landowner or permittee as required by NDAC 69-05.2-12-12(7)(c). Include a written commitment from the landowner to follow a sound management plan for the impoundment.
- If bond release for vegetation establishment (Stage 3) has not been previously obtained, documentation that suspended solids are not being contributed to stream flow or runoff outside the permit area in excess of that allowed by NDAC 69-05.2-16-04.
- If any permie developed water supplies (surface or ground water) existed on the tract, describe the permie water supply and provide evidence that the water supply has been replaced on this tract or on another, or refer to plans that show where it will be replaced in the future.
- If any permanent impoundments are located within the tract, a demonstration that the water quality is suitable for the intended use of the impoundment.

# **ATTACHMENT I**

## Section Breakdown

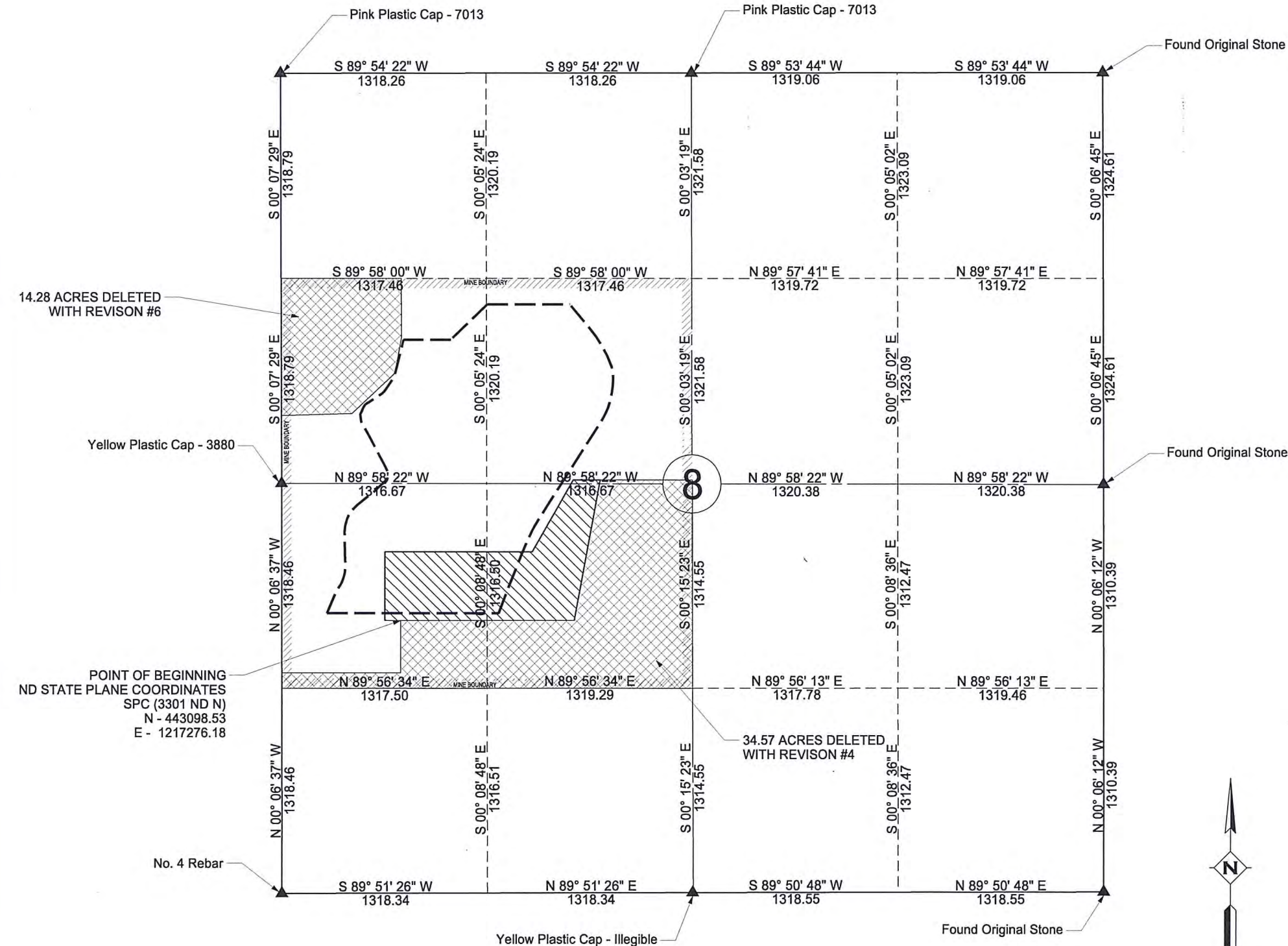
# RECORD OF SURVEY MINING BOND RELEASE AREA SECTION 8, T154N, R100W, 5TH P.M.

Tract for FBR 0501-154-100-8

A tract of land for final bond release in Section 8, T154N, R100W, of the 5th P.M., Williams County, North Dakota. All bearings and distances are based on North Dakota State Plane Coordinate System, North Zone, NAD 88, described as follows:

Commencing at the southwest corner of said Section 8; thence North 00 degrees 06 minutes 37 seconds West on an assumed bearing, along the west line of said Section 8 for 1418.45 feet; thence North 89 degrees 56 minutes 34 seconds East for 763.15 feet; thence North 00 degrees 06 minutes 37 seconds West 336.13 feet to the point of beginning; thence South 89 degrees 56 minutes 34 seconds West for 100.00 feet; thence North 00 degrees 06 minutes 37 seconds West for 441.60 feet; thence North 89 degrees 56 minutes 34 seconds East for 943.93 feet; thence North 29 degrees 32 minutes 42 seconds East for 531.66 feet; thence North 89 degrees 56 minutes 34 seconds East for 173.55 feet; thence South 10 degrees 25 minutes 09 seconds West for 919.19 feet; thence South 89 degrees 56 minutes 34 seconds West for 1112.56 feet to the point of beginning

Said tract having an area of 15.49 acres of land as shown on this plat.



POINT OF BEGINNING  
ND STATE PLANE COORDINATES  
SPC (3301 ND N)  
N - 443098.53  
E - 1217276.18

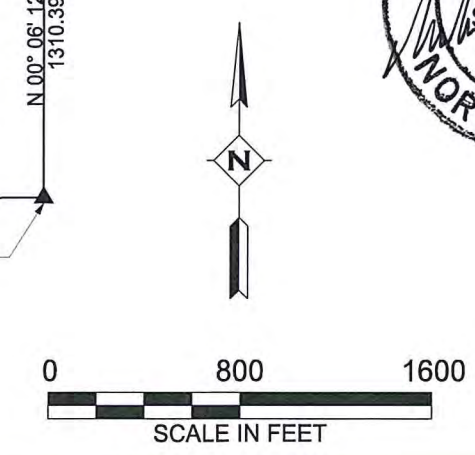
BASIS OF BEARING:  
A LINE FROM THE SOUTHWEST CORNER OF SECTION 8  
TO THE WEST QUARTER CORNER OF SECTION 8, WITH A BEARING  
OF N00° 06' 37" W.

LEGEND	
	FOUND MONUMENT AS DESCRIBED
	ORIGINAL FACILITY BOUNDARY LEONARDITE PRODUCTS PUBLIC SERVICE COMMISSION PERMIT No. GRGR-0501
	LIMITS OF OPEN PIT MINING FOR PERMIT No. GRGR-0501
	SECTION LINE
	QUARTER SECTION LINE
	SIXTEENTH LINE
	PROPOSED BOND RELEASE BOUNDARY
	DELETED AREA FROM PUBLIC SERVICE COMMISSION PERMIT No. GRGR-0501



I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of North Dakota.

*Michael L. Fletchall*  
Michael L. Fletchall  
Date 11/13/17 License No. 4293



**LEONARDITE PRODUCTS, LLC**  
STONY CREEK MINE  
WILLISTON, ND 58802

ATTACHMENT No. 1  
FINAL BOND RELEASE TRACT MAP

## **ATTACHMENT II**

Metes and Bounds Description

## Attachment II – Metes and Bounds Description

A tract of land for final bond release in parts of the South Half of the Northwest Quarter and the North Half of the Southwest Quarter of Section 8, Township 154 North, Range 100 West of the Fifth Principal Meridian, Williams County, North Dakota, described as follows:

Commencing at the southwest corner of said Section 8; thence North 00 degrees 06 minutes 37 seconds West on an assumed bearing, along the west line of said Section 8 for 1418.45 feet; thence North 89 degrees 56 minutes 34 seconds East for 763.15 feet; thence North 00 degrees 06 minutes 37 seconds West 336.13 feet to the point of beginning; thence South 89 degrees 56 minutes 34 seconds West for 100.00 feet; thence North 00 degrees 06 minutes 37 seconds West for 441.60 feet; thence North 89 degrees 56 minutes 34 seconds East for 943.93 feet, thence North 29 degrees 32 minutes 42 seconds East for 531.66 feet; thence North 89 degrees 56 minutes 34 seconds East for 173.55 feet; thence South 10 degrees 25 minutes 09 seconds West for 919.19 feet; thence South 89 degrees 56 minutes 34 seconds West for 1112.56 feet to the point of beginning.

Said tract having an area of 15.49 acres.

All bearings and distances are based on the North Dakota State Plane, North Zone, NAD 88.

**ATTACHMENT III**

Legal Advertisement & Map

Attachment III – Legal Advertisement

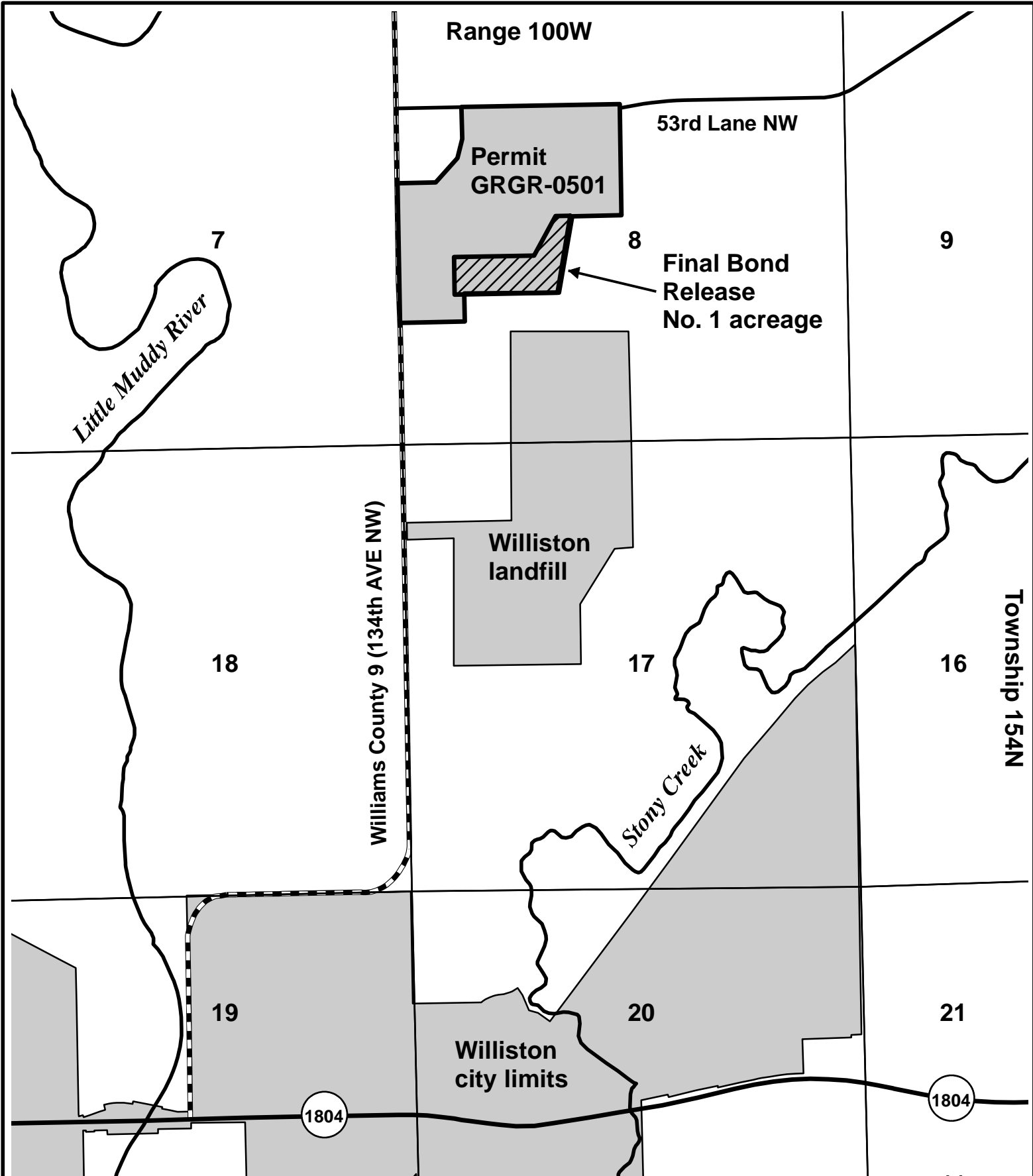
**NOTICE OF FILING FOR FINAL RELEASE OF RECLAMATION BOND**

The Leonardite Products, LLC, as applicant, has filed an application for final bond release on 15.49 acres of land in Williams County located in the West Half, Section 8, T154N, R100W, as shown on the map. This action will release the area for industrial land use, for which the 10 year revegetation liability requirements do not apply. The land is included in Permit GRGR-0501, which was approved by the Public Service Commission on November 2, 2005. The land has since been mined by Leonardite Products, LLC and will be developed into an inert waste disposal facility by Eco Park Landfill, LLC, in accordance with their Permit to Construct and Operate a Solid Waste Management Facility issued by the North Dakota Department of Health. The purpose of the bond release is to relieve Leonardite Products, LLC of all liabilities associated with the construction, operation, reclamation, and closure of the disposal facility, which have become the responsibility of Eco Park Landfill, LLC, as regulated by the North Dakota Department of Health.

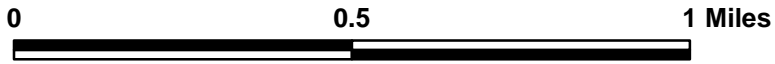
Permit GRGR-0501 is currently bonded in the amount of \$281,359. As part of this final bond release application, Leonardite Products, LLC, is requesting a bond reduction of \$181,359.00. Upon approval of this bond release application, Leonardite Products, LLC will be released from reclamation liability for 15.49 acres in Permit GRGR-0501.

Written comments, objections, or requests for an informal conference or public hearing on this bond release may be submitted by any person having a valid legal interest that is or may be adversely affected by this action, to the North Dakota Public Service Commission, 600 East Boulevard Avenue, Department 408, Bismarck, ND 58505-0480, within 30 days after the last publication of this notice. Any request for an informal conference or hearing should be in writing to the Commission, and must state specifically the issues or objections that an affected party has regarding this bond release.

Leonardite Products, LLC  
PO Box 548  
Williston, North Dakota 58802



**Newspaper Publication Notice Map**  
**Permit GRGR-0501**  
**Final Bond Release No. 1**



**ATTACHMENT IVa**

Leonardite Products, LLC Letter to Ellis/Olson, LLC  
& Final Bond Release Map

Attachment IVa – Letters Sent by Leonardite Products, LLC to Surface Owner

The following owner was sent a notification letter, which is shown on the following pages. Certified mail return receipts are on file at Leonardite Products, LLC.

Ellis/Olson, LLC

The logo for Leonardite Products LLC features a thick, dark horizontal bar at the top. Below the bar, the words "LEONARDITE" and "PRODUCTS-LLC" are stacked in a bold, sans-serif font. "LEONARDITE" is in a larger font size than "PRODUCTS-LLC". The letters are a dark brown or black color with a slight gradient and shadow effect.

Date XX, 2018

Lance Olson, Registered Agent  
Ellis/Olson, LLC  
5166 134<sup>th</sup> Avenue NW  
Williston, North Dakota 58801

Dear Lance:

Because you are a surface owner, this letter is to inform you that Leonardite Products, LLC, has filed an application for final bond release on 15.49 acres of land in Williams County located in the West half, Section 8, T154N, R100W, as shown on the map. This action will release the area for industrial land use, for which the 10 year revegetation liability requirements do not apply. The land is included in Permit GRGR-0501, which was approved by the Public Service Commission on November 2, 2005. The land has since been mined by Leonardite Products, LLC and will be developed into an inert waste disposal facility by Eco Park Landfill, LLC, in accordance with their Permit to Construct and Operate a Solid Waste Management Facility issued by the North Dakota Department of Health. The purpose of the bond release is to relieve Leonardite Products, LLC of all liabilities associated with the construction, operation, reclamation, and closure of the disposal facility, which have become the responsibility of Eco Park Landfill, LLC, as regulated by the North Dakota Department of Health.

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State law requires that we send you this letter. No action is required from you as a result of this notification.

Date, xx, 2018  
Page 2

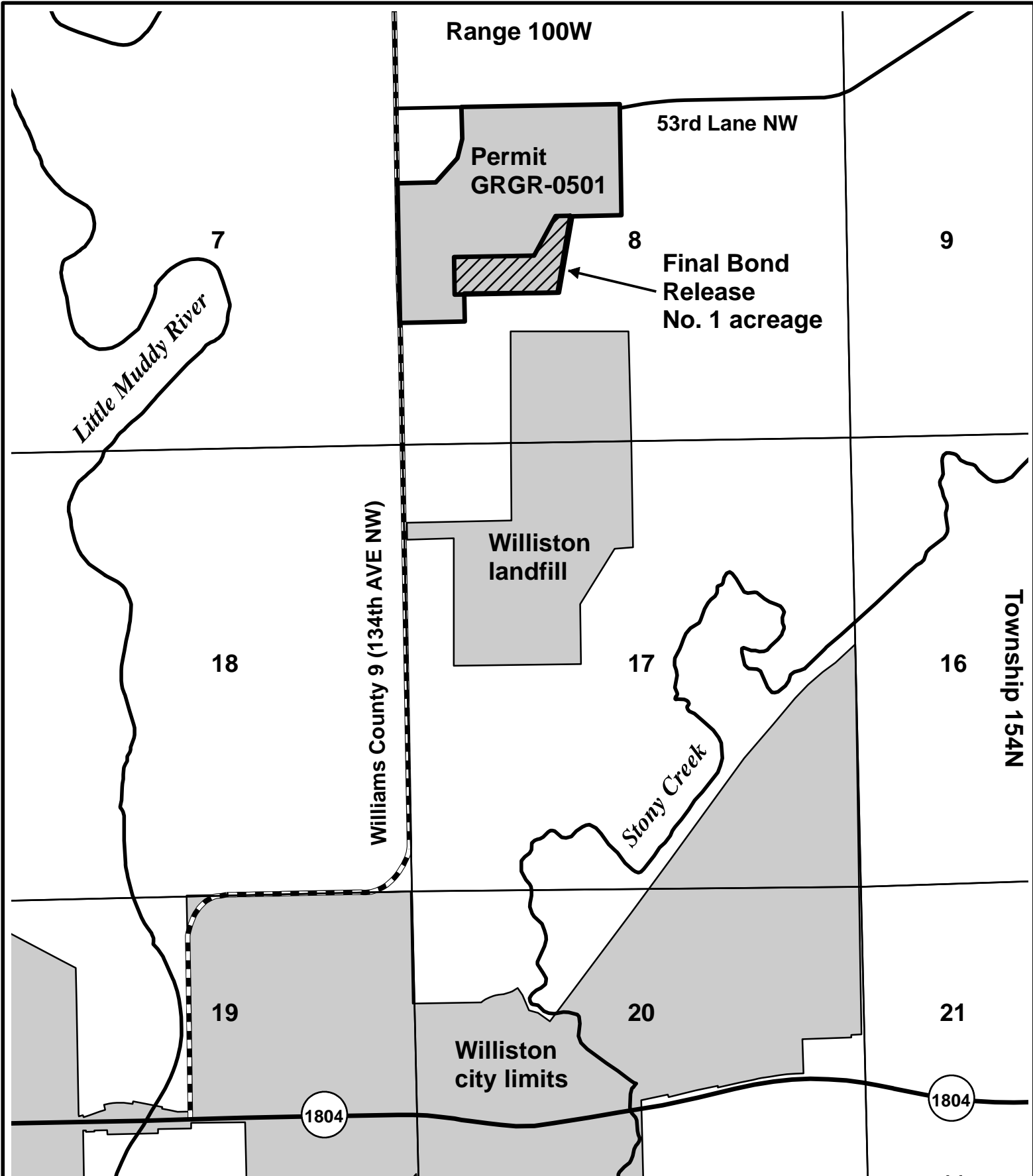
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If you have any questions, please contact me.

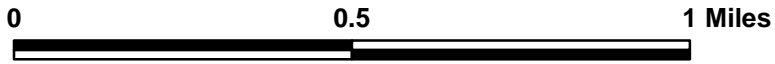
Sincerely,

LEONARDITE PRODUCTS, LLC

Cherie Harms  
President



**Newspaper Publication Notice Map**  
**Permit GRGR-0501**  
**Final Bond Release No. 1**



**ATTACHMENT IVb**

Leonardite Products, LLC Letter to Agencies  
& Final Bond Release Map

Attachment IVb – Letters Sent by Leonardite Products, LLC to Government Agencies

The following Agencies were sent a notification letter, which is shown on the following pages. Certified mail return receipts are on file at Leonardite Products, LLC.

City of Williston – Howard Klug, Mayor

Upper Missouri District Unit – Javayne Oylo

Williams County Auditor – Beth M. Innis

Williams County Commissioners

Williams County Planning and Zoning Division – Kameron Hymer

North Dakota Department of Health – David Glatt, Chief, Environmental Health Section

North Dakota Forest Service – Larry Kotchman, State Forester

North Dakota Game and Fish Department – Terry Steinwand, Director

North Dakota Geological Survey – Edward Murphy, Geologist

North Dakota Soil Conservation Committee – Bruce Schmidt, Extension Program Coordinator

North Dakota State Water Commission – Garland Erbele, State Engineer

State Historical Society of North Dakota – Claudia Berg, Director

Tri-County Regional Development Council

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Date XX, 2018

Howard Klug  
City of Williston  
22 East Broadway  
PO Box 1306  
Williston 58802-1306

Dear Howard:

This letter is to inform you that Leonardite Products, LLC, has filed an application for final bond release on 15.49 acres of land in Williams County located in the West Half, Section 8, T154N, R100W, as shown on the map. This action will release the area for industrial land use, for which the 10 year revegetation liability requirements do not apply. The land is included in Permit GRGR-0501, which was approved by the Public Service Commission on November 2, 2005. The land has since been mined by Leonardite Products, LLC and will be developed into an inert waste disposal facility by Eco Park Landfill, LLC, in accordance with their Permit to Construct and Operate a Solid Waste Management Facility issued by the North Dakota Department of Health. The purpose of the bond release is to relieve Leonardite Products, LLC of all liabilities associated with the construction, operation, reclamation, and closure of the disposal facility, which have become the responsibility of Eco Park Landfill, LLC, as regulated by the North Dakota Department of Health.

Permit GRGR-0501 is currently bonded in the amount of \$281,359. As part of this final bond release application, Leonardite Products, LLC, is requesting a bond reduction of \$181,359.00. Upon approval of this bond release application, Leonardite Products, LLC will be released from reclamation liability for 15.49 acres in Permit GRGR-0501.

State law requires that we send you this letter. No action is required from you as a result of this notification.

Date xx, 2018  
Page 2

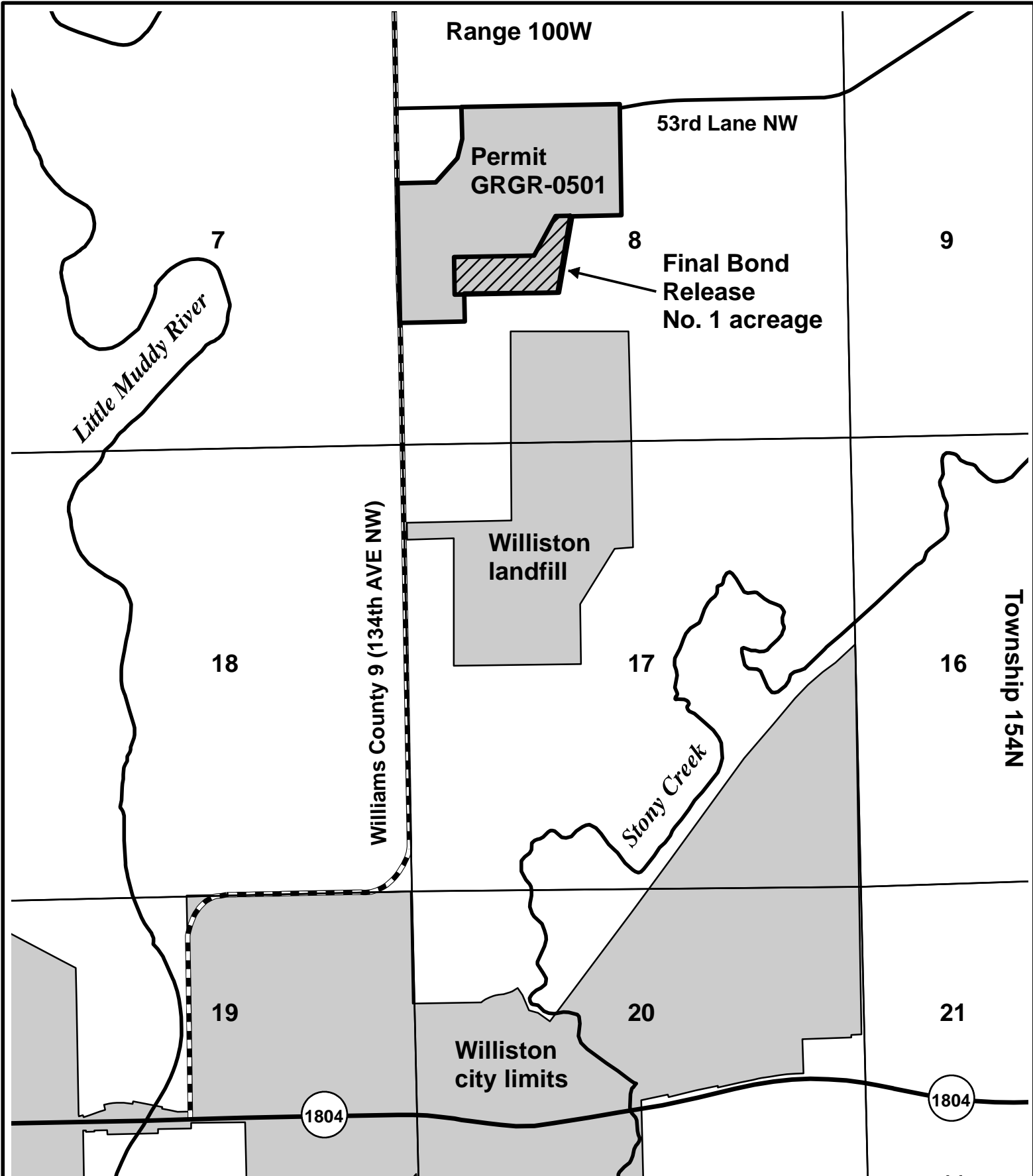
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If you have any questions, please contact me.

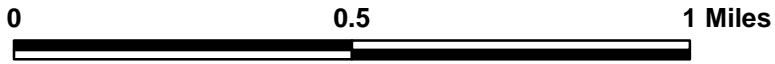
Sincerely,

LEONARDITE PRODUCTS, LLC

Cherie Harms  
President



**Newspaper Publication Notice Map**  
**Permit GRGR-0501**  
**Final Bond Release No. 1**





Date XX, 2018

Javayne Oyloe  
Upper Missouri District Health Unit  
110 West Broadway, Suite 101  
Williston 58801

Dear Javayne:

This letter is to inform you that Leonardite Products, LLC, has filed an application for final bond release on 15.49 acres of land in Williams County located in the West Half, Section 8, T154N, R100W, as shown on the map. This action will release the area for industrial land use, for which the 10 year revegetation liability requirements do not apply. The land is included in Permit GRGR-0501, which was approved by the Public Service Commission on November 2, 2005. The land has since been mined by Leonardite Products, LLC and will be developed into an inert waste disposal facility by Eco Park Landfill, LLC, in accordance with their Permit to Construct and Operate a Solid Waste Management Facility issued by the North Dakota Department of Health. The purpose of the bond release is to relieve Leonardite Products, LLC of all liabilities associated with the construction, operation, reclamation, and closure of the disposal facility, which have become the responsibility of Eco Park Landfill, LLC, as regulated by the North Dakota Department of Health.

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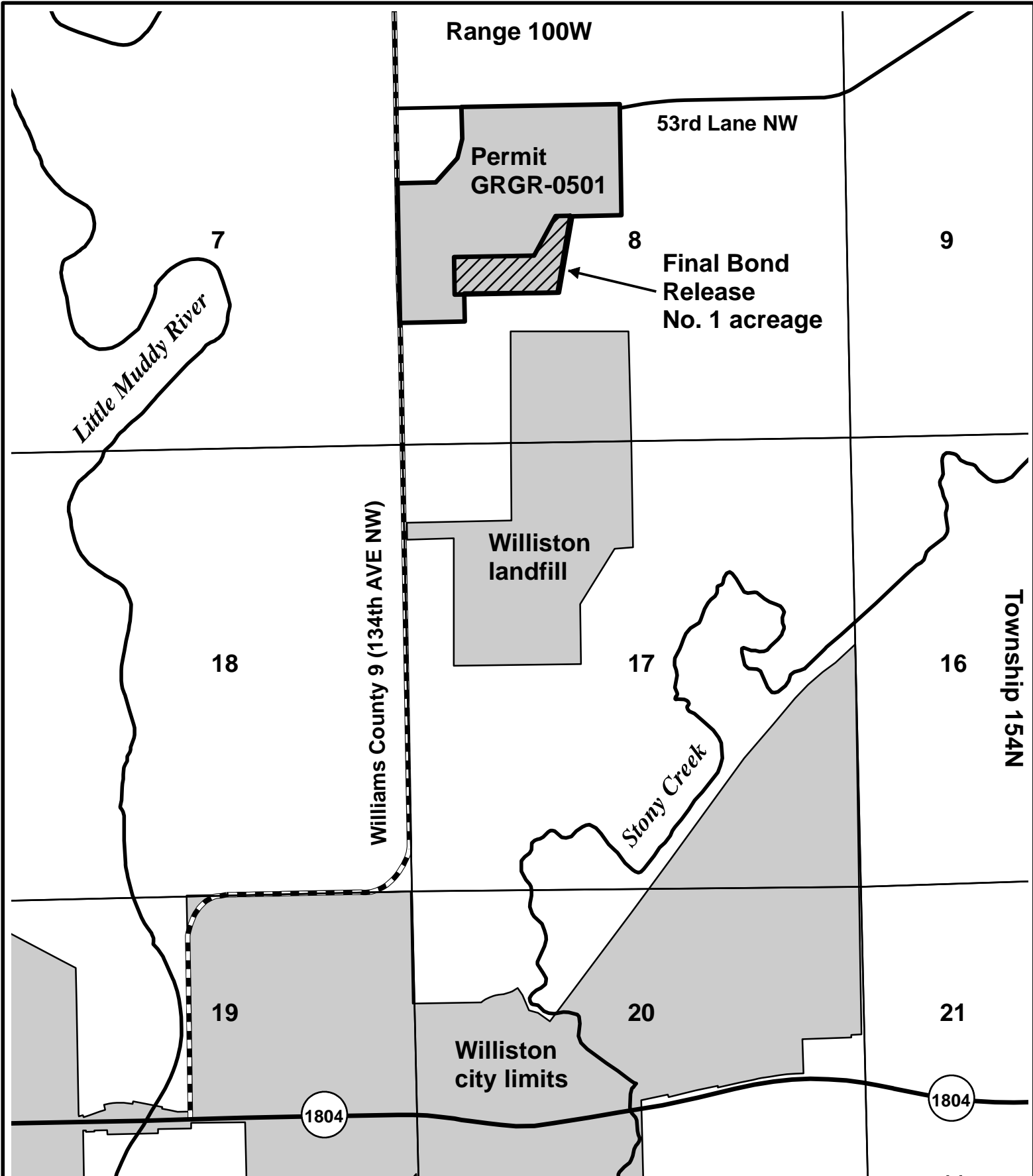
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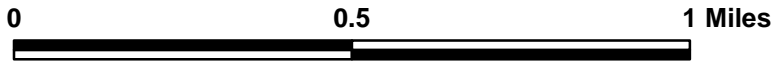
Sincerely,

LEONARDITE PRODUCTS, LLC

Cherie Harms  
President



**Newspaper Publication Notice Map**  
**Permit GRGR-0501**  
**Final Bond Release No. 1**





Date XX, 2018

Beth Innis  
Williams County Auditor  
Williams County Courthouse, Ground Floor  
205 East Broadway, PO Box 2047  
Williston 58802-2047

Dear Beth:

This letter is to inform you that Leonardite Products, LLC, has filed an application for final bond release on 15.49 acres of land in Williams County located in the West Half, Section 8, T154N, R100W, as shown on the map. This action will release the area for industrial land use, for which the 10 year revegetation liability requirements do not apply. The land is included in Permit GRGR-0501, which was approved by the Public Service Commission on November 2, 2005. The land has since been mined by Leonardite Products, LLC and will be developed into an inert waste disposal facility by Eco Park Landfill, LLC, in accordance with their Permit to Construct and Operate a Solid Waste Management Facility issued by the North Dakota Department of Health. The purpose of the bond release is to relieve Leonardite Products, LLC of all liabilities associated with the construction, operation, reclamation, and closure of the disposal facility, which have become the responsibility of Eco Park Landfill, LLC, as regulated by the North Dakota Department of Health.

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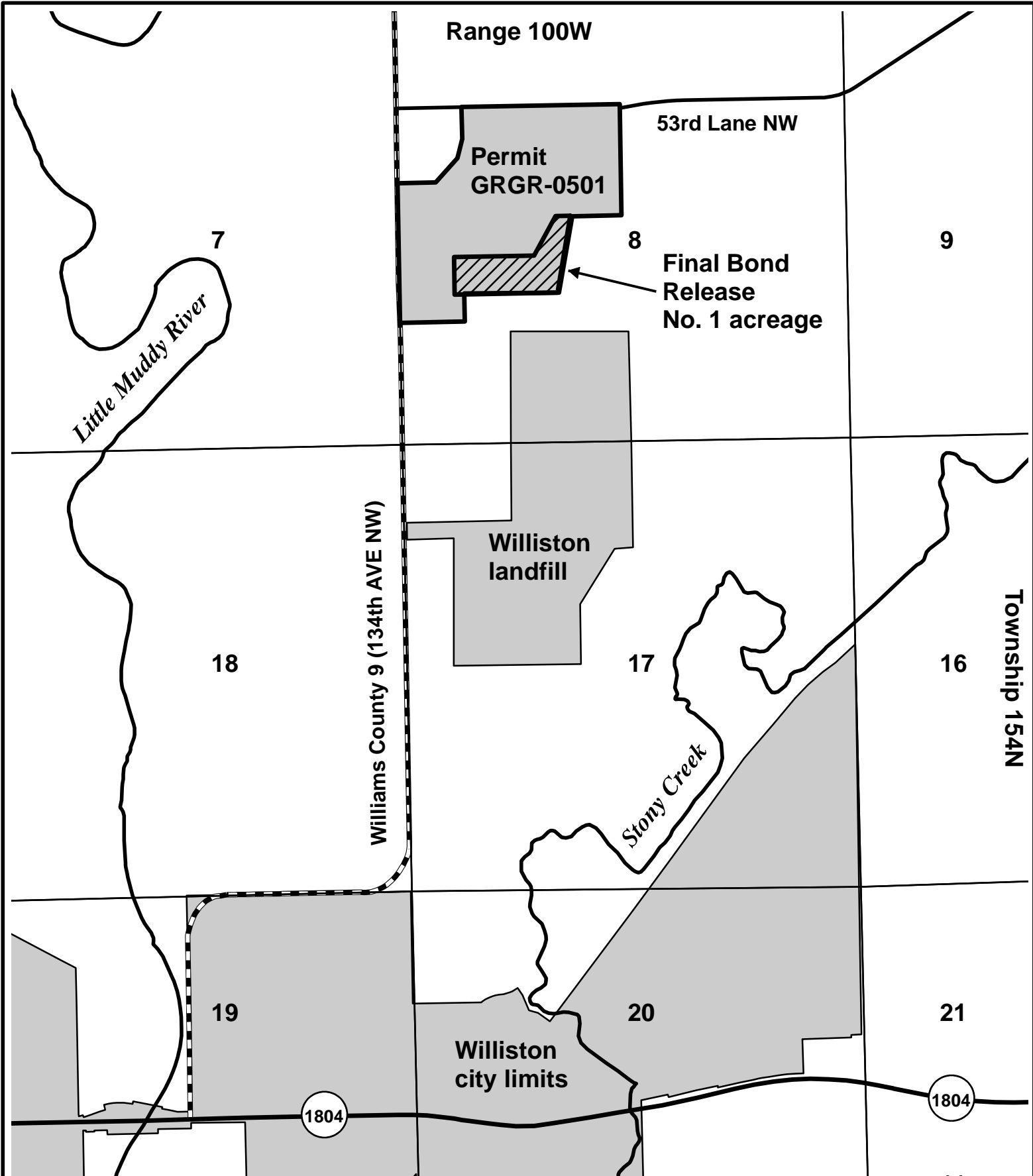
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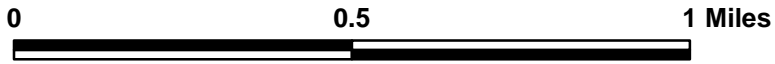
Sincerely,

LEONARDITE PRODUCTS, LLC

Cherie Harms  
President



**Newspaper Publication Notice Map**  
**Permit GRGR-0501**  
**Final Bond Release No. 1**





Date XX, 2018

Williams County Commissioners  
205 East Broadway  
Williston 58801

To Whom It May Concern:

This letter is to inform you that Leonardite Products, LLC, has filed an application for final bond release on 15.49 acres of land in Williams County located in the West Half, Section 8, T154N, R100W, as shown on the map. This action will release the area for industrial land use, for which the 10 year revegetation liability requirements do not apply. The land is included in Permit GRGR-0501, which was approved by the Public Service Commission on November 2, 2005. The land has since been mined by Leonardite Products, LLC and will be developed into an inert waste disposal facility by Eco Park Landfill, LLC, in accordance with their Permit to Construct and Operate a Solid Waste Management Facility issued by the North Dakota Department of Health. The purpose of the bond release is to relieve Leonardite Products, LLC of all liabilities associated with the construction, operation, reclamation, and closure of the disposal facility, which have become the responsibility of Eco Park Landfill, LLC, as regulated by the North Dakota Department of Health.

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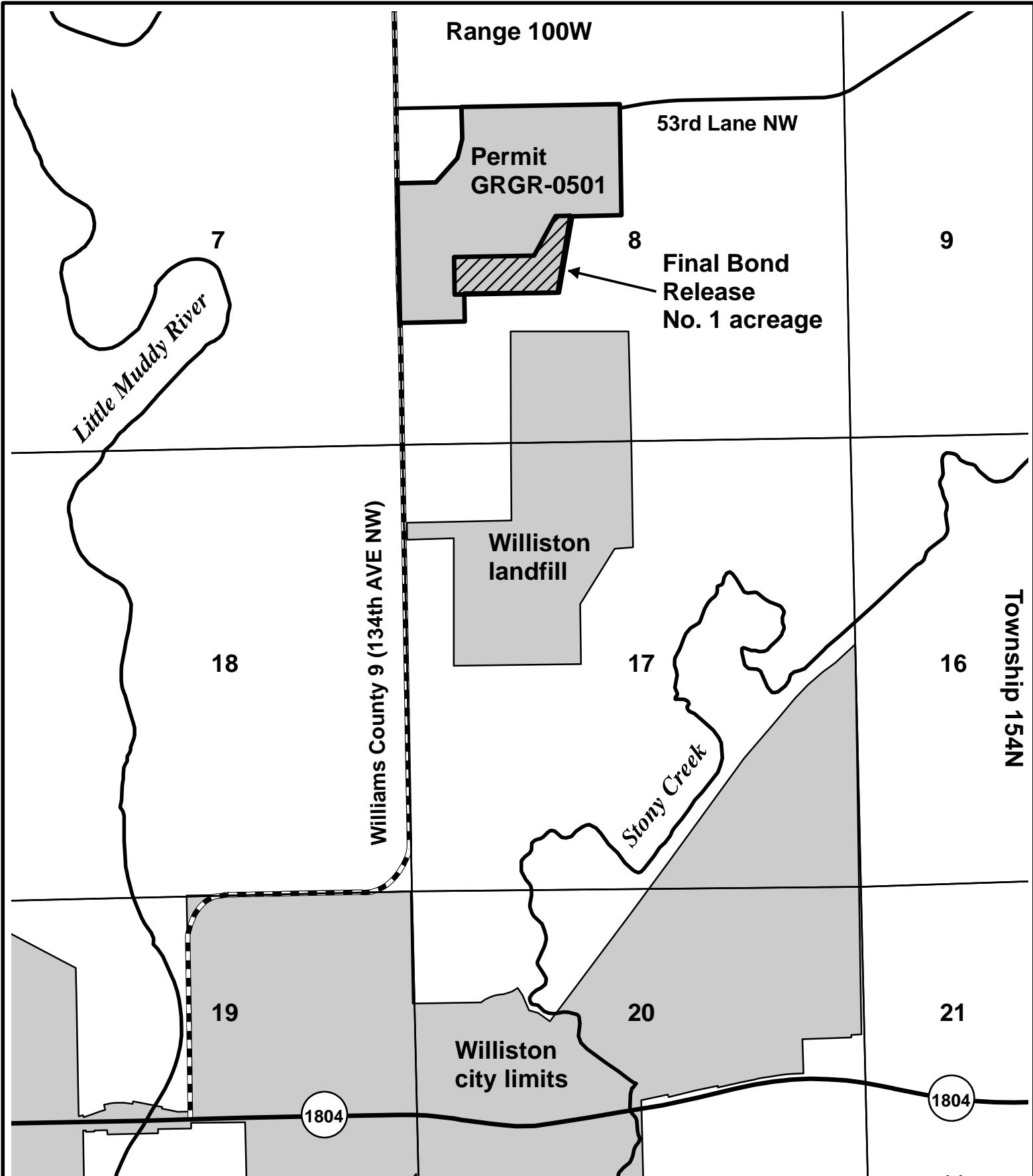
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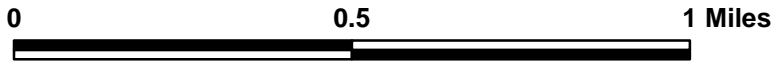
Sincerely,

LEONARDITE PRODUCTS, LLC

Cherie Harms  
President



**Newspaper Publication Notice Map**  
**Permit GRGR-0501**  
**Final Bond Release No. 1**





Date XX, 2018

Kameron Hymer  
Williams County Planning and Zoning Division  
PO Box 2047  
Williston 58802

Dear Kameron:

This letter is to inform you that Leonardite Products, LLC, has filed an application for final bond release on 15.49 acres of land in Williams County located in the West Half, Section 8, T154N, R100W, as shown on the map. This action will release the area for industrial land use, for which the 10 year revegetation liability requirements do not apply. The land is included in Permit GRGR-0501, which was approved by the Public Service Commission on November 2, 2005. The land has since been mined by Leonardite Products, LLC and will be developed into an inert waste disposal facility by Eco Park Landfill, LLC, in accordance with their Permit to Construct and Operate a Solid Waste Management Facility issued by the North Dakota Department of Health. The purpose of the bond release is to relieve Leonardite Products, LLC of all liabilities associated with the construction, operation, reclamation, and closure of the disposal facility, which have become the responsibility of Eco Park Landfill, LLC, as regulated by the North Dakota Department of Health.

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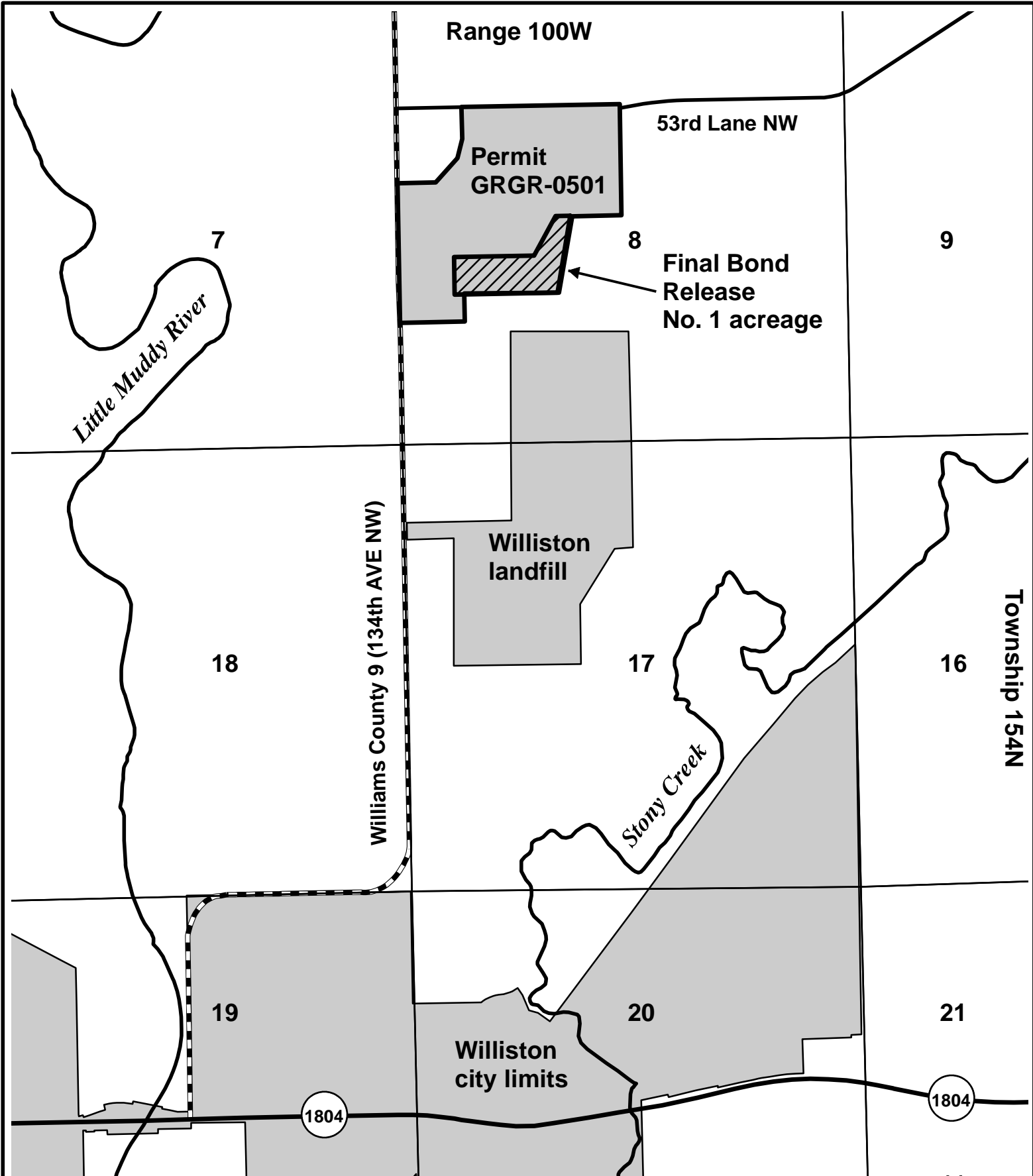
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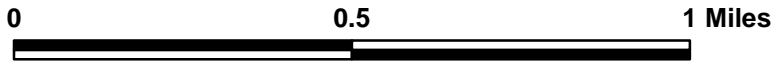
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President



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Date XX, 2018

Dave Glatt  
North Dakota Department Of Health, Environmental Health Section  
918 East Divide Avenue  
Bismarck 58501-1947

Dear Dave:

This letter is to inform you that Leonardite Products, LLC, has filed an application for final bond release on 15.49 acres of land in Williams County located in the West Half, Section 8, T154N, R100W, as shown on the map. This action will release the area for industrial land use, for which the 10 year revegetation liability requirements do not apply. The land is included in Permit GRGR-0501, which was approved by the Public Service Commission on November 2, 2005. The land has since been mined by Leonardite Products, LLC and will be developed into an inert waste disposal facility by Eco Park Landfill, LLC, in accordance with their Permit to Construct and Operate a Solid Waste Management Facility issued by the North Dakota Department of Health. The purpose of the bond release is to relieve Leonardite Products, LLC of all liabilities associated with the construction, operation, reclamation, and closure of the disposal facility, which have become the responsibility of Eco Park Landfill, LLC, as regulated by the North Dakota Department of Health.

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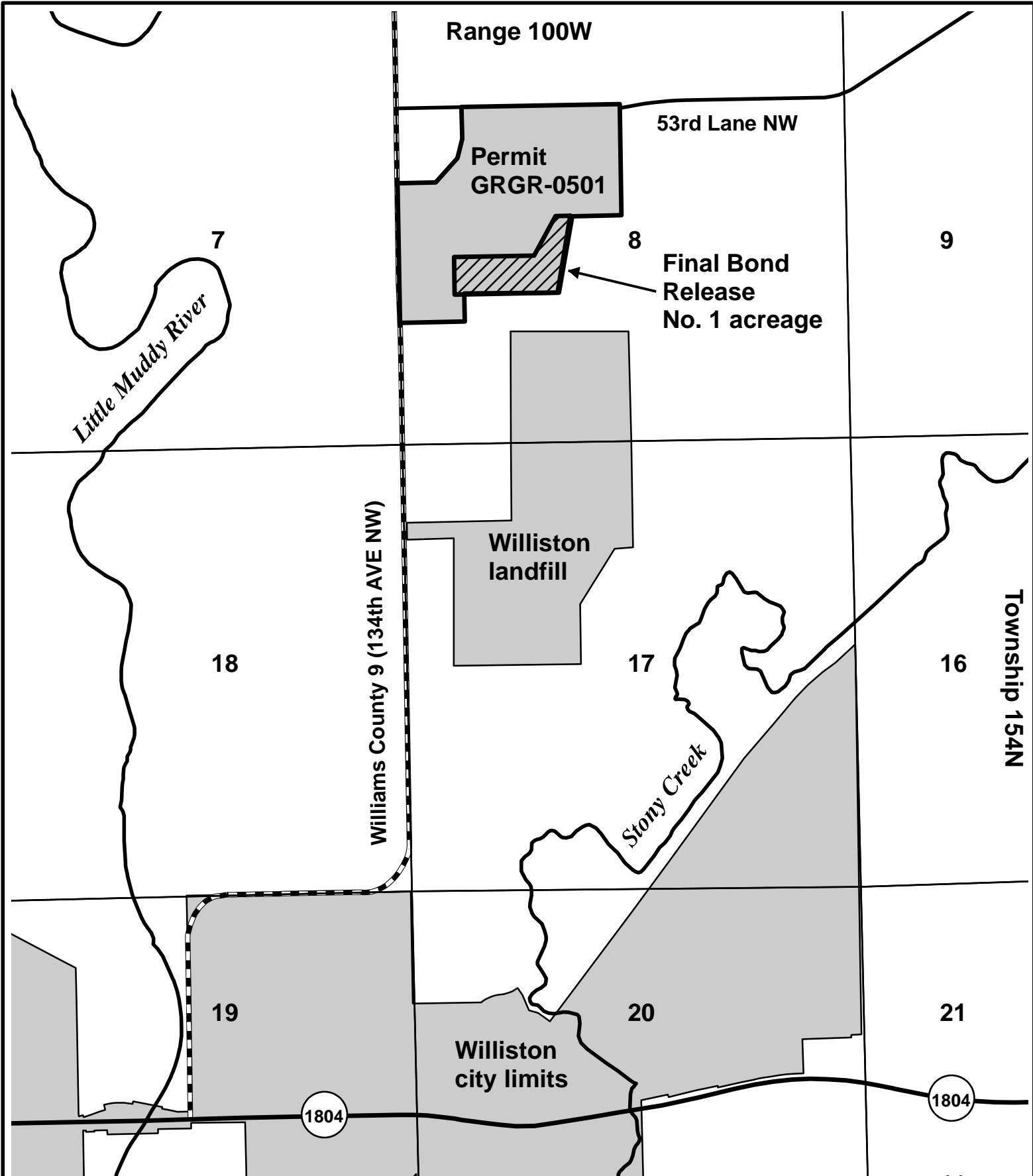
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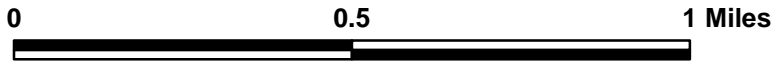
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President



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Date XX, 2018

Larry Kotchman  
North Dakota Forest Service, Office of the State Forester  
307 1st Street East  
Bottineau 58318-1100

Dear Larry:

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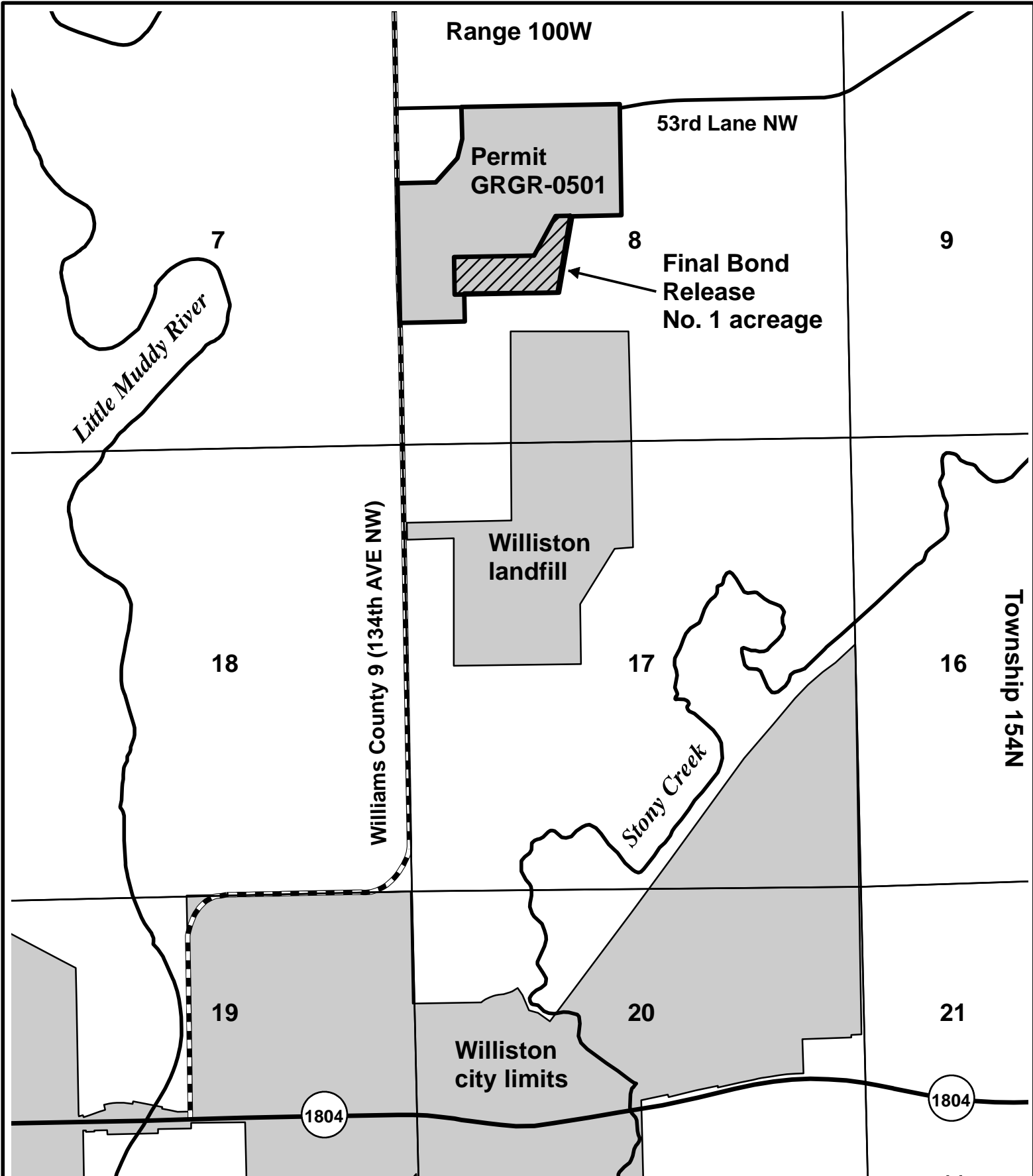
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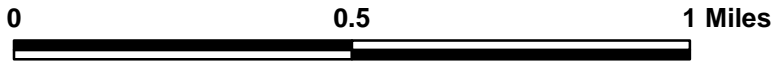
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LEONARDITE PRODUCTS, LLC

Cherie Harms  
President



**Newspaper Publication Notice Map**  
**Permit GRGR-0501**  
**Final Bond Release No. 1**





Date XX, 2018

Terry Steinwand  
North Dakota Game and Fish Department  
100 N. Bismarck Expressway  
Bismarck 58501-5095

Dear Terry:

This letter is to inform you that Leonardite Products, LLC, has filed an application for final bond release on 15.49 acres of land in Williams County located in the West Half, Section 8, T154N, R100W, as shown on the map. This action will release the area for industrial land use, for which the 10 year revegetation liability requirements do not apply. The land is included in Permit GRGR-0501, which was approved by the Public Service Commission on November 2, 2005. The land has since been mined by Leonardite Products, LLC and will be developed into an inert waste disposal facility by Eco Park Landfill, LLC, in accordance with their Permit to Construct and Operate a Solid Waste Management Facility issued by the North Dakota Department of Health. The purpose of the bond release is to relieve Leonardite Products, LLC of all liabilities associated with the construction, operation, reclamation, and closure of the disposal facility, which have become the responsibility of Eco Park Landfill, LLC, as regulated by the North Dakota Department of Health.

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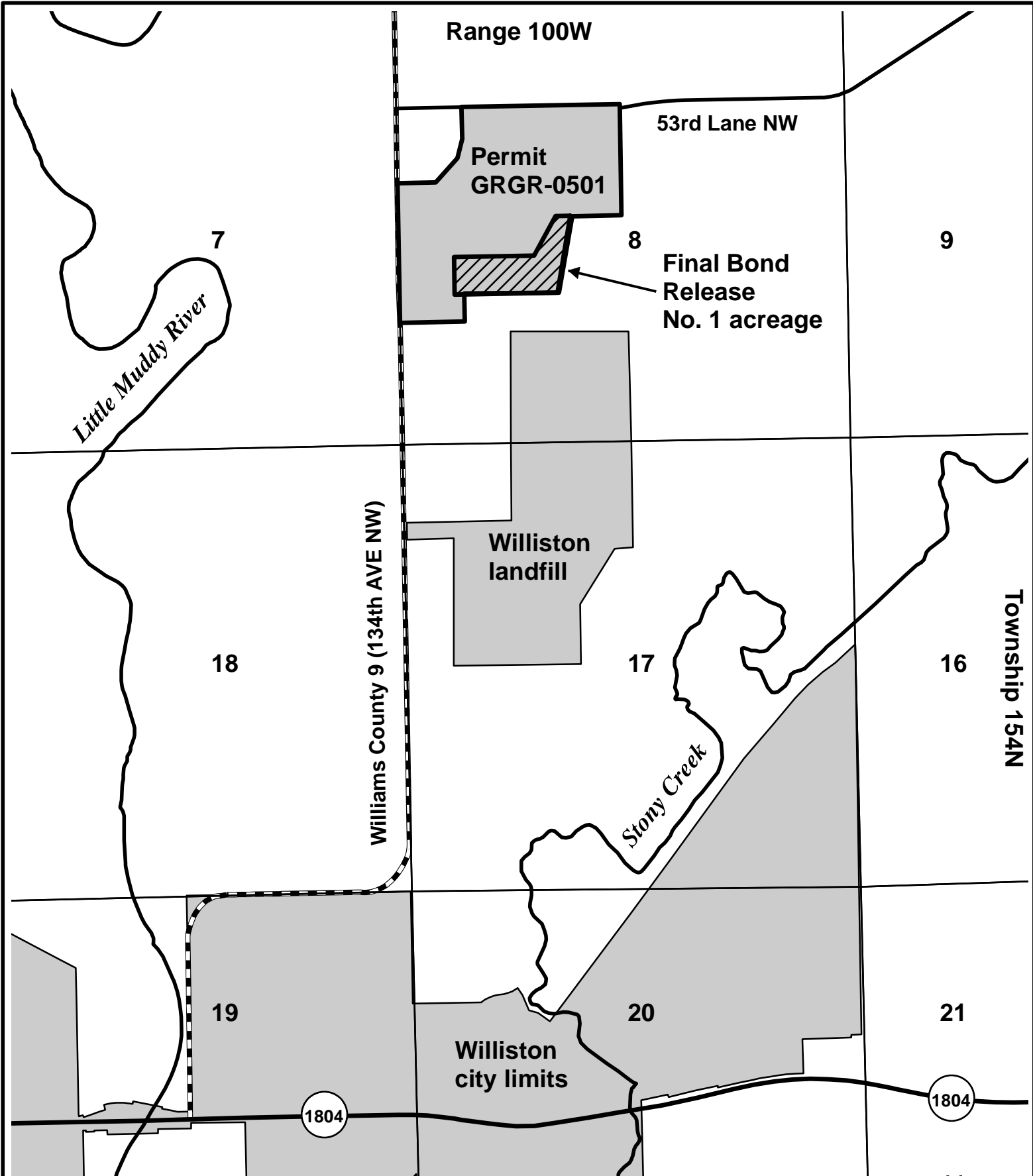
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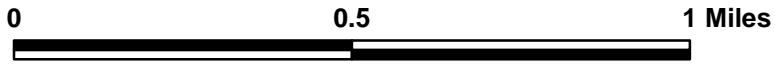
Sincerely,

LEONARDITE PRODUCTS, LLC

Cherie Harms  
President



**Newspaper Publication Notice Map**  
**Permit GRGR-0501**  
**Final Bond Release No. 1**





Date XX, 2018

Edward Murphy  
North Dakota Geological Survey  
600 East Boulevard Avenue  
Bismarck 58505-0840

Dear Edward:

This letter is to inform you that Leonardite Products, LLC, has filed an application for final bond release on 15.49 acres of land in Williams County located in the West Half, Section 8, T154N, R100W, as shown on the map. This action will release the area for industrial land use, for which the 10 year revegetation liability requirements do not apply. The land is included in Permit GRGR-0501, which was approved by the Public Service Commission on November 2, 2005. The land has since been mined by Leonardite Products, LLC and will be developed into an inert waste disposal facility by Eco Park Landfill, LLC, in accordance with their Permit to Construct and Operate a Solid Waste Management Facility issued by the North Dakota Department of Health. The purpose of the bond release is to relieve Leonardite Products, LLC of all liabilities associated with the construction, operation, reclamation, and closure of the disposal facility, which have become the responsibility of Eco Park Landfill, LLC, as regulated by the North Dakota Department of Health.

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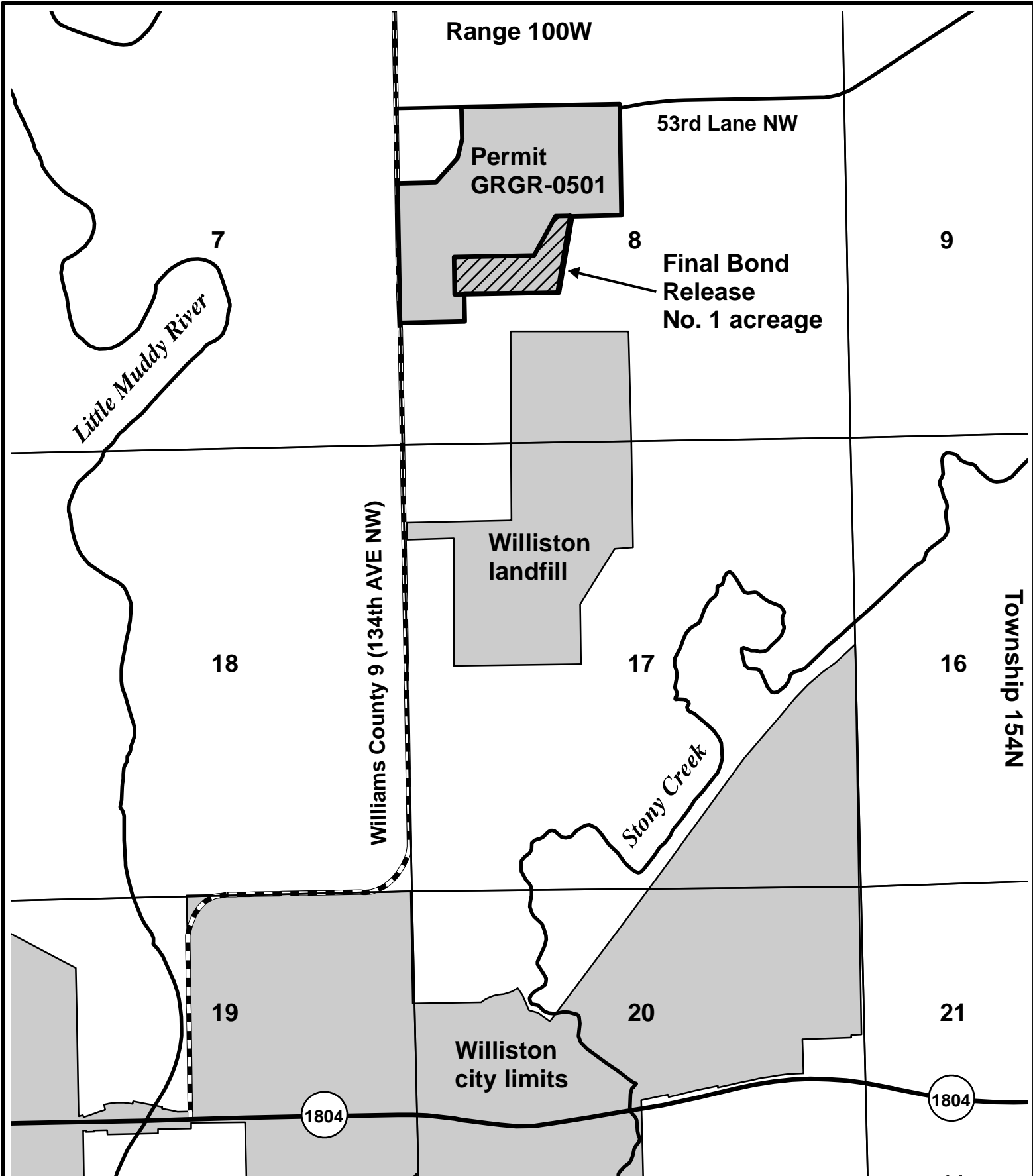
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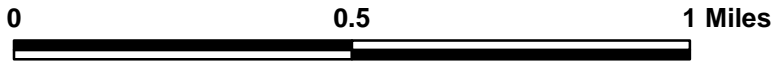
Sincerely,

LEONARDITE PRODUCTS, LLC

Cherie Harms  
President



**Newspaper Publication Notice Map**  
**Permit GRGR-0501**  
**Final Bond Release No. 1**





Date XX, 2018

Bruce Schmidt, Extension Program Coordinator  
North Dakota State Soil Conservation Committee  
NDSU Extension Service  
2718 Gateway Ave., Suite 304  
Bismarck 58503

Dear Bruce:

This letter is to inform you that Leonardite Products, LLC, has filed an application for final bond release on 15.49 acres of land in Williams County located in the West Half, Section 8, T154N, R100W, as shown on the map. This action will release the area for industrial land use, for which the 10 year revegetation liability requirements do not apply. The land is included in Permit GRGR-0501, which was approved by the Public Service Commission on November 2, 2005. The land has since been mined by Leonardite Products, LLC and will be developed into an inert waste disposal facility by Eco Park Landfill, LLC, in accordance with their Permit to Construct and Operate a Solid Waste Management Facility issued by the North Dakota Department of Health. The purpose of the bond release is to relieve Leonardite Products, LLC of all liabilities associated with the construction, operation, reclamation, and closure of the disposal facility, which have become the responsibility of Eco Park Landfill, LLC, as regulated by the North Dakota Department of Health.

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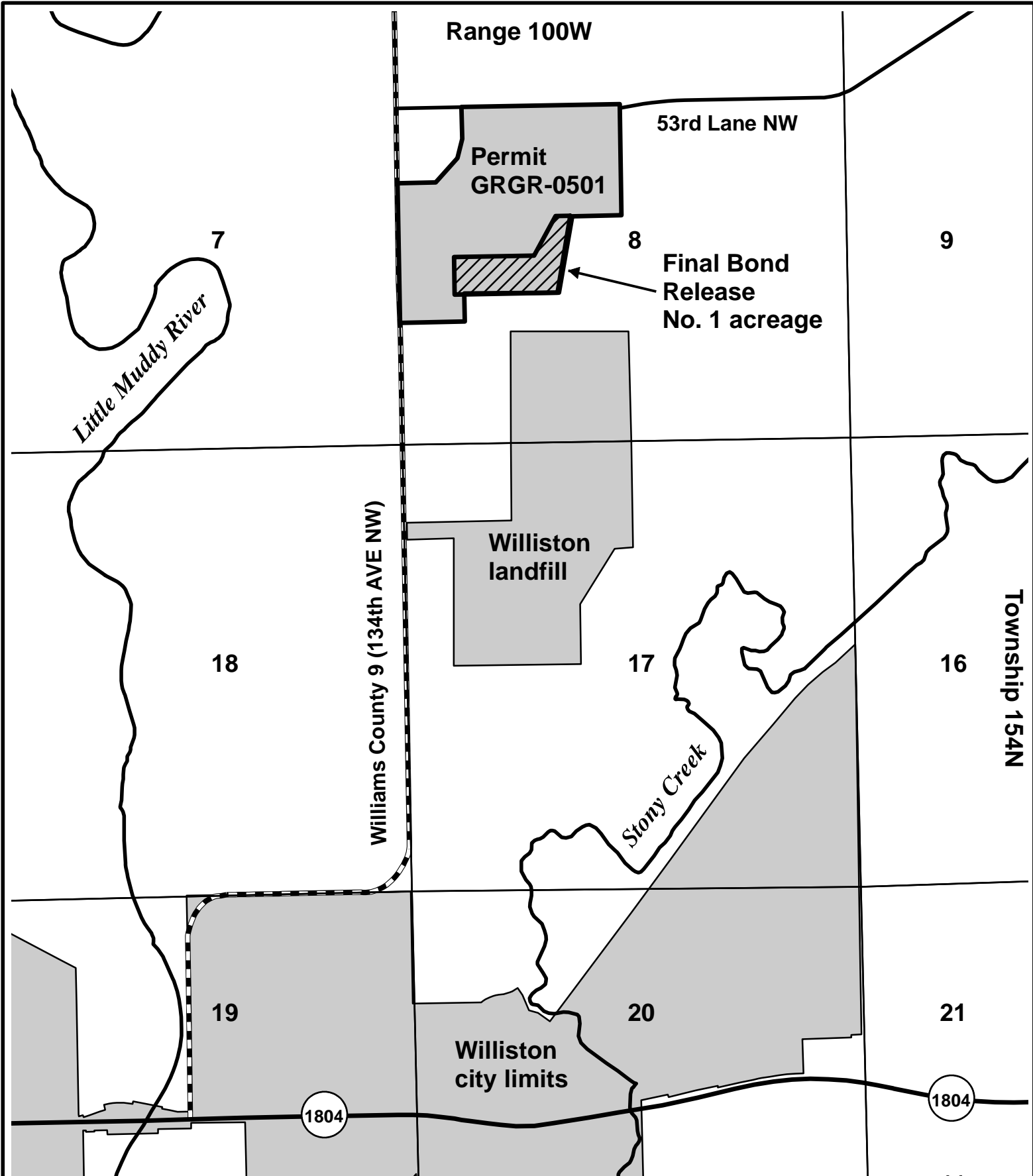
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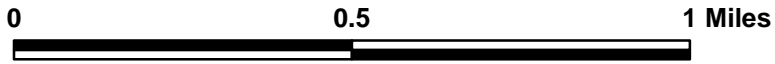
Sincerely,

LEONARDITE PRODUCTS, LLC

Cherie Harms  
President



**Newspaper Publication Notice Map**  
**Permit GRGR-0501**  
**Final Bond Release No. 1**





Date XX, 2018

Garland Erbele  
North Dakota State Water Commission  
900 East Boulevard Avenue, Dept. 770  
Bismarck 58505-0850

Dear Garland:

This letter is to inform you that Leonardite Products, LLC, has filed an application for final bond release on 15.49 acres of land in Williams County located in the West Half, Section 8, T154N, R100W, as shown on the map. This action will release the area for industrial land use, for which the 10 year revegetation liability requirements do not apply. The land is included in Permit GRGR-0501, which was approved by the Public Service Commission on November 2, 2005. The land has since been mined by Leonardite Products, LLC and will be developed into an inert waste disposal facility by Eco Park Landfill, LLC, in accordance with their Permit to Construct and Operate a Solid Waste Management Facility issued by the North Dakota Department of Health. The purpose of the bond release is to relieve Leonardite Products, LLC of all liabilities associated with the construction, operation, reclamation, and closure of the disposal facility, which have become the responsibility of Eco Park Landfill, LLC, as regulated by the North Dakota Department of Health.

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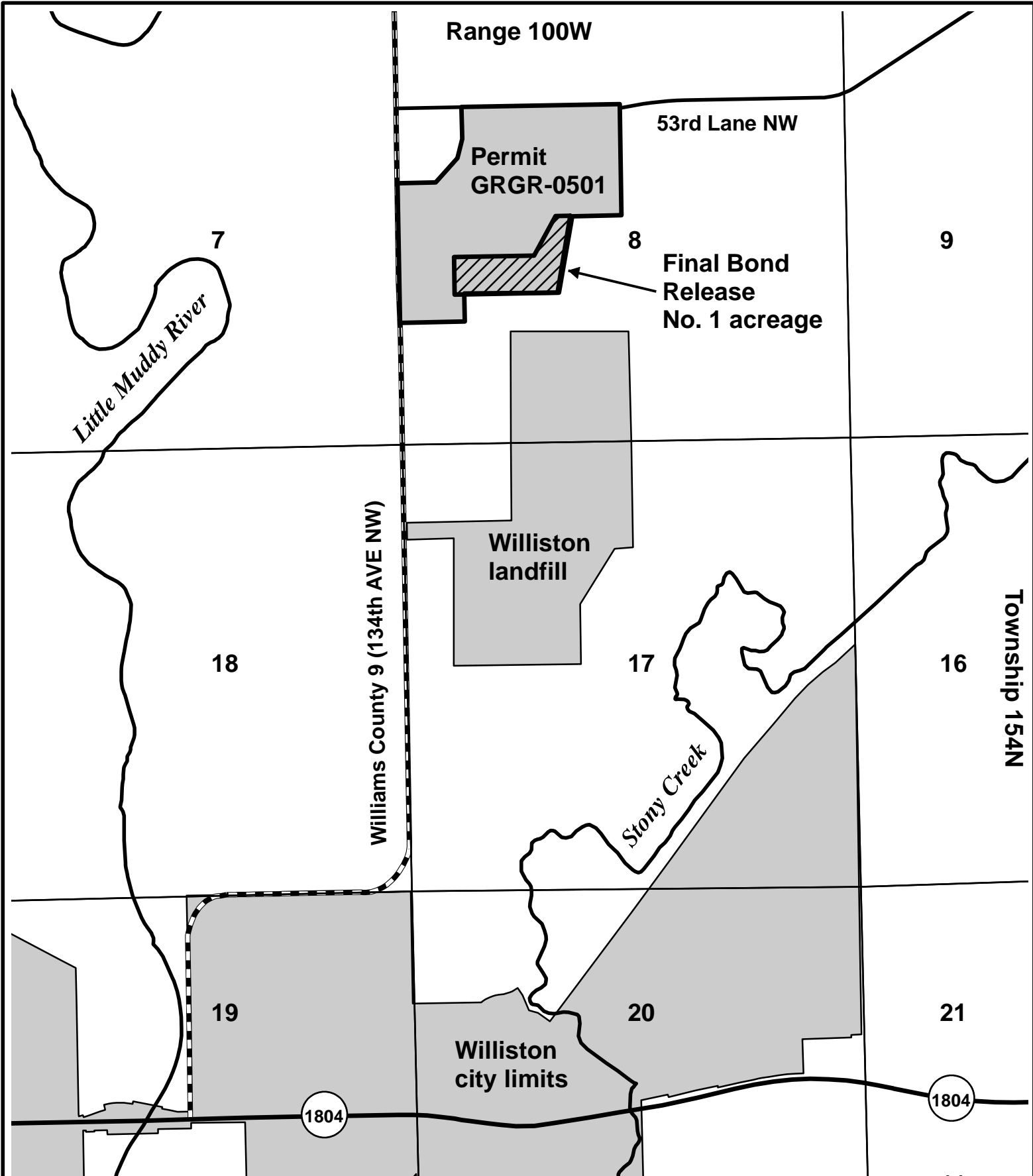
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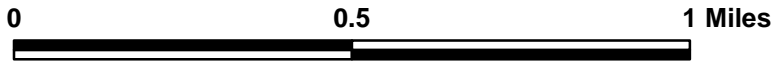
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President



**Newspaper Publication Notice Map**  
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Date XX, 2018

Claudia Berg  
State Historical Society of North Dakota  
612 East Boulevard Avenue  
Bismarck 58505

Dear Claudia:

This letter is to inform you that Leonardite Products, LLC, has filed an application for final bond release on 15.49 acres of land in Williams County located in the West Half, Section 8, T154N, R100W, as shown on the map. This action will release the area for industrial land use, for which the 10 year revegetation liability requirements do not apply. The land is included in Permit GRGR-0501, which was approved by the Public Service Commission on November 2, 2005. The land has since been mined by Leonardite Products, LLC and will be developed into an inert waste disposal facility by Eco Park Landfill, LLC, in accordance with their Permit to Construct and Operate a Solid Waste Management Facility issued by the North Dakota Department of Health. The purpose of the bond release is to relieve Leonardite Products, LLC of all liabilities associated with the construction, operation, reclamation, and closure of the disposal facility, which have become the responsibility of Eco Park Landfill, LLC, as regulated by the North Dakota Department of Health.

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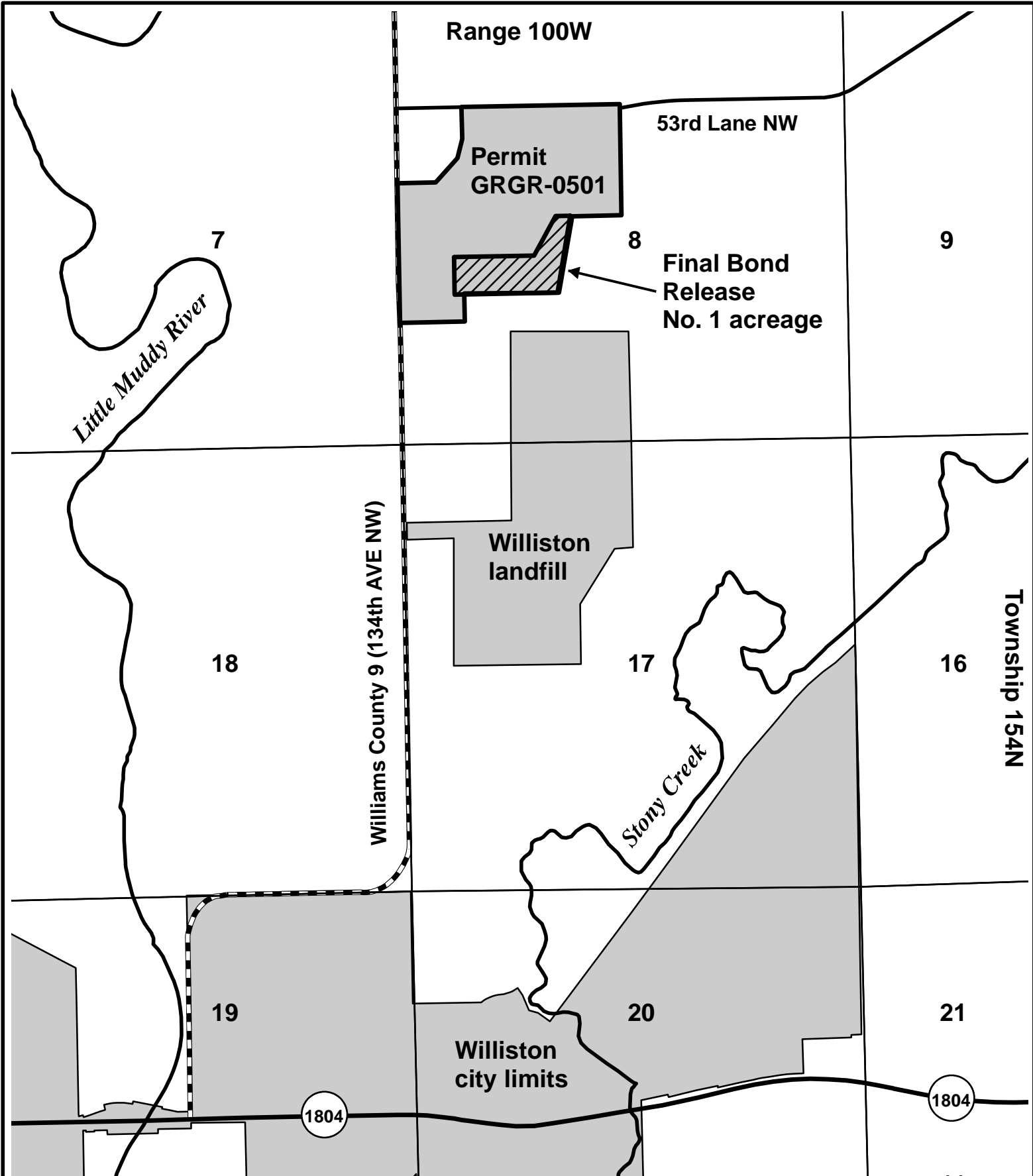
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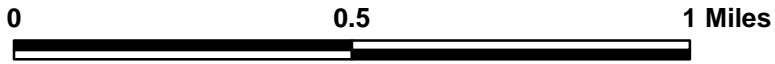
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Cherie Harms  
President



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**Permit GRGR-0501**  
**Final Bond Release No. 1**





Date XX, 2018

Tri-County Regional Development Council  
22 East Broadway  
Williston 58801

Dear Whom It May Concern:

This letter is to inform you that Leonardite Products, LLC, has filed an application for final bond release on 15.49 acres of land in Williams County located in the West Half, Section 8, T154N, R100W, as shown on the map. This action will release the area for industrial land use, for which the 10 year revegetation liability requirements do not apply. The land is included in Permit GRGR-0501, which was approved by the Public Service Commission on November 2, 2005. The land has since been mined by Leonardite Products, LLC and will be developed into an inert waste disposal facility by Eco Park Landfill, LLC, in accordance with their Permit to Construct and Operate a Solid Waste Management Facility issued by the North Dakota Department of Health. The purpose of the bond release is to relieve Leonardite Products, LLC of all liabilities associated with the construction, operation, reclamation, and closure of the disposal facility, which have become the responsibility of Eco Park Landfill, LLC, as regulated by the North Dakota Department of Health.

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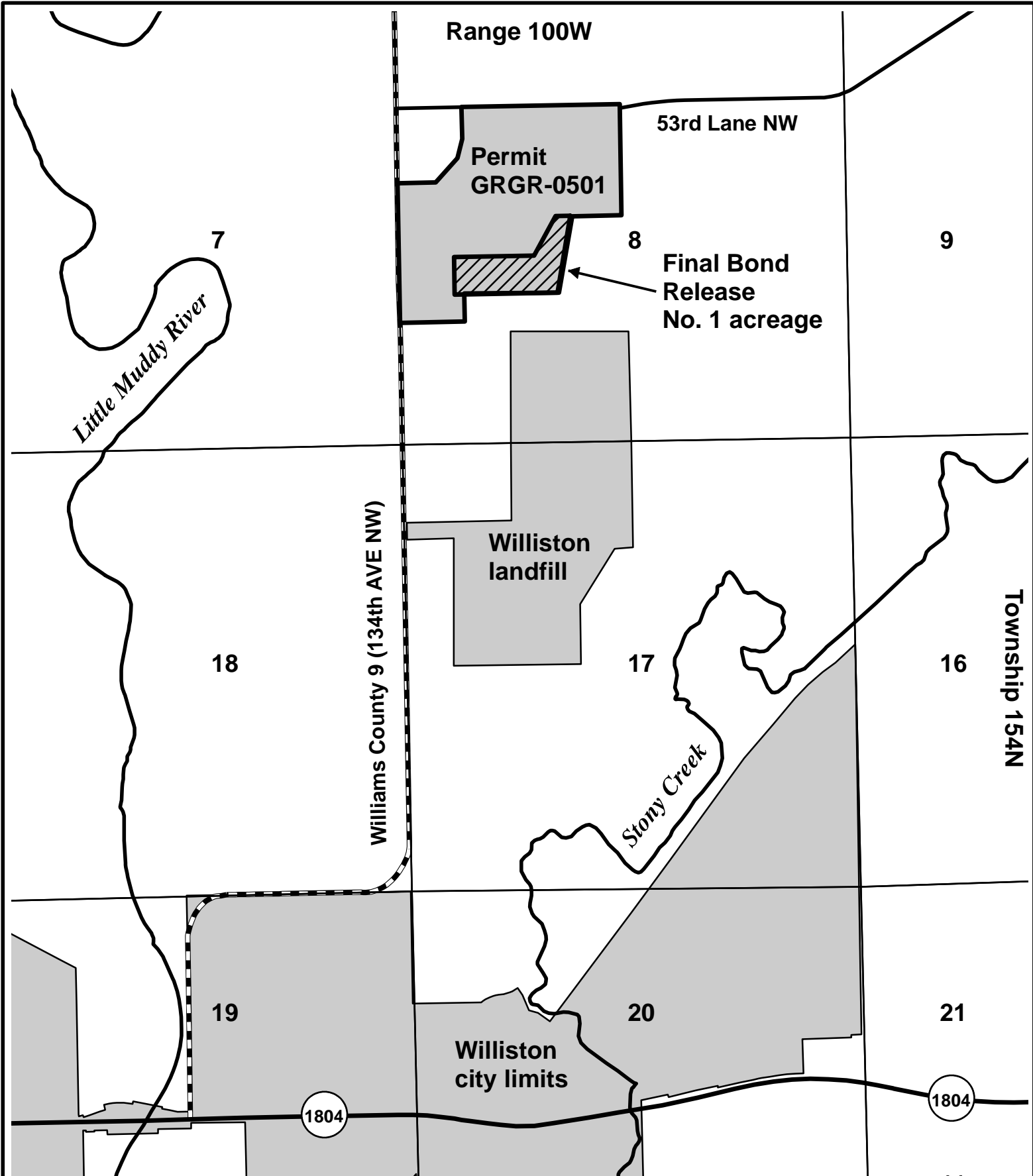
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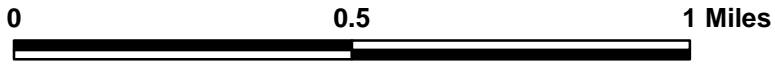
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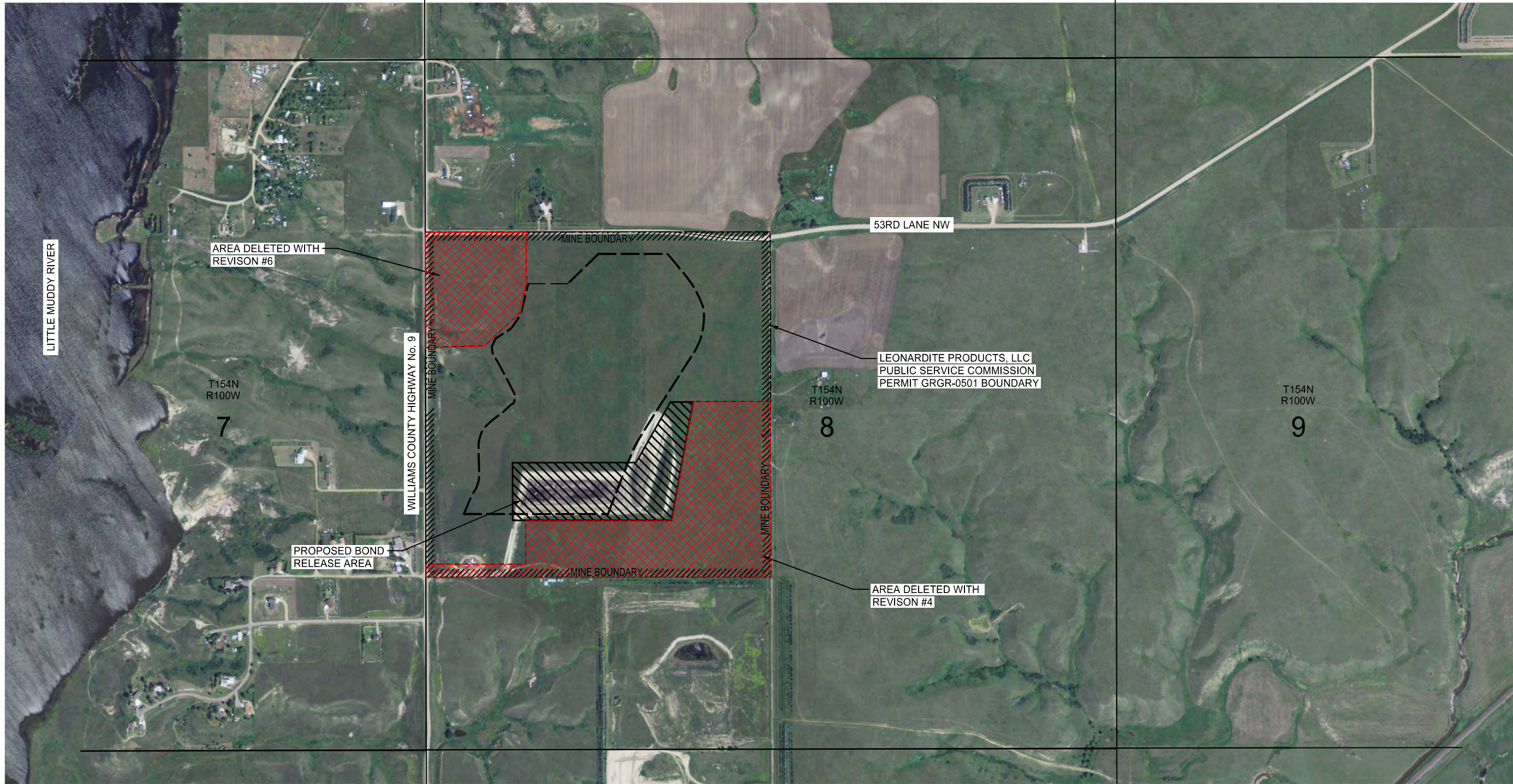


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**Permit GRGR-0501**  
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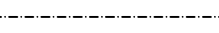
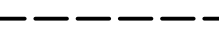


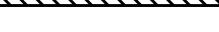



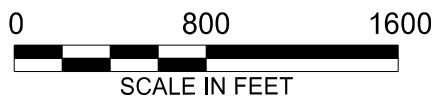
## **ATTACHMENT V**

Aerial Final Bond Release Map



LEGEND

-  MINE BOUNDARY
-  FACILITY BOUNDARY LEONARDITE PRODUCTS PUBLIC SERVICE COMMISSION PERMIT GRGR-0501
-  FACILITY BOUNDARY
-  LIMITS OF OPEN PIT MINING FOR PERMIT GRGR-0501
-  SECTION LINE
-  PROPOSED BOND RELEASE BOUNDARY
-  DELETED AREA FROM PUBLIC SERVICE COMMISSION PERMIT GRGR-0501

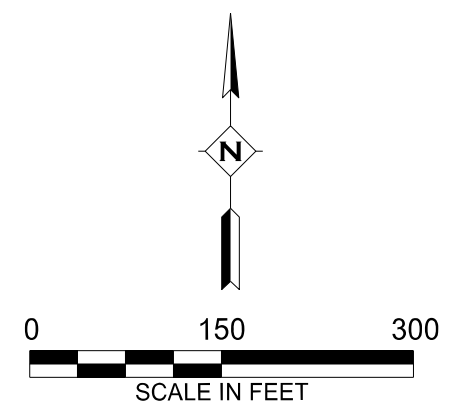
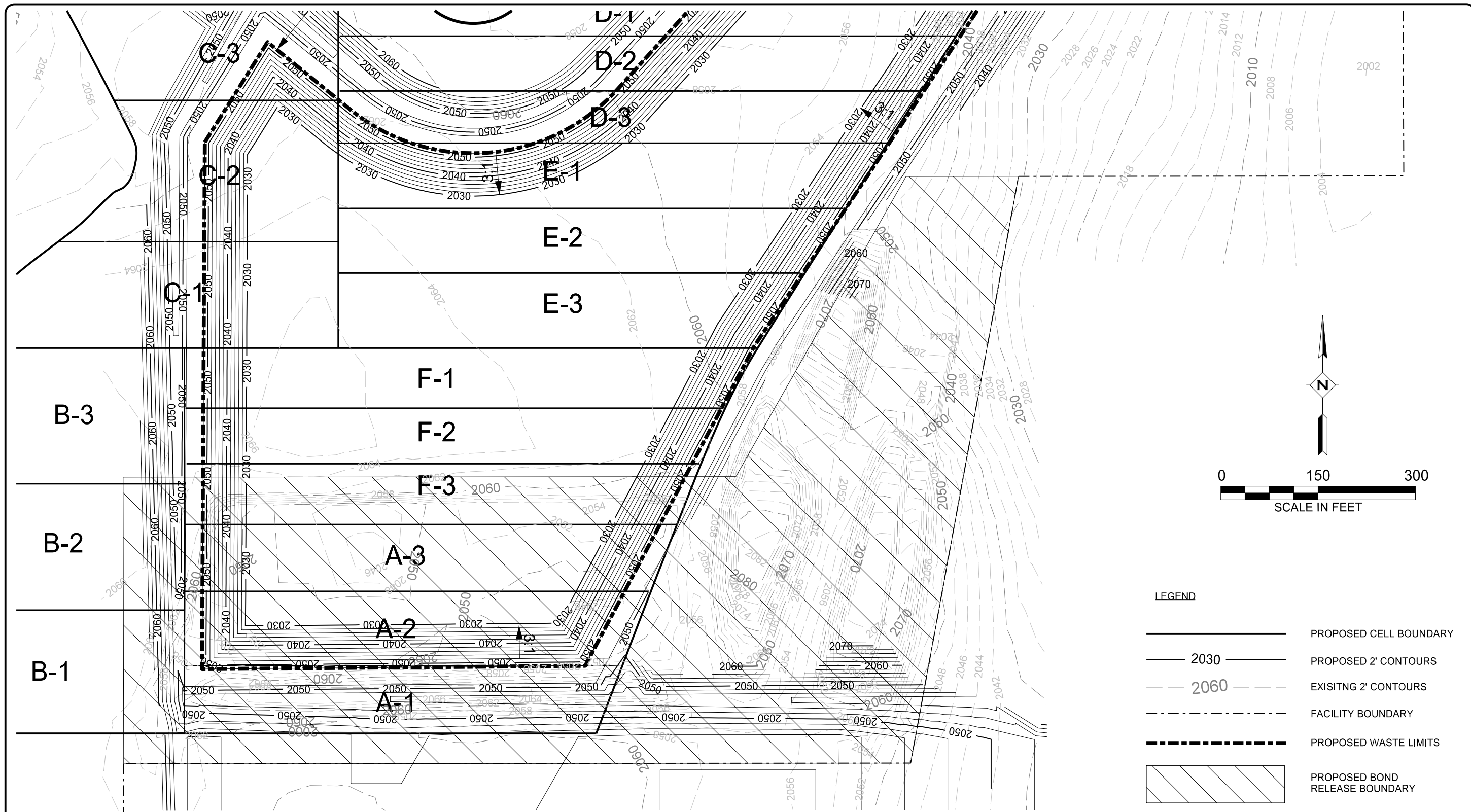


LEONARDITE PRODUCTS , LLC  
 STONY CREEK MINE  
 WILLISTON, ND 58802


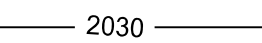

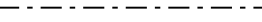


ATTACHMENT No. 5  
 FINAL BOND RELEASE TRACT MAP

## **ATTACHMENT VI**

Final Bond Release No. 1 to Tract GRGR-0501  
Inert Landfill Topography & Cell Boundaries



LEGEND

	PROPOSED CELL BOUNDARY
	PROPOSED 2' CONTOURS
	EXISTING 2' CONTOURS
	FACILITY BOUNDARY
	PROPOSED WASTE LIMITS
	PROPOSED BOND RELEASE BOUNDARY

LEONARDITE PRODUCTS , LLC  
 STONY CREEK MINE  
 WILLISTON, ND 58802

ATTACHMENT No. 6  
 INERT LANDFILL TOPOGRAPHY AND CELL BOUNDARIES  
 FINAL BOND RELEASE No. 1 TO TRACT GRGR-0501

## **ATTACHMENT VII**

General Information

## Attachment VII – General Information

Leonardite Products, LLC is requesting final bond release on 15.49 acres of land located in the West Half, Section 8, T154N, R100W, as shown on the enclosed maps. This action will release the area for industrial use, which the 10 year revegetation liability requirements do not apply. The land is included in Permit GRGR-0501, which was approved by the Public Service Commission on November 2, 2005 to GeoResources, Inc. The land has since been reissued and mined by Leonardite Products, LLC. The permit was transferred to Leonardite Products, LLC on October, 30 2008. The area to receive the final bond release will be developed into an inert waste Inert Landfill disposal facility by Eco Park Landfill, LLC, in accordance with their Permit to Construct and Operate a Solid Waste Management Facility issued by the North Dakota Department of Health. The purpose of the bond release is to relieve Leonardite Products, LLC of all liabilities associated with the construction, operation, reclamation, and closure of the disposal facility, which will become the responsibility of Eco Park Landfill, LLC, as regulated by the North Dakota Department of Health.

Suitable plant growth materials (SPGM) were removed from this area in 2006. Coal removal also began in 2006 and has been completed. Subsequent to coal removal, the pit will be converted into an inert waste Inert Landfill disposal facility. A permit for Solid Waste Management Facility was first issued by the NDDOH on June 28, 2016. A copy of the permit can be found in Attachment VIII. All grading, backfilling, and construction is scheduled to commence as soon as fall of 2017. The area is ready for complete regulation by the NDDOH.

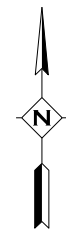
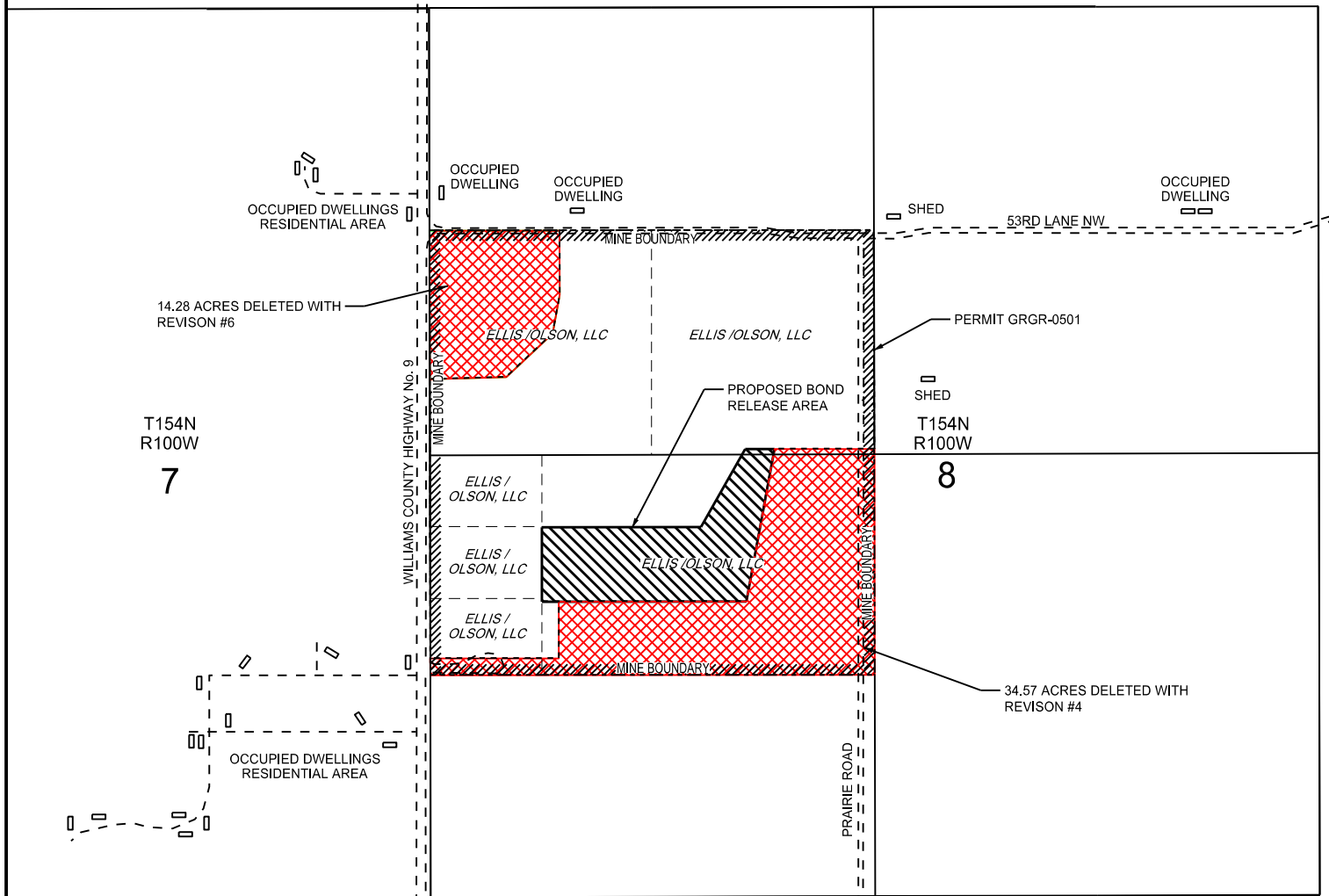
Three stockpiles of overburden, subsoil, and topsoil piles are located within the proposed bond release area and are dedicated to the development of the Eco Park, LLC inert waste Inert Landfill disposal facility and will be in place until after all inventories from the piles are depleted.


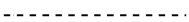
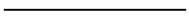


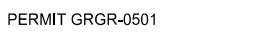
The proposed bond release will not impact the quality of surface runoff from Permit GRGR-0501. Surface runoff generated within the interior of the proposed inert waste Inert Landfill disposal facility will be collected in sumps, and pumped into sedimentation a pond in accordance with NDDOH water quality standards.

The proposed inert waste Inert Landfill disposal facility is served by an existing aggregate surfaced road that intersects with Williams County Highway No. 9.

Permit GRGR-0501 is currently bonded in the amount of \$281,359. As part of this final bond release application, Leonardite Products, LLC, is requesting a bond reduction of \$181,359.00. Upon approval of this bond release application, Leonardite Products, LLC will be released from reclamation liability for 15.49 acres in Permit GRGR-0501.

Ellis/Olson, LLC is the surface owner of the entire GRGR-0501 permit area and all land adjoining the bond release area as illustrated on Attachment VII (i).



LEGEND	
	MINE BOUNDARY
	FACILITY BOUNDARY
	SECTION LINE
	PROPOSED BOND RELEASE BOUNDARY
	DELETED AREA PERMIT GRGR-0501
	PERMIT GRGR-0501

LEONARDITE PRODUCTS, LLC  
 STONY CREEK MINE  
 SEC. 8, T154N, R100W  
 WILLISTON, ND 58802

ATTACHMENT VII (i)  
 SURFACE OWNER MAP  
 FINAL BOND RELEASE No. 1

## **ATTACHMENT VIII**

Other Approvals

## Attachment VIII – Other Approvals

The ND Public Service Commission has approved Revision No. 7 (Renewal 2, October 14, 2015) to Permit GRGR-0501, in the SW $\frac{1}{4}$  Section 8, T154R, R100W, a five year permit renewal which will allow Leonardite Products, LLC to continue operating under approved mining and reclamation plans for this permit area in the Stony Creek Mine until November 2, 2020. In addition, other approvals were required for this project.

- Williams county Zoning Case 2012-04-00125 – Issued July 3, 2012
- Permit for Solid Waste Management Facility – Issued June 28, 2016

1 512-09-202  
Permits

**A RESOLUTION AMENDING THE ZONING  
ORDINANCE AND SUBDIVISION REGULATIONS  
OF WILLIAMS COUNTY, NORTH DAKOTA  
ADOPTED JULY 7, 1987**

**WHEREAS:** A request has been received to amend the Zoning Ordinance and Subdivision Regulations of Williams County as delineated in the Application and map attached hereto and by reference incorporated herein;

**WHEREAS:** The procedures required under NDCC Chapter 11-33 and the Williams County Zoning Ordinance and Subdivision Regulations have been complied with;

**WHEREAS:** The Williams County Commission has determined that it is appropriate to grant the request for amendment to the Zoning Ordinance and Subdivision Regulations of Williams County;

**NOW, THEREFORE, BE IT RESOLVED,** by the County Commission of the County of Williams, North Dakota, as follows:

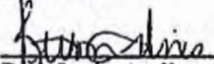
The Zoning Ordinance and Subdivision Regulations of Williams County are hereby amended to reflect the change from Agriculture to Industrial for S3/4 less the 40 ac for the City landfill SE1/4 SW1/4 and Sublot 1 in SE1/4 of NE1/4, Section 8, and the N1/2 of the NE1/4, Section 17, T154 R100, Stony Creek Township, Williams County, ND. The Williams County Planning Administrator is hereby directed to enter such amendment upon the Williams County Zoning Map.

Dated this 3rd day of July, 2012

County of Williams

By:   
Dan Kall, Chairman

ATTEST:

  
Beth Innlis, Auditor



**NORTH DAKOTA**  
DEPARTMENT *of* HEALTH

ENVIRONMENTAL HEALTH SECTION  
Gold Seal Center, 918 E. Divide Ave.  
Bismarck, ND 58501-1947  
701.328.5200 (fax)  
www.ndhealth.gov



512-129.06

FILE: Eco Park Inert Landfill – Permit 0384

June 28, 2016



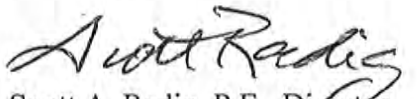
Will Chamley  
Eco Park Landfill, LLC  
5228 134th Avenue NW  
Williston, ND 58801

Dear Mr. Chamley:

Enclosed is a Permit for a Solid Waste Management Facility. It lists the conditions under which the permit is issued. The operation of this disposal facility must adhere to these permit provisions; therefore, we would advise that you read them carefully.

If you have any questions regarding this permit, please contact the Department at 701-328-5166.

Sincerely,

  
Scott A. Radig, P.E., Director  
Division of Waste Management

SAR:KDJ:lj1

Enc.

By Certified Mail

cc/enc: Chris McConn, Interstate Engineering



**NORTH DAKOTA DEPARTMENT OF HEALTH  
DIVISION OF WASTE MANAGEMENT**

**Review and Response to Public Comments Received for the  
Proposed Eco Park Inert Waste Management Facility**

**June 28, 2016**

The North Dakota Department of Health (Department), Division of Waste Management (Division), set a public comment period from May 22, 2016 through June 20, 2016 for the proposed Draft Permit for the Eco Park Landfill, LLC (Eco Park) inert waste landfill. During the public comment period, a public hearing was not requested.

Notifications of the public comment period were published in the *Williston Herald* and through the Department's public notice web page and public notice e-mail subscription service. During the public comment period, the Division received written comments regarding the Draft Permit.

The Division prepared an application review dated May 18, 2016. Copies of the application information, the Division's application review (NDDH Review) and a Draft Permit were available for review by the public at the Division's office and were also available electronically to interested parties. The notification was also published in the Williston and Williams County papers.

Following the comments and responses are copies of all written comments.

Comment:

*"Although not mentioned during our conversation, please change the mailing and physical address of the property to 5228 134<sup>th</sup> Avenue NW, Williston North Dakota."*

Department Response: The addresses will be changed on the permit.

Comment:

*"For Conditions E18, E19 and E20, refer to contact water instead of leachate."*

Department Response: No reason was presented to support the change, and "contact water" is not defined within NDAC Article 33-20; however, the terms "inert waste" and "leachate" are both defined as follows:

**“NDAC 33-20-01.1-03. Definitions.** The terms used throughout this title have the same meaning as in North Dakota Century Code chapter 23-29, except:...

30. "Leachate" means a liquid that has passed through or emerged from solid waste and contains soluble, suspended or miscible materials removed from such waste....
26. "Inert waste" means nonputrescible solid waste which will not generally contaminate water or form a contaminated leachate. Inert waste does not serve as food for vectors. Inert waste includes, but is not limited to: construction and demolition material such as metal, wood, bricks, masonry and cement concrete; asphalt concrete; metal; tree branches; bottom ash from coal fired boilers; and waste coal fines from air pollution control equipment.”

Since leachate is formally defined, and the definition of inert waste includes the word “leachate,” the wording appears appropriate. In reality, many inert waste landfills do impact water that has been in contact with waste materials, whether it is metal, sheetrock (high sulfide), breakdown of organic materials, etc. While formal leachate management systems of pipes, drainage layers, sumps, etc., are not addressed in the rules, prudent management of water is needed for operation and to minimize contact with waste.

Comment:

*“ In Condition F7, change the maximum working area of the disposal operation from 10,000 square feet to 1 acre (approximately 40,000 square feet).”*

Department Response: No justification is provided on why the working area needs to be up to an acre in size. The Department has found that many operations are simply too large and they become inefficient in compacting and covering waste. The Department will increase the size up to 15,000 square feet (120 x 120 feet) consistent with other larger inert waste landfills and allow some flexibility for future changes based on waste receipts, equipment and compliance. Specific Condition F.7. could be adjusted to read:

- F.7. All waste operations shall be properly maintained to minimize the potential for fire. The working area of the disposal operation shall be maintained in as small an area as practicable, not to exceed **15,000** square feet before cover is applied. Adequate cover shall be stockpiled near the operating area to cover the waste to a depth of two (2) feet in the event of a fire. The Department may adjust the size of the working area if needed, based on waste receipts, equipment, compliance and submittal of an updated sequential development plan that demonstrates orderly and efficient operations.

Comment:

*“In Condition F9, change the maximum amount of “open landfill” (without a final cover) from 1 acre to 10 acres.”*

Department Response: No justification is provided on why the working area needs to be up to 10 acres in size. Landfills with large “open areas” simply become un-orderly, increases the risk if a fire or other contingency occurs and, since there is no financial assurance required, it increases the risk of default and problems in closure. As with other larger inert waste landfills, a larger open area may be considered; however, 10 acres seems excessive; particularly in view that the mine area in 2014 appears about 790 feet wide (E-W) by about 400 feet (N-S) or about 7.4 acres. Phased development and sequential partial closure was not fully addressed in the application; however, preliminary drawings show about four to five phases in the 2014 mine area. It would seem sequential filling of two or three phases could easily be addressed by the Permittee and the Department could consider modifications in the future similar to the consideration of Specific Condition F.7. above.

Some adjustment to Specific Condition F.9. could read:

- F.9. Operations and sequential partial closure shall be implemented such that the working face or open area (the area that has not been covered or closed) of the landfill must be limited in size to as small an area as practicable. The open area of the inert waste landfill shall not exceed **15,000** square feet before cover is applied. Heavy equipment shall routinely run over the lifts of waste material (one foot to two feet maximum) at least four to five times or more as necessary to adequately break up and compact the waste material. At maximum, areas that have not been formally closed with the required two (2) feet of final cover shall be no larger than **80,000** square feet. All wastes, including, but not limited to, the working face must be covered at least two times per year with a minimum of six (6) inches of suitable earthen material. Grade stakes shall be placed as necessary to ensure filling activities follow the approved closure grades. The Department may adjust the size of the working area and maximum open area if needed, based on waste receipts, equipment, compliance and submittal of an updated sequential development plan that demonstrates orderly and efficient operations.

### Conclusion

The Department believes that a permit can be issued to Eco Park Inert Landfill, LLC that meets the requirements of the North Dakota Solid Waste Management Law and Rules.

  
Scott A. Radig, P.E., Director  
Division of Waste Management

SAR:KDJ:ljl  
Enc: Copy of e-mailed comments

## Johnson, Kirk D.

---

**From:** Johnson, Kirk D.  
**Sent:** Monday, May 23, 2016 11:20 AM  
**To:** 'Chris McConn'  
**Subject:** RE: Eco Park Inert Landfill permit conditions

Thanks, Chris, for the message and conditions. Steve and I will be in touch again soon. Have a good week. Kirk

---

**From:** Chris McConn [<mailto:Chris.McConn@interstateeng.com>]  
**Sent:** Monday, May 23, 2016 10:24 AM  
**To:** Tillotson, Steve J.; Johnson, Kirk D.  
**Cc:** Slim Sylte ([derald@chamleypipe.com](mailto:derald@chamleypipe.com)); Will Chamley ([chamleypipe@gmail.com](mailto:chamleypipe@gmail.com))  
**Subject:** Eco Park Inert Landfill

Steve and Kirk,

Thanks for calling last week to review the Eco Park Inert Landfill permit language. After discussion with the client, below are the proposed changes we respectfully request, and a summary of understanding on some other items that won't necessarily change, that we discussed for clarification. If you are ok with this, the applicant requests that the draft permit go out for public comment. I did receive this morning a copy of the public notice that was sent out to Will Chamley (and Williams County and Stoney Creek Township). As discussed, we understand that any changes the Department agrees to could still be incorporated into the final permit.

### PROPOSED CHANGES:

1. Although not mentioned during our conversation, please change the mailing and physical address of the property to 5228 134<sup>th</sup> Avenue NW, Williston North Dakota.
2. For Conditions E18, E19 and E20, refer to contact water instead of leachate.
3. In Condition F7, change the maximum working area of the disposal operation from 10,000 square feet to 1 acre (approximately 40,000 square feet).
4. In Condition F9, change the maximum amount of "open landfill" (without a final cover) from 1 acre to 10 acres.
5. After section K, change the name of the landfill from Cando Inert Landfill to Eco Park Inert Landfill.

### SUMMARY OF UNDERSTANDING

1. Regarding when the requested changes are incorporated in to the permit, it is our understanding that the Department may wait until after the public notice is issued to do this. If this is acceptable to the Department, the applicant is fine with it.
2. For paragraph E18, we request the language not to say it is required to have SPGM training for "all consultants, facility staff, etc." As discussed, we understand that having a short video and a 1-2 page summary of SPGM management for signature by parties participating in activities that may be involved in activities related to SPGM management will be acceptable to the Department for fulfilling this requirement.
3. For multiple Conditions (E18, E19, and E20) the permit instructs on how to manage, test and report leachate in the landfill. As discussed, it is our understanding that the Department does not expect the operator to line the landfill; monitor leachate head; collect leachate or routinely analyze leachate.
4. For Condition F14, it is our understanding from our discussion that the Department will allow the operator to meet with Department staff and produce a description of operations and how they will address erosion control and vegetation establishment as it relates to areas with slopes of 6% or steeper. This could be done in intervals of 5 year increments to

keep the document up to date. A registered engineer will not need to prepare this document. As indicated by the Department, the general expectation would be for traditional erosion control measures like those identified in the North Dakota Department of Transportation document entitled, "Erosion and Sediment Control Handbook" (<http://www.dot.nd.gov/manuals/environmental/escm/escmfinal.pdf>).

5. Regarding the amount of landfill open without a final cover (requested change #4), just as a brief explanation, the intermediate slope of the landfill while open will be near 8-9 acres in area.

If you have any questions, feel free to call to discuss.

Sincerely,  
Chris  
S1200124.06

***Chris McConn, PE (MN, ND, SD)***

Interstate Engineering  
116 East Washington Avenue  
PO Box 316  
Fergus Falls, MN 56538-0316  
Phone: 218.739.5545  
Mobile: 218-770-2810  
Fax: 218.739.4814  
[chris.mcconn@interstateeng.com](mailto:chris.mcconn@interstateeng.com)

*Professionals you need, people you trust.*



**PERMIT FOR A SOLID WASTE MANAGEMENT FACILITY**  
**NORTH DAKOTA DEPARTMENT OF HEALTH – DIVISION OF WASTE MANAGEMENT**  
**TELEPHONE: 701-328-5166 • REV. 02/12**

---

Pursuant to Chapter 23-29 of the North Dakota Century Code (NDCC), (Solid Waste Management and Land Protection Act), and Article 33-20 of the North Dakota Administrative Code (NDAC), (Solid Waste Management Rules), and in reliance on statements and representations heretofore made by the owner or owner's representative designated below, a permit is hereby issued authorizing such owner/operator to construct and operate a solid waste management facility at the designated location under any and all conditions.

**A. Owner/Operator:**

1. **Name:** Eco Park Inert Landfill
2. **Mailing Address:** 5228 134th Avenue NW, Williston, ND 58801
3. **Location Address:** 5228 134th Avenue Northwest NW, Williston, ND 58801
4. **Lat/Long:** Latitude: 48.1760 Longitude: -103.5779

**B. Permit Number:** 0384

**C. Solid Waste Management Units:**

1. Inert Waste Landfill
2. Clean Wood Stockpile (ground wood waste not to exceed 5,000 yds<sup>3</sup> at any one time)
3. Waste Tire Stockpile (up to 1,300 tires maximum temporary storage for recycling)
4. Scrap Metal and Appliances (white goods) temporary stockpile
5. Used concrete and asphalt stockpile for recycling (not to exceed 5,000 yds<sup>3</sup>)
6. All sorted recyclable materials will be stored at the facility's transfer station.
7. Potential grass/leaves drop-off site for composting

**D. Location Information:**

1. **General:** S1/2 of NW1/4 and N1/2 of SW1/4 of Section 8, Township 154N, Range 100W of Williams County
2. **Permit Area:** As described in referenced documents and facility files: 106 acres total. All acres are considered potentially usable for inert solid waste activities.

**E. General Conditions:**

- E.1.** The owner/operator of the facility is subject to the Solid Waste Management and Land Protection Act (NDCC Chapter 23-29, the Solid Waste Management Rules (NDAC Article 33-20), all other North Dakota and federal laws, rules or regulations and orders now or hereafter effected by the North Dakota Department of Health (hereinafter the Department), and to any and all conditions of this permit.
- E.2.** Compliance with terms of this permit does not constitute a defense to any order issued or any action brought under NDCC Chapter 23-29, NDAC Article 33-20, NDCC Chapter 23-20.3, NDAC Article 33-24, Sections 3013, 7003, or 3008(a) of RCRA, Sections 106(a), 104 or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. et. seq.) or any other law providing for protection of public health or the environment.
- E.3.** Issuance of this permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local law or regulations.
- E.4.** It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- E.5.** This permit is based on the premise that the information submitted by the owner/operator is accurate and that the facility will be or has been constructed and will be operated as specified in the application and all related documents. Any inaccuracies or misrepresentations found in the application may be grounds for the termination or modification of this permit. The Permittee must inform the Department of any deviation from, or changes in, the information in the application which would affect the Permittee's ability to comply with the applicable rules or permit conditions.
- E.6.** The Permittee shall at all times properly operate and maintain the facility and systems of disposal, storage and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance/quality control procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.
- E.7.** The Permittee shall give notice to the Department of any planned physical alterations or additions to permitted waste management units. Any physical change in or change in the method of the operation of a treatment or disposal operation shall be considered to

be construction, installation or establishment of a new operation. No construction, installation or establishment of a new operation shall be commenced unless the owner/operator thereof shall file an application for, and receive, a permit to construct and operate from the Department.

- a. The Permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
  - b. Any significant change in or use of contract operators in the routine operation of the facility shall be deemed a significant change in the operation and shall be subject to Departmental review of the operator's qualifications, background, experience, equipment and other pertinent issues. Such change may necessitate modification of the permit and the facility's Plan of Operation.
  - c. Whenever the Permittee becomes aware that the Permittee failed to submit any relevant facts in the permit application or submitted incorrect information in the permit application or in any report to the Department, the Permittee shall promptly submit such facts or information.
- E.8. The owner/operator shall construct, operate, maintain and close the waste management units and the facility according to the criteria of law and rule, conditions of this permit, and other reasonable precautions to prevent or minimize, if applicable, any environmental impacts including, but not limited to, fugitive dust emissions, objectionable odors, air toxics and gas emissions, spills, litter and contamination of surface water and groundwater.
- E.9. The Permittee shall furnish to the Department, within a reasonable time, any relevant information which the Department may request to determine whether cause exists for modifying, reissuing or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.
- E.10. This permit may be modified, revoked and reissued, or terminated for cause as specified in NDAC Section 33-20-02.1-06. The filing of a request for permit modification, revocation and reissuance, termination, or the notification of planned changes or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforcement of any permit condition.

This permit may be renewed as specified in NDAC Section 33-20-02.1-07. Review of any application for a permit renewal shall consider improvements in the state of control and measurement technology, compliance with state rules and permit, as well as changes in applicable regulations.

- E.11. This permit does not supersede local zoning authority or any other requirements of any political subdivision of the state.

- E.12.** Within sixty (60) days of the issuance of this permit, if not already completed, the owner/operator shall record a notarized affidavit with the County Recorder. The affidavit shall specify that this facility, as noted in the legal description, is permitted to accept solid wastes for disposal. This affidavit shall specify that another affidavit must be recorded upon the facility's final closure.
- a.** Upon closure, a second affidavit shall be recorded specifying any final details regarding the types of waste disposed at the facility, as well as any final details regarding the facility's location, construction, management, etc.
  - b.** The Department must be provided a copy of both affidavits, certified by the County Recorder of the county in which the facility is located. The copies must be forwarded to the Department within thirty (30) days of recorded dates, or if notification has already been completed, within thirty (30) days of the permit issuance date.
- E.13.** Any entity that controls the permit holder (Permittee) agrees to accept responsibility for any remedial measures, closure and postclosure care or penalties incurred by the permit holder (Permittee).
- E.14.** Prior to the onset of any earthmoving or construction and to help familiarize contractors and facility staff with pertinent erosion and sediment control issues and requirements, the Permittee shall develop an Erosion and Sediment Control Handbook for Departmental review and approval and which shall identify appropriate storm water and erosion control Best Management Practices and features which must be installed to minimize erosion and impacts to nearby waterways, drainageways and wetlands. A plan shall also be developed showing where pertinent erosion controls will be placed before the onset of any earthmoving or construction. It shall be the responsibility of the Permittee to ensure adequate erosion and sediment controls are established for all construction activities.
- The erosion control measures must be inspected and approved by the Department prior to site disturbance. Erosion and sediment controls must be adapted, improved or updated as necessary to minimize and control impacts. Should any storm water or erosion issues or questions arise and at least one week prior to the onset of any construction, the Permittee and/or his consultants shall contact the Department at 701-328-5166.
- E.15.** The Permittee shall implement self-inspection procedures for all solid waste management units, borrow areas and related activities at the facility regulated by this permit. In addition to ongoing daily inspections and logbook records of operations by facility staff, formal inspections and completion of the checklists for all solid waste units and activities shall be completed at random on a weekly basis or more frequently as needed.

Prior to accepting waste from any industry, including, but not limited to, contractors (construction, demolition, etc.), manufacturers, maintenance companies, auto and truck maintenance (transportation) companies, oilfield companies, etc., or waste hauler, the owner/operator shall provide to appropriate representatives of the company a copy of the approved waste acceptance procedures as well as copies of an approved waste evaluation form. The company must agree to the waste screening and inspection procedures. The owner/operator shall maintain a list of industrial and commercial sources of inert waste in the facility's Operating Record. The training and educational material shall be repeated and/or amended as necessary to ensure compliance with the waste acceptance procedures and the permit.

For individual solid waste units and/or activities, the Department may allow or require changes in inspection procedures, parameters, increase or reduce the frequency of inspections, or make other changes based on facility records and inspections. Inspection, education and training procedures, measures and checklists shall be re-evaluated (subject to Department approval) prior to the onset of operation and as needed to ensure compliance, when upgrades or changes are made in the Plan of Operation, when waste streams change or other significant changes or issues arise.

- E.16.** Recordkeeping and reporting shall be in accordance with the Department's *Guideline 4A – Recordkeeping and Reporting by Owners or Operators of Solid Waste Facilities*, (Attachment 1) and with this permit and any supporting documents. The Operating Record shall be maintained in a single location at or near the facility and shall be accessible to the Department for inspection. Records shall be maintained throughout the life of the facility, including the postclosure care period. Upon completion of each document required in the Operating Record, the Department shall be notified of its placement in the Operating Record. Within two (2) months of the permit issuance date and prior to acceptance of any waste, the Permittee shall notify the Department of the location of the Operating Record.
- E.17. General Training Requirements:** Within sixty (60) days of permit issuance, prior to initial waste acceptance in any new or modified waste unit or cell, and within thirty (30) days of employment of any new employee, operational personnel involved in solid waste acceptance, screening, handling and in the facility operation or monitoring must be provided a copy of this permit and shall be instructed in specific details of the facility plans and procedures to ensure compliance with the permit, the facility plans and the state rules as necessary to ensure orderly operation and to prevent accidents and environmental impacts. Documentation of training such as names, dates, description of instruction methods and copies of certificates awarded must be placed in the facility's Operating Record. Training on permit, plans, and rule requirements shall be repeated as specified in this permit and as needed to ensure all employees know their responsibilities.
- E.18.** Prior to the onset of any construction or operation, adequate training must be provided to all consultants, facility staff, equipment operators, contractors, subcontractors and any other personnel used in facility construction or operation to ensure the facility, sub-

base, liners, leachate systems, and supporting structures, roads, access areas, etc., are properly built in accordance with the plans, state environmental laws and rules, the solid waste permit, the storm water permit, the Storm Water Pollution Prevention Plan, and other pertinent requirements.

This training shall address suitable plant growth material (SPGM) topsoil and subsoil segregation, including staking and training of scraper operators by a Registered Professional Soil Scientist, management, signage, erosion control and revegetation, location, management and signage of SPGM topsoil and subsoil stockpiles. Documentation of such training shall be incorporated into the facility records and a summary provided to the Department prior to the onset of waste acceptance.

- E.19. Report Requirements: To help reduce paper, save time and ensure more orderly management of records, routine reports shall be submitted to the Department in a digital or electronic format as a searchable PDF format or an MS Word document unless otherwise requested. In some cases, the Department may request hard copies in addition to electronic format.**

**Operating Report Requirements:** In addition to the reports required by rule and this permit, the Permittee shall submit a monthly report by the twelfth (12th) calendar day of the following month to the Department. These reports shall include pictures and a summary and update of recent site construction, operation, inspections, the solid waste landfill, the surface impoundment and adjacent areas, roads, access routes, soil storage areas and other pertinent information. The report shall detail precipitation, melt water or runoff/run-on issues; storm water and erosion issues; the conditions of all berms, dikes, roads, ditches, erosion control structures and other pertinent structures; erosion control measures; any spillage and subsequent cleanup; surface water management issues; protection of surface water; personnel training during the period; the establishment, maintenance and status of vegetation on the site, including all areas affected by site operations including, but not limited to, disturbed and reclaimed areas; and any other information necessary to keep the Department apprised of the facility's operation and compliance with state law and rules, the approved plans and this permit. If necessary, to maintain communication, the Department reserves the right to amend and/or require more frequent reporting. The Department may also reduce the reporting requirement based on satisfactory operation. The reports shall also include a summary of all logbooks and inspections and must be sufficiently detailed to address any additional issues contained in the attached guideline on solid waste facility report requirements. (See Attachment 1, *Guideline 4A-Recordkeeping and Reporting by Owners or Operators of Solid Waste Facilities.*)

**For the Landfill Unit,** the reports shall also include a summary of the disposal operation including, but not limited to: (1) the size and location of the operational area in square feet, including a map or diagram of the operating areas, areas with interim cover, areas brought to grade and areas formally closed or scheduled for closure; (2) waste placement, lift thickness, and compaction (number of passes with heavy equipment); (3) waste-covering activities and implementation of sequential partial

closure requirements of NDAC Section 33-20-04.1-05; (4) placement of interim cover; (5) cell construction and testing of liners, final cover subsoil and topsoil SPGM and associated features of the approved plans; (6) schedule and/or implementation of erosion controls, cover crop seeding and condition and status of native vegetation on closed and/or reclaimed areas; (7) the amounts, types and analytical results of waste accepted for disposal; (8) leachate generation, leachate head above liner, leachate analysis, and leachate management; and (9) all other information needed to ensure compliance with state law and rules, the approved plans and this permit.

**E.20. Landfill Construction and Operation:** During excavation and construction of any disposal unit, surface impoundment storage area, or other solid waste unit, any layers of materials with a higher hydraulic conductivity, including, but not limited to, areas of sand, silty sand, gravel, Leonardite and/or lignite over eight (8.0) inches in thickness, the base or sidewall shall be over-excavated and replaced with at least five (5) feet of carefully compacted clay-rich soil to establish a geologic barrier to leachate migration. At minimum, Leonardite, sand, gravel or lignite zones less than eight (8.0) inches in thickness shall be scarified, mixed with in-situ shale or clay-rich sediments to a depth of twelve (12) inches. Any compacted clay seal shall be visually classified, recompacted and tested as described in Section IV, Subbase Preparation, of the Department's *Guideline 5 - Quality Assurance for Construction of Landfill and Surface Impoundment Liners, Caps and Leachate Collection Systems* (see Attachment 2). Replacement of the zones of higher hydraulic conductivity and the placement of compacted clay shall be addressed in the final quality assurance/quality control report to the Department.

- Prior to any construction of a new or expanded cell, the Department shall be notified of such construction to be afforded the opportunity to view the new or expanded unit and help verify the construction, including, but not limited to, the five-foot perimeter clay buffer or seal emplaced between the solid waste unit and the adjoining Leonardite. No disposal in a new unit or cell is approved until the Department reviews details on the construction, formally inspects the facility and formally approves the documentation on the facility construction.
- During operations or construction, should any areas of subsidence or voids be observed, the Department shall be notified within five (5) days of occurrence and any disposal or construction activities must cease. The Department reserves the right to require appropriate modification or remedial activities to address any disruption in the landfill base.

**F. Specific Conditions:**

**Inert Waste Landfill:**

**F.1.** The facility shall not be used for the disposal of household garbage and putrescible waste; asbestos; soluble wastes (fly ash, salt, etc.); animal carcasses; waste grain, seed and elevator screenings; liquids; unrinsed pesticide containers; lead-acid batteries; used oil; scrap metal; metal appliances; PCB waste/oils; hazardous wastes [i.e., ignitables

(solvents, paints and fuels), corrosives (acids and alkalies), reactives, toxicity characteristic and listed wastes]; electronic waste (televisions, computers, monitors, printers, copiers, materials containing circuit boards, ballasts, capacitors, etc.); mercury-containing devices (fluorescent lighting, switches, thermometers, thermostats, etc.); hazardous materials; sludges; manure; septic tank pumpings; and infectious wastes. Grass and leaves may not be placed in any disposal unit; however, clean materials free of plastics, trash and garbage may be stockpiled for composting if approved in this permit.

This facility is not approved for managing radioactive materials or Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM). If the facility is to be used for disposal of inert waste from oilfield service companies or companies engaged in or related to oilfield exploration and production activities, the Permittee must actively educate such waste generators of the waste acceptance and waste rejection requirements and the Permittee must survey such waste materials for TENORM and other prohibited waste materials.

- F.2.** The facility is authorized for disposal of inert wastes unless otherwise approved by the Department. "Inert waste" means nonputrescible, non-water-soluble solid waste that will not in any way form a contaminated leachate. Inert waste includes but is not limited to: (1) construction and demolition material such as wood, bricks, masonry, concrete (cured) and incidental metal resulting from the demolition or razing of buildings, roads and other structures; (2) trees and tree branches; (3) incidental metal wastes that do not contain oils, solvents, PCBs, or other similar materials; (4) bottom ash from coal-fired boilers; and (5) waste coal fines from air pollution equipment.
- F.3.** Metal items, including, but not limited to, major appliances, metal furniture, scrap metal, etc., may not be collected or transported for disposal to any solid waste disposal unit or facility unless such unit or facility has provision for intermediate storage and recycling of these materials and all such materials are appropriately segregated for recycling. Any metal items that may contain oils, fuels, antifreeze, solvents, PCBs, refrigerants or other similar materials shall be drained before stockpiling or provisions shall be made to properly remove and recycle such materials before they leak or spill.
- F.4.** The owner/operator shall undertake a program to educate waste generators and haulers on appropriate measures to reduce, reuse and recycle wood materials and shall help facilitate, implement or provide appropriate procedures and services to reduce waste disposal as described in NDCC Section 23-29-02. Within three (3) years of the permit issuance date, the owner/operator shall demonstrate substantial efforts to promote at least a 40% reduction of waste disposal. A description of recycling and waste reduction activities and an estimate of the volume and percentage of waste which has been diverted shall be included in the annual report to the Department.

- F.5.** Except as modified by conditions of this permit, this facility and related waste management units and structures shall be designed, constructed, operated and closed in accordance with previous correspondence and documents contained in Departmental files pertaining to this facility and as described in the documents enumerated below, which are hereby incorporated by reference in this permit.
- a.** *Application for a Solid Waste Management Facility Permit, North Dakota Department of Health – Division of Waste Management SFN 19269 (4-2010)*, received on January 4, 2016;
  - b.** Interstate Engineering Eco Park Inert Landfill and adjacent Montana-Dakota Utilities former underground mine extent, final evaluation of 43 soil borings results and diagrams received on November 11, 2015 and approved by the Department on November 18, 2015;
  - c.** *Proposed Eco Park Inert Landfill Work Plan* received on November 24, 2014 from Interstate Engineering, Inc., Fergus Falls, MN, and approved by the Department on December 3, 2014;
  - d.** *Eco Park Inert Landfill Pre-application* received on April 29, 2013 from Interstate Engineering, Inc., Fergus Falls, MN, and approved by the Department on October 9, 2013; and
  - e.** Future submittals approved by the Department may supersede or supplement items listed above.
- F.6.** The owner or operator shall design, construct, maintain and operate the facility in a manner to minimize the possibility of a fire, explosion or any unplanned sudden or nonsudden release of solid waste or solid waste constituents to air, soil, groundwater or surface water which could threaten human health or the environment.
- F.7.** All waste operations shall be properly maintained to minimize the potential for fire. The working area of the disposal operation shall be maintained in as small an area as practicable, not to exceed **15,000** square feet before cover is applied. Adequate cover shall be stockpiled near the operating area to cover the waste to a depth of two (2) feet in the event of a fire. The Department may adjust the size of the working area if needed, based on waste receipts, equipment, compliance and submittal of an updated sequential development plan that demonstrates orderly and efficient operations.
- F.8.** The facility shall be operated in full accordance with the approved Plan of Operation and the waste screening provisions. All activities at the site will be conducted in a manner that will minimize the risk of fire. No open flames or smoldering material will be allowed near the fill area.
- F.9.** Operations and sequential partial closure shall be implemented such that the working face or open area (the area that has not been covered or closed) of the landfill must be

limited in size to as small an area as practicable. The open area of the inert waste landfill shall not exceed **15,000** square feet before cover is applied. Heavy equipment shall routinely run over the lifts of waste material (one foot to two feet maximum) at least four to five times or more as necessary to adequately break up and compact the waste material. At maximum, areas that have not been formally closed with the required two (2) feet of final cover shall be no larger than **80,000** square feet. All wastes, including, but not limited to, the working face must be covered at least two times per year with a minimum of six (6) inches of suitable earthen material. Grade stakes shall be placed as necessary to ensure filling activities follow the approved closure grades. The Department may adjust the size of the working area and maximum open area if needed, based on waste receipts, equipment, compliance and submittal of an updated sequential development plan that demonstrates orderly and efficient operations.

- F.10.** Adequate emergency cover soil (in addition to the dirt needed for normal fill and cover activities) shall be stockpiled in close proximity to the disposal area to be used in the event of a fire or other emergency. These stockpiles shall, at minimum, be equivalent to two (2) cubic feet per square foot of open area plus enough dirt to cover unclosed areas of the landfill with at least two (2) feet of dirt.
- F.11.** All earthen material must be maintained on-site (to be used for all construction, cover, closure and revegetation activities) unless removal from the site is authorized by the Department.
- F.12.** All personnel involved in solid waste handling and in the facility operation or monitoring must be provided a copy of this permit and shall be instructed in specific procedures to ensure compliance with the permit, the facility plans and the state rules as necessary to prevent accidents and environmental impacts. Documentation of training such as names, dates, description of instruction methods and copies of certificates awarded must be placed in the facility's Operating Record. In addition, a copy of this permit, pertinent rules, guidelines and forms shall be posted at a prominent location within the facility.
- F.13.** Disturbed areas shall be planted with a cover crop to control erosion, weeds and windblown dust. Upon placement of final cover on any portion of the landfill and upon construction of facility berms, ditches, etc., revegetation practices, procedures and erosion control measures shall be provided to address the issues identified in the attached guidelines on revegetation and native grass planting procedures for solid waste landfills (*Guideline 24 – General Native Grass Seeding* and *Guideline 26 – Soil Surveys and Management of Suitable Plant Growth Material and Plant Rooting Soil for Solid Waste Disposal Facilities*) (Attachments 3 and 4). However, the final seed mix may be adjusted based on consultation with local soils and native grass experts, subject to Departmental approval. Placement of final cover shall include placement of erosion control measures such as straw or mulch incorporation, erosion control matting, etc. The area shall also be promptly planted with a cover crop so as to provide near-term protection of the soil and seed bed.

- F.14.** Facility operations, construction and ancillary activities shall avoid disturbance of environmentally-sensitive or erosion-prone areas characterized by strong slopes, thin soil conditions or sensitive vegetation. Steep, erosion-prone or unstable areas outside of the approved plans are not suited for use, storage, soil borrow activities or development unless formally approved as a modification of this permit subject to NDAC Chapter 33-20-02.1. Development of any area that exceeds a six percent (6%) slope shall not be undertaken without formal Departmental approval and incorporation of appropriate erosion control and revegetation provisions.
- F.15.** The applicant is required to send the landfill operator (s) to an inert waste operations and screening workshop given by the North Dakota Department of Health. The operator (s) must attend one (1) workshop within two (2) years of the permit issuance date.
- F.16.** The facility's annual report shall include a summary of educational and outreach efforts to reduce, reuse and recycle materials including scrap metal, appliances, wood materials, concrete aggregate, asphalt, compost and all other materials recycled. The report shall include the amounts and types of materials received, the amounts in any stockpile, the amounts marketed or given away, the amounts and types of material processed, and any other information needed to accurately document the facility or community waste reduction and recycling efforts.

**G. Scrap Tire/Rubber Stockpile Unit:**

- G.1.** The Permittee is allowed to accumulate up to the equivalent of one semi-trailer load of scrap tires in a pile to be located a minimum of 100 feet from the active landfill working face to reduce fire hazards. Any such pile must be approved by the Department and the Permittee is required to set aside adequate funds for any processing, transportation and disposal. The stockpile must be located in a nearly level area that is readily accessible by firefighting equipment and shall avoid steep areas, drainageways or inaccessible areas. All prudent measures must be employed to minimize the risk of fire, insects or vermin. All tires must be managed in accordance with state rules and any solid waste permit.
- G.2.** Disposal of scrap tires in the inert waste landfill is allowed so long as they are carefully layered in the bottom of a disposal trench or working area, six (6) inches of soil or approved cover material covers the tires and then covered with no more than twenty-four (24) inches of bulkier or heavier waste placed over the tires area. This layer of bulkier waste must be well-compacted by running over the material with heavy equipment at least five times in all of the operating area. The well-compacted waste must then be covered with at least twelve (12) inches of interim cover.

**H. Concrete and Asphalt Storage and Recycling Unit:**

- H.1.** The owner/operator may maintain a waste concrete and asphalt temporary storage and recycling unit on the permit area for resource recovery and marketing. Stockpiled

concrete and asphalt may be marketed for construction purposes including: road bases, aggregate for hot mix asphalt, drainage materials or other uses. Concrete and asphalt must be crushed as needed to limit the storage area of the recycled materials stockpile to no greater than 5,000 cubic yards without Departmental approval. The Permittee must demonstrate that they are setting aside adequate funds for processing and marketing the concrete and aggregate into derived aggregate.

**I. Yard Waste Compost Unit:**

- I.1.** The owner/operator may maintain a yard waste compost unit on the permit area, subject to approval by the Department. The compostable material shall be restricted to leaves, grass clippings and similar yard waste material, straw and produce from supermarkets and other materials approved by the Department. No plastic, garbage, debris or trash shall be commingled in the compost pile. A summary of the operation, turning, moisture levels, temperature levels, odors, training of operators and other issues shall be included in the facility's Operating Record and shall be summarized in the owner/operator's routine annual report. Operation of the compost unit shall promote timely and orderly aerobic breakdown of compostable materials. The owner/operator shall make provisions to educate and promote use of compost materials for landscaping, land recovery, gardening, etc.

**J. Waste Woodpile/Processing Unit:**

- J.1.** The owner/operator may stockpile reasonable amounts of wood and wood products so long as efficient and safe operation is afforded and may operate wood processing equipment in accordance with all Departmental permits. The amount of ground wood stockpiled on-site must not exceed 5,000 cubic yards without Departmental approval. The owner/operator is encouraged to promote and support measures to minimize wood waste in the area served and promote utilization of wood and wood-derived materials for appropriate uses. The facility's annual report shall include a summary of educational and outreach efforts to reduce, reuse and recycle wood; the amounts and types of wood materials received (tree branches, pallets, lumber, construction/demolition, etc.); the amounts in each wood stockpile; the amounts marketed or given away (firewood, pallet recycling, construction lumber, etc.); the amounts and types of processed wood materials stockpiled; the amounts of wood processed; and the amounts of wood products used or marketed for mulch, fuel or other appropriate uses.
- J.2.** Any wood stockpile shall be free of oil, rubber, asphalt, asphalt shingles, tar paper, upholstered furniture, household waste, plaster, non-wood siding, asbestos, insulation, grass, leaves and other potential contaminants.

**K. Metal and Appliance Stockpile/Recycling Unit:**

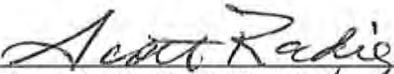
- K.1.** The owner/operator may stockpile segregated amounts of scrap metal and appliances for recycling. The owner/operator is encouraged to promote and support measures to

recycle metal and segregate it from the waste stream. Appliances containing refrigerant, including, but not limited to, refrigerators, freezers, air conditioners, and dehumidifiers, shall be carefully lined up so as to allow removal of refrigerants. Electronic waste or other unallowed materials shall not be commingled in the recycling pile. Metal items containing oils, greases, etc., shall be properly drained prior to delivery to the site. The facility's annual report shall include a summary of educational and outreach efforts to reduce, reuse and recycle metal, the amounts and types of metal materials received and the amount removed for recycling.

Should questions or issues arise, the owner or operator shall contact the North Dakota Department of Health at 701-328-5166.

In consideration of information provided regarding the facility and its operation and in consideration of the conditions above, the North Dakota Department of Health hereby issues a permit to the Eco Park Inert Landfill.

This permit is effective as of June 28, 2016 and shall remain in effect until June 28, 2021, unless modified, superseded, or revoked under NDAC Section 33-20-02.1-06 or continued in accordance with NDAC Section 33-20-02.1-07.

  
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Scott A. Radig, P.E., Director  
Division of Waste Management

6-28-2016  
\_\_\_\_\_  
Date

Attachments:

1. Guideline 4A - Recordkeeping and Reporting by Owners or Operators of Solid Waste Facilities
2. Guideline 5 - Quality Assurance for Construction of Landfill and Surface Impoundment Liners, Caps and Leachate Collection Systems
3. Guideline 24 - General Native Grass Seeding
4. Guideline 26 - Soil Surveys and Management of Suitable Plant Growth Material and Plant Rooting Soil for Solid Waste Disposal Facilities



**GUIDELINE 4A - RECORDKEEPING AND REPORTING BY OWNERS OR OPERATORS OF SOLID WASTE FACILITIES (other than Municipal Solid Waste Landfills)**

North Dakota Department of Health - Division of Waste Management

918 E. Divide Ave., 3rd Fl., Bismarck, ND 58501-1947

Telephone: 701.328.5166 • Fax: 701.328.5200 • Website: [www.ndhealth.gov/wm](http://www.ndhealth.gov/wm)

Updated 02-2014

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**I. Introduction**

The owners or operators of all waste management facilities, except those permitted by rule, are required to keep operating records and make routine reports to the North Dakota Department of Health. The owner or operator is required to maintain records of demonstrations, inspections, monitoring results, design documents, plans, operational procedures, notices, cost estimates and financial assurance documentation. A new facility is not allowed to accept waste until the Department has received and approved a report, which includes narrative, drawings and test results which certify that the facility was constructed in accordance with approved plans and specifications and as required by the permit. In addition, the owners or operators must maintain records on the categories and weights or volumes of solid waste received at the facility.

Appropriate maps, pictures and diagrams should be included with the regular records and reports to describe the site. Information with the pictures should include (1) the name of the facility; (2) the subject; (3) the location; (4) the date and time; (5) the photographer; (6) weather conditions; and (7) pertinent comments and observations. It is beneficial to formalize the reporting requirements so that they are consistent and easily tracked. It is suggested that the owner and operators keep copies of all information for their facility files maintained at the approved site. In addition, it is often beneficial to file copies of the reports with any local governmental bodies, health districts or other interested regulatory or governmental officials.

**Note:** Municipal solid waste landfills must comply with the recordkeeping requirements found in 40 CFR § 258.29. The Department has a separate guideline (Guideline 4) for municipal solid waste facility owners/operators.

Certain smaller facilities, such as small inert landfills and small community transfer stations also may not be required to address this specific guideline.

**II. Recordkeeping Requirements**

The operating record should be maintained in a single location. The location may be at the facility or at corporate headquarters or city hall, but should be near the facility within the state of North Dakota. Records should be maintained throughout the life of the facility, including the postclosure care period. Upon completion of each document required in the operating record, the Department should be notified of its placement in the operating record. Recordkeeping at the facility should include the following:

1. Location restriction demonstrations. Demonstrations are required for any location restrictions. The location restrictions apply to:
  - a. Airports

- b. Floodplains
  - c. Faulted areas
  - d. Seismic impact zones
  - e. Unstable areas
  - f. The General Location Standards of NDAC 33-20-04.1-01.
2. Inspection records, training procedures and notification procedures.  
Inspection records should include:

- a. Date and time wastes were received during the inspection;
- b. Names of the transporter and the driver;
- c. Source of the wastes;
- d. Vehicle identification numbers; and
- e. All observations made by the inspector

Training records should include procedures used to train personnel for waste acceptance requirements, including recognition of hazardous waste, PCB waste, asbestos, radioactive materials, and other problem or prohibited waste requirements.

Notification to EPA, state and local agencies should be documented.

3. Demonstration, certification, monitoring, testing, or analytical findings required by the groundwater criteria. Documents to be placed in the operating record include:
- a. Documentation of design, installation, development and decommission of any monitoring wells, piezometers and other measurement, sampling and analytical devices;
  - b. Certification of the number, spacing and depths of the monitoring systems;
  - c. Documentation of sampling and analysis programs and statistical procedures;
  - d. Notice of finding a statistically significant increase over background for one or more of the constituents at any monitoring well at or the compliance boundary;
  - e. Certification that an error in sampling, analysis, statistical evaluation, or natural variation in groundwater caused an increase (false positive) of constituents, or that a source other than the Solid Waste Management Unit (SWMU) caused the contamination (if appropriate);
  - f. A notice identifying any constituents that have been detected in groundwater and their concentrations;
  - g. A notice identifying the constituents that have exceeded the groundwater protection standard;
  - h. A certification that a source other than a SWMU caused the contamination or an error in sampling, analysis, statistical evaluation, or natural groundwater variation caused the statistically significant increase (false positive) in constituents (if applicable);

- i. The remedies selected to remediate groundwater contamination; and
  - j. Certification of remediation completion.
4. Closure and postclosure plans and any monitoring, testing or analytical data associated with these plans.

The facility owner or operator is required to place a copy of the closure plan, postclosure plan and a notice of intent to close the facility in the operating record. Monitoring, testing or analytical data associated with closure and postclosure information generated from groundwater and any other required monitoring must be placed in the operating record. A copy of the notation on the deed to the SWMU property, as required following closure along with certification and verification that closure and postclosure activities have been completed in accordance with their respective plans, also must be placed in the operating record.

5. Estimates and financial assurance documentation required. The following documents must be placed in the operating record:
- a. An estimate of the cost of hiring a third party to close the largest area of all SWMUs ever requiring final cover;
  - b. Justification for the reduction of the closure cost estimate and the amount of financial assurance (if appropriate);
  - c. A cost estimate cost of hiring a third party to conduct postclosure care;
  - d. An estimate and financial assurance for the cost of a third party to conduct corrective action; and
  - e. A copy of each financial assurance mechanism.

### III. Reporting Requirements

Nonhazardous solid waste facilities such as landfills, surface impoundments, land treatment facilities, waste piles, transfer stations, treatment facilities, and other types of facilities in North Dakota are required to submit regular reports to the North Dakota Department of Health as required in the North Dakota Solid Waste Management Rules, approved plans and/or permit conditions. These guidelines supply guidance to help meet appropriate reporting requirements. **Please review your facility permit to see if additional reporting requirements apply.**

**Electronic Record Submittal:** To help reduce paper, save time and ensure more orderly management of records, unless otherwise requested, routine reports should be submitted to the Department in a digital or electronic format such as a readable and searchable PDF format, Excel Tables for data or similar format consistent with the Department's recordkeeping system. Pursuant to NDAC 33-20-04.1-04, the original signed report must be retained with the facility operating record, which must be kept at the facility or at a location near the facility within North Dakota and approved by the Department. In some cases, the Department may require printed copies in addition to electronic format.

Regular reports help keep the Department informed as to the status of the operation and site conditions. The reports should essentially be a summary of the daily log books, inspections and records kept onsite by the operational personnel and any inspections conducted by other facility personnel. The report should include pictures, maps, diagrams, checklists, etc., to help document site conditions.

Different types of facilities will need to adapt these guidelines to meet their reporting needs. Reporting requirements may be modified, increased or decreased through permit conditions, permit modification, operational plans, or correspondence.

For further information on specific issues, please refer to Department Publications and Guidelines, which are on-line at [www.ndhealth.gov/wm/Publications/](http://www.ndhealth.gov/wm/Publications/).

**A. Waste Accepted, Disposed, Handled, Recycled, and/or Rejected at Facility.**

Disposal facilities must keep records on the types and amounts of waste accepted; the generators of the waste; waste analysis and characteristics; where it is disposed in the facility; and any waste rejected or not accepted. For waste types and amounts of waste disposed, recycled or composted at the facility, computer spreadsheet (Excel) or table summarizing information could be used; a suggested format would be as follows:

Date	Source of Waste	Waste Hauler	Waste Type	Loads	Yardage	Weight (tons)

For facilities that receive regular shipments of waste from a specific generator, the waste record could be reported as a weekly or monthly summary. Facilities that receive small amounts of waste from numerous generators (i.e., individual homeowners in pickups, trailers, etc.) could provide a simple summary of the quantities. Any additional information on the waste characteristics, analysis, liquid content, waste rejection, or other issues should be provided as well as an identification of the disposal area for the wastes. Waste management units or areas should be identified by general dates on a map or diagram. In addition, any special handling for any wastes disposed or allowed to be disposed or otherwise managed at the facility (i.e., asbestos waste, oil contaminated soil, yard wastes, etc.) should be explained and appropriately identified. Any specific problems in the types of wastes or the inclusion of hazardous materials, liquids, ignitable materials, radioactive materials, or other issues with the waste stream should be clearly identified.

**Waste Reduction and Recycling** information as appropriate should also be included in a spreadsheet or table as above on any wastes or recyclable material segregated, stockpiled, composted, or otherwise handled (i.e., scrap metal, appliances, clean or reusable wood, compost piles, etc.). The Department encourages permittees to work with their customers and haulers to encourage recycling and waste reduction activities consistent with NDCC 23-29-02(8), which established a forty percent waste reduction/recycling goal.

**Waste Acceptance and Rejection** issues should be tracked in the routine reports (similar to waste accepted as described above); however, in the event that hazardous, radioactive, ignitable, explosive, or other unacceptable wastes are brought to the facility, or if liquid wastes are likely to have been released or spilled on roads, such issues should be reported as soon as practicable and a waste rejection report must be filed to inform the Department of the issue within 5 days of the rejection of the waste. The Waste Rejection Form is available on the NDDoH website at [www.nd.gov/eforms/Doc/sfn60120.pdf](http://www.nd.gov/eforms/Doc/sfn60120.pdf)

## B. Capacity of Solid Waste Units.

It is important for the Department to have knowledge of solid waste capacity for operating solid waste units, the anticipated dates of closure and a discussion of significant permit modifications. Capacity or airspace questions in this section relate to all cells/units of the approved facility operated under the current permit regardless of whether the cells/units are closed or are not contiguous at the time of this report. If there are more than one type of solid waste units covered under this permit (i.e., a municipal solid waste landfill, an inert waste landfill, waste pile or compost unit, transfer station, etc.), please provide estimations for each separate unit. Landfill units that are formally closed may also be identified as separate units in the report.

Tonnage questions must be based on scale records or, if approved, a reasonable conversion factor for converting cubic yards of waste **as placed (compacted) in the unit** to tons (or vice versa). For landfills, the Total Airspace Filled estimation must cover the period between the opening date (onset of disposal) of the unit and the end of the reporting year of the report (11:59:59 p.m. or 24:00 hours, December 31). The Airspace Used of Reporting Year must be for the calendar year of the reporting year. If an aerial or ground survey has not been completed within the calendar year, an updated survey must be completed the next year. Airspace measurements include daily and intermediate cover, but not final cover.

FOR EACH SOLID WASTE DISPOSAL UNIT OR ACTIVITY (Landfill, Surface Impoundment, Surface Impoundment Being Closed with Waste In Place, Waste Pile, Compost Unit, etc.):

1. Total (maximum) airspace (original or initial capacity) approved in permit (cubic yards):
2. Total airspace filled or used (cubic yards) by the end of the reporting year?
3. Total airspace filled or used (cubic yards) at the end of the previous year?
4. Amount of airspace filled or used (cubic yards) during the reporting year?
5. Remaining airspace or capacity?
6. Anticipated date when the facility will be full?
7. Tonnage disposed during reporting period:
  - a. If conversion factors are used to convert waste tonnage to cubic yards, what are the factors?
8. Average density of waste disposed in place (tons/cubic yard) and how calculated?
9. Do you plan on constructing any new lined areas, cells or expansions (including vertical expansions) within the next year?
10. Do you foresee applying for a major permit modification in the near future?
  - a. If so, please describe what and when?

11. Date facility last surveyed (most facilities should do an annual survey or assessment):
12. Attach copy of last survey, if not already on file.

**C. Operators and Training.**

Please list the operating staff, their duties, a description of training they have received, and if they are certified or trained by the state of North Dakota, the last date of such training/certification:

Name:

Duties (Operator, Gate Monitor, Manager, etc.):

Years of experience – On this facility:

At other facilities:

Training or certification type and expiration date (NDDoH, SWANA, Stormwater, Composting, etc.) – list on separate sheet if needed:

Will this employee be attending training during the oncoming year?

If so, please describe:

**D. Equipment.**

Describe routine equipment used on the site, the condition and repair issues, and the source and type of equipment used as backup or contingency management of the site in the event of equipment breakdown, unusual circumstances and/or emergencies.

**E. Control of Spillage, Windblown Debris, Dusts, Odors, and Vermin.**

Assess any waste spillage and subsequent cleanup, decontamination of access roads, haul roads and/or in waste management areas and solid waste units. Discuss any significant release of windblown waste, dust and/or debris to the surrounding area and subsequent cleanup of windblown debris. The generation of dust, odors or vermin should also be regularly assessed and appropriate control measures detailed. Corrective measures to prevent or minimize spillage, dust, debris, etc., can also be addressed.

**F. Condition of Berms, Small Stormwater Impoundments, Dams and Noncontact Surface Water Containment Structures.**

This section should address the construction, repair, maintenance or replacement of any berms, dams, ponds or other containment structures around the waste management areas and any water or waste contained in them. Inspection procedures may adapt some the measures discussed below for large surface impoundments.

**G. Surface Water Run-on and Runoff Control, Stormwater Management and Erosion Control.**

This section should discuss any significant surface water run-on or runoff events, including flow into the solid waste management areas, flow out of the management area, surface water interception and erosion control by berms, dams, and other stormwater management measures and any other pertinent information. To help monitor surface water run-on and runoff controls, all facilities should keep regular track of how

much rain falls in the area of the facility and during spring thaws, and any appreciable run-on/runoff from snowmelt. Appropriate maps or diagrams should be provided to show the areas of management activity and the surface water management/erosion control features. If appreciable amounts of water accumulate onsite or around the site, some surface water analysis may be required to document water quality. Any controlled or uncontrolled release of water should be addressed. Departmentally approved procedures must be followed if any water is to be released from the site. Surface water quality and management information, as required or necessary, should also be submitted in this section of the report. A copy of any information required for a Stormwater Pollution Prevention Plan should also be provided to the Division of Waste Management in addition to the Division of Water Quality.

#### **H. Removal and Stockpiling of Suitable Plant Growth Topsoil and Subsoil.**

Disposal facilities must remove all suitable plant growth material (soil A and upper part of the B horizons) from areas to be disturbed. This should include the material in the disposal area and any other areas disturbed by operation activities, including haul roads, equipment storage, parking areas, etc. The report and maps should address suitable plant growth material (SPGM) removal and stockpiling, revegetation of stockpiles, erosion controls, and any removal of topsoil SPGM or subsoil SPGM from stockpiles for management or respreading on reclaimed areas. Topsoil SPGM and subsoil SPGM stockpiles must be protected and adequate signs placed at the piles to inform others that the piles are not to be disturbed or material removed without authorization. The signs must include a contact name and phone number should any questions arise. For newly stripped areas, monuments should be left as necessary to document the depths of SPGM topsoil and subsoil removal. The stockpiles, revegetation, signage, and any removal, erosion or other issues should be routinely inspected and discussed in the routine reports.

#### **I. Liner Protection and Integrity, Geologic and Soil Conditions in the Solid Waste Management Areas.**

Facilities with liners and leachate management/collection systems should routinely assess the condition of these construction features, looking for erosion, cracking of soil liners, tears in synthetic materials, erosion or vegetation in clay liners, and any other significant features. Desiccation and freeze-thaw conditions significantly affect clay liners. Unprotected liners may need to be assessed and/or rebuilt in part or in whole. As appropriate for the disposal facility, this section should address the types of geologic materials or soils encountered in the solid waste management areas or excavations.

This section should especially address any significant variations in normal operating procedures or conditions. This might include interception of any lignite, sand, gravel, or fractured materials; any interception of groundwater; any breaching or damage to the liner; and the general condition of the liners underlying the facility. For any liner construction or repair, appropriate Departmentally approved Quality Assurance/Quality Control procedures must be followed and appropriate plans and detailed reports filed with the Department.

**J. The Condition, Operation and Maintenance of Leachate Collection or Management Systems.**

Owners/operators of facilities with leachate collection or extraction systems need to regularly inspect and maintain such systems. This would include, but not be limited to an assessment of the condition of leachate collection sand bedding, gravel sumps, piping, pumping equipment, manholes, and other structures should be provided. Any damage to such facilities and/or subsequent repair should be addressed. A quantification and schedule or frequency of the leachate removed from the site, the level of leachate within the facility, the quality of the leachate and its management should be addressed. Piping and access points need to be jetted or cleaned, at minimum, on an annual basis.

**K. The Status of Disposal Operations.**

This section should address a description of the condition of the operation or disposal area and the filling of the facility. Sequential partial closure must be implemented as necessary to keep the disposal area as small as practicable and to close filled areas in a timely manner to facilitate final reclamation and closure. At minimum, the report should include a summary of routine inspections and inspection checklists.

For landfills, the report should evaluate and discuss (1) the square footage of the working face or open area of a landfill (which normally must be limited in size to as small an area as practicable); (2) the slope of the working face (nearly level is best, but should not exceed 25% slope) to ensure optimal access and compaction; (3) waste placement and spreading (placement at the base of the working face with spreading and compaction working upslope) to ensure adequate placement and compaction; (4) waste compaction (routine compaction with three to five passes of heavy equipment over each square foot of waste) helps maximize usage of landfill space and minimize water infiltration and windblown waste; (5) placement of routine cover and interim cover; (6) water management, including measures to minimize concentration of water on the waste, to prevent ponding of surface water, to minimize infiltration of surface water, to control erosion, to prevent runoff off-site and other considerations; (7) as necessary, discuss any fires and measures to control fires; (8) any settlement, slumping or erosion of filled areas; (9) control windblown dust; and (10) other issues necessary or required to keep the Department informed of operational issues.

**L. Composting, Land Treatment, Waste Treatment Activities.**

For waste treatment, compost facilities, land farms, or other treatment units or facilities or solid waste facilities that maintain an operation for treating oil, gasoline or other hydrocarbon contaminated soil, the report should document appropriate activities as outlined in the permit, rules and guidelines. This should include the summary of waste accepted or handled, the adequacy of treatment, materials removed, the amount of materials in the process, and any spillage, release, runoff or run-on controls, dust or other issues in the operation. Additional information specific to treatment activities would include the inspection schedule; rates of waste application or treatment; appropriate waste characterization; the application of any fertilizer, water, amendments, inoculants, or other additives; treatment activities; material sampling and waste breakdown rates; stormwater control; dust control; and any other pertinent information.

For facilities that operate and maintain compost units for yard wastes, manure, sludge, or other biodegradable wastes, general information should be provided as outlined in this guideline as well as the monitoring of compost pile odors, moisture, temperature, and general condition. A summary of the pile size, frequency of turning, moisture conditions, and maintenance should be provided. Include a summary of any admixtures or other waste materials (food waste, car wash sump waste, sewage sludge, manure, animal remains, etc.) that are co-composted. The results of any routine analysis of the compost material should be included in the report. Marketing or use of compost should also be addressed to help meet state waste reduction goals.

#### **M. Surface Impoundments.**

Any impoundments onsite for managing regulated waste materials, leachate, and water that has been in contact with or degraded by solid waste materials, or for stormwater management, should be assessed in the regular reports. Inspection procedures and checklists shall be developed to address, at minimum, appropriate design, operation, inspection, evaluation and maintenance measures as outlined in the following publications and guidelines:

- North Dakota Dam Design Handbook
- Technical Manual for Dam Owners – Impacts of Plants on Earthen Dams (FEMA 534)
- Technical Manual for Dam Owners – Impacts of Animals on Earthen Dams (FEMA 473)
- Federal Guidelines for Dam Safety – Glossary of Terms (FEMA)
- Technical Manual: Conduits through Embankment Dams (FEMA)
- Filters for Embankment Dams – Best Practices for Design and Construction (FEMA)
- Technical Manual: Outlet Works Energy Dissipators (FEMA)
- Guidance Document for Coal Waste Impoundment Facilities & Coal Waste Impoundment Inspection Form, West Virginia Water Research Institute, West Virginia University, Prepared for: National Technology Transfer Center, Wheeling Jesuit University; Dec. 2005.

An inspection procedures manual and checklist should be developed pursuant to referenced guidance, facility plans and state law and rules. An electronic copy of the manual and checklists shall be submitted to the North Dakota State Water Commission and the Department who reserve the right to require modifications or additions, if deemed necessary.

Identified issues regarding the erosion evaluation, assessment of piping, animal burrowing, evaluation of valves, inspection procedures, vegetation control, evaluation and maintenance of piping and valves, any repair, and any other prudent measures to maintain the surface impoundments shall be incorporated into the routine inspection, training and record-keeping requirements and shall be summarized in routine reports for this facility.

Reports shall also include, but not be limited to the volume in the pond; remaining capacity (excepting the two feet of freeboard); the amount of freeboard; the condition of any liners, piping, spillways, or other features; any leakage, spillage, overtopping, or other unforeseen events; and other appropriate management measures.

The report shall include, at minimum, annual representative analysis of water and/or waste contained in the impoundment for the parameters reasonably expected to be contained in the waste or water, the parameters for the approved groundwater monitoring plan and/or a list of parameters approved by the Department.

**For surface impoundments to be closed with waste in place**, many of the issues regarding landfill operation (see above) may be adapted for such facilities to show orderly filling, maintenance, operation, and closure.

#### **N. Site Reclamation.**

All facilities will need to be cleaned up, debris removed and areas regraded as necessary. Nondisposal facilities should ensure the area is properly closed and revegetated as appropriate.

For disposal facilities, this section should address the final covering as it is completed and, as appropriate, as identified in the Facility Operation and Closure Plan. This should include the condition of the final slope of the site as identified in the plans and as provided in closure guidance; the construction of a low permeability cap over the landfilled wastes utilizing compacted clay or other material as approved by the Department; the placement of additional fill soil or drainage media; the replacement of any buffer soil and suitable plant growth material; and the final revegetation of filled areas of the site. A description of the Quality Assurance/Quality Control procedures for site capping and reclamation should be addressed and appropriate plans and reports filed with the Department.

Closed facilities must be periodically inspected to address vegetation establishment and condition, weed control, plant coverage, and any significant surface water erosion, settling, repair of settled areas, cover repair, drop structures, or any other pertinent issues. Drainage swales and the condition of berms, diversions, etc., must be evaluated. Some steeper facilities may have additional requirements to monitor erosion and vegetation.

#### **O. Groundwater and Surface Water Monitoring and Assessment of any Leachate Seepage.**

The report should include a section on groundwater and surface water monitoring for the reporting period or this could be in a separate report. This information should include water levels and laboratory analysis as required in the facility permit. The inspection procedures should also evaluate the condition of the wells and any springs or leachate seepage in or around the site.

#### **P. General Site Operation Standards.**

The report should include a summary of the general disposal standards. An example for a landfill would be the standards as outlined on a specific facility checklist. The assessment should be made on a regular basis as required in the permit or operating plans or, at a minimum, on a weekly basis for inert waste sites. Most facilities should monitor these conditions every day the site is open; however, the checklist could be completed weekly. A checklist should be adapted and developed for the various types of facilities. The appropriate checklist should be completed, maintained with the facility

records and a summary of the inspection reports should be filed with the Department. Department staff can assist in developing appropriate checklists.

#### **Q. Permit and Site Development and Operating Plan.**

A facility owner/operator should regularly review the site development plans, operating plans, contingency plans, and other specific facility plans as well as the permit and the North Dakota Solid Waste Management Rules to ensure that the facility is in compliance with all necessary requirements. Any anticipated or necessary changes may necessitate a change in the plans and/or the permit. Copies of all necessary documents, the permit and the state rules should be readily available at the site and site personnel should be well trained in their requirements. Any updates of the contingency plans or site plans are subject to Departmental approval. Significant changes in or changes in the method of operation of a facility may necessitate a formal modification of the permit.

#### **IV. Conclusion**

The Department appreciates the work and effort to adequately inspect facilities, keep records and provide routine reports. **Again, submittal of electronic reports and submittals in a readable and searchable PDF format, Excel Tables for data or similar format consistent with the Department's recordkeeping system is strongly encouraged to help reduce paper, save time and ensure more orderly management of records.** Should you have any questions or comments, please feel free to contact the Department.

For further information on other issues, please refer to the Publications page of the Division website.



## **GUIDELINE 5 – QUALITY ASSURANCE FOR CONSTRUCTION OF LANDFILL AND SURFACE IMPOUNDMENT LINERS, CAPS AND LEACHATE COLLECTION SYSTEMS**

North Dakota Department of Health – Division of Waste Management

918 E. Divide Ave., 3<sup>rd</sup> Floor, Bismarck ND 58501-1947

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Revision: 11/2010

### **I. Introduction**

Quality Assurance (QA) procedures are necessary to assure proper construction of solid waste landfills and surface impoundments. The purpose of this document is to provide detailed recommendations to field personnel, engineers and permit applicants regarding the minimum quality assurance procedures for the construction of facilities and to ensure documentation of construction. These QA recommendations do not in any way reduce the responsibilities of individual contractors or permittees to achieve facility design or performance specifications.

Quality assurance refers to the function of the owner or owner's representative, usually an independent testing company, to monitor construction activity and review construction data and reports from contractors, manufacturers and suppliers. Contractors, manufacturers and suppliers must supply Quality Control (QC) information for their products and equipment. The information becomes part of the project quality assurance/documentation report that is often submitted to the Department.

A specific sequence of procedures is necessary for the construction of liners. These procedures are usually provided with an application for a permit and occasionally required by a permit. Documentation of each procedure becomes necessary to demonstrate that design or performance specifications have been achieved. Visual inspection, survey, field and laboratory testing will be undertaken as appropriate. Recommendations for certifications are listed, including testing frequencies and product specifications. A qualified QA inspector and/or surveyor, independent of the owner or owner's representative, can provide oversight to certify proper construction.

This document has been prepared by the Department for the purpose of assisting owners and operators to fulfill regulatory and permit requirements. Questions and comments are welcome, and can be addressed to the Division of Waste Management, North Dakota Department of Health, 918 E. Divide Ave., 3rd Fl., Bismarck, ND 58501-1947.

### **II. Soil Investigation**

The soil material to be used for the construction or installation of any backfill or subliner, subbase, clay liner, drainage layer, or landfill cap must be clearly identified and described in a soil investigation to be submitted to the Department with any permit application or as deemed necessary (NDAC 33-20-03.1-02, subsection 6). The soil investigation should include a map and a description of borings along with a determination of soil parameters for any material to be used during construction. Appropriate soil parameters for a soil investigation include, but are not limited to:

1. In-place moisture-density
2. Atterberg limits
3. Grain-size distribution
4. Laboratory moisture-density relationship (ASTM D698 or D1557)
5. Coefficient of permeability

### **III. Backfill or Subliner Installation**

For some landfills in strip mined areas, it is necessary to raise the bottom elevation of the disposal units. The earthen materials used for backfill must be selected and placed to ensure proper stability for the landfill and the liners and to help minimize leachate constituent migration. The backfill placement should be documented as follows:

1. A grid pattern should be established at the base and sides of the excavation, generally 100 foot spacing. Survey points should be taken and recorded on drawings to be submitted to the Department in the QA report.
2. Minimum one (1) standard or modified proctor test for every 10,000 cubic yards with an additional test for any change in the major soil type.
3. Grain-size distribution and soil classification of backfill tested, at minimum, once each 5000 cubic yards, with any changes in the major soil type.
4. Suitability of backfill, at minimum each twelve inches, tested as follows:
  - a. Visual check of soil characteristics as the material is placed.
  - b. Density test. Meet 90 percent modified or 95 percent standard proctor density, one test per 100 foot grid.

Location method of all tests should be documented for reports.

#### **IV. Subbase Preparation**

Construction of appropriate berms, embankments and subbase preparation will occur prior to liner installation. A survey of the subgrade area is necessary prior to the start of liner construction. The subgrade surface should be smooth and free from material prior to the start of liner construction. The subgrade should be documented as follows:

1. A grid pattern should be established with additional points placed at the toe of all slopes and at the low point in each cell. Survey points should be taken and recorded on drawings for inclusion with reports.
2. Tests of the top six inches of the subgrade are needed as follows:
  - a. Minimum one (1) standard or modified proctor test (minimum 5-point curve) with an additional test for any change in major soil type.
  - b. Density and in-place moisture testing. Determine in-place moisture content and meet, at minimum, 90 percent modified proctor or 95 percent standard proctor density, one test per 100 foot grid.
  - c. Soil classification. Atterberg limits and grain-size distribution once per 1000 cubic yards of subgrade surface area, at a minimum, and with any change in the major soil type.
  - d. Location method of all tests should be documented for reports.

#### **V. Lysimeter Installation**

Lysimeters should be installed in accordance with appropriate design details. The subgrade elevations and pipe invert elevations should be addressed in permit applications or as may be required by the Department. All values should be entered in appropriate tables. The lysimeter construction should be visually inspected during installation.

## VI. Clay Liner Specifications

For clay liner (and clay caps), the selection and placement of clay soils is critical to meet the required hydraulic conductivity of  $1 \times 10^{-7}$  centimeters per second or less. The condition and moisture level of the soil material has to be monitored closely. Processing of the soil is very important. If the material consists of a claystone, a rock crusher and screen may be utilized to pulverize the material to an adequate consistency.

Appropriate precautions are needed to avoid rocks and gravel larger than 3/4 inch in the liner materials. At minimum, for clay liner soils placed within two feet of the top of the clay liner surface (the upper two feet of the liner), rocks and gravel larger than 3/4 inch must be screened or removed from the soil. A road reclaimer or tillage equipment may be used to break up soil clods. The addition of water or, if necessary, any drying of the soil must be provided for. Placement of the clay soil should be as follows:

1. The clay soils should be placed to achieve a maximum thickness of six inches per compacted lift and compacted to a minimum 90 percent modified proctor or 95 percent standard proctor density. Additional compaction effort may be necessary based on the moisture-density relationship and permeability information.
2. The clay should be compacted 2 to 5 percent wetter than the moisture content at maximum proctor density.
3. Placement and/or compaction of frozen soils is not recommended. Therefore, if frozen soils are identified, they should be removed from the liner. Special precautions to prevent freezing of the clay liner will be necessary. These methods may include soil cover and/or insulation.
4. Proper compaction equipment and methods are necessary. The tamp foot or sheeps foot compactor should weigh, at minimum, 30,000 pounds. However, equipment in the range of 60,000 to 70,000 pounds is better. It is necessary that field equipment properly breaks clay lumps and kneads the clay materials together. At minimum, four to six passes of the compaction equipment per lift of soil are necessary to assure structural improvement of the soil.
5. Visual control to eliminate unacceptable material is necessary. Appropriate testing and documentation during clay liner and clay cap construction are necessary. The soil testing and documentation recommendations follow:
  - a. Density and as-placed moisture content tests, as discussed in item No. 1 above, one (1) density and as-placed moisture content test per 100-foot grid pattern on the base of the cell on every lift and offset on each subsequent lift. Nuclear density testing may be utilized rather than sand cone; however, some limited sand cone testing should be utilized to verify nuclear testing methods. Use of a twelve (12) inch probe could allow for reduced frequency of testing since the probe will effectively monitor two (2) lifts per test. Nuclear

density testing holes must be filled with clay or bentonite. Greater testing frequency should be utilized in confined areas, small facilities, or where thinner liners are allowed.

- b. Moisture-density (Proctor) testing (minimum 5 point curve), at minimum, on every 5000 cubic yards or less of material used and with any change in the major soil type with a minimum of one test per lift of soil. Modified proctor density testing is preferred to standard proctor testing.
- c. Laboratory determination of as-placed moisture content, dry density and Atterberg limits at a minimum frequency of one (1) test per every 5000 cubic yards of material used.
- d. Soil classification tests for grain-size distribution and soil classification at a frequency of, at minimum, one (1) test per every 5000 cubic yards of clay placed or at a frequency of one (1) test per acre and with any change in the major soil type.
- e. Hydraulic conductivity testing of the liner at a frequency equivalent to every third grain-size sample required under item No. 3 above with a minimum of three tests per site or construction phase. Laboratory testing methods utilizing a Shelby tube or on hand carved samples from the liners are inferior and have been documented to under represent actual hydraulic conductivities by a factor of 900 to 1300. Some in situ testing of liner and cap construction utilizing single or double ring devices is preferable to verify lab testing results. Landfill leachate may be used instead of water in the liner tests.
- f. Porosity should be calculated in conjunction with permeability tests.

## **VII. Clay Side Liner Specifications**

Clay side liners may be constructed parallel to the sidewall in instances where side slopes are not overly steep. Problems could arise in achieving adequate compaction and uniform thickness on steeper slopes. Where slopes are steeper (especially steeper than 2.5 to 3 H:1 V) liners should be built in horizontal lifts with a horizontal thickness equivalent to the scraper width. Horizontal lifts should be tied together and should not contain layers of coarse material. More permeable zones in horizontal lifts could result in seepage. Side/liner construction and testing should be similar to that for the requirements for bottom liners, except for horizontal lifts, where the density and as-placed moisture content testing requirement should be completed on each 200 lineal feet of sidewall for each lift and the testing should be offset on each subsequent lift.

When the trench is open for use, liners should be protected to minimize the damaging effects of desiccation (drying), freezing, erosion and traffic on the liners. Recompaction or reconstruction of damaged liners may be necessary.

## **VIII. Synthetic Liner Installation**

Installation procedures for synthetic liners should be fully described in the permit application. All synthetic liner installation must be performed under the daily supervision of a master seamer. All personnel performing seaming operations should be qualified by experience or by successfully passing seaming tests. The experience record of each of the installer's technicians should be given to the QA inspector prior to the start of synthetic liner placement. No seamer should be allowed to work until their qualifications have been reviewed by the inspector.

The manufacturer shall provide quality control (QC) certification forms with results of plant testing of the geomembrane. These forms must certify that the geomembrane rolls shipped to the site meet or exceed the material property requirements of the project specifications. These QC certification forms should be received by the QA inspector prior to any synthetic liner installation.

A preconstructing meeting is necessary prior to synthetic liner placement to discuss schedule, responsibilities, testing frequencies and to review the installer's panel layout drawing.

The geomembrane rolls must be inspected upon arrival to ensure that the materials meet the project specifications. The QA inspector should record all roll numbers to verify rolls as shipped and note in a daily field report any damage to the rolls.

Prior to the placement of the liner, both installer and the QA inspector must inspect the clay liner for any uneven areas, rocks, foreign objects, etc. that may damage the liner. The installer should sign an acceptance form accepting the clay liner condition prior to synthetic liner placement. During the deployment of the liner, the inspector should be present to observe deployment, record roll numbers and panel numbers, and mark any areas with visible damage on the liner. A panel placement form should be filled out by the inspector detailing weather conditions, etc. during deployment.

Before seaming begins, trial welds must be taken, tested and recorded. The frequency of trial welds should be specified in the permit application. If a trial weld fails, the seamer must be required to make another complete trial seam. If this additional test fails, the seaming apparatus or seamer should not be accepted until the deficiencies are corrected and two consecutive passing trial seams are made.

Continuity (nondestructive) testing should be performed using a vacuum box unit or appropriate pressure testing methods over the entire length of each seam. This process should be observed by the QA inspector and any leaks noted, repaired and retested. This testing should follow along the seaming process, not at the completion of all seaming.

Destructive test samples must be taken at the minimum frequency of one test per every 500 feet of seam length. These samples should be taken on a daily basis and sent to an independent laboratory for testing. The locations of these tests should be recorded and included on the as-built panel placement drawing.

#### **IX. Cap and Liner Protection and Repair**

Damage to both synthetic and clay liners and caps may occur due to exposure to wind, rain, freezing, drying, equipment traffic and other factors. The owner/operator of a landfill should address liner protection, maintenance and repair in the permit application. The owner/operator or his representative should perform regular inspections of the cap or liner condition and repair damaged areas.

Caps and lines should be protected from damage during freezing conditions. All lined areas should have at least six feet of solid waste in place on the liner by December 15 of each year. No disposal should take place on uncovered areas after December 15 without testing the liner integrity; Department approval may be necessary.

#### **X. Drainage Layer or Blanket Placement**

Installation of the granular drainage material must be performed in a manner that prevents equipment from coming in direct contact with the liner. Placement should start at the edge of the cell and proceed by pushing the material out over the liner surface. Placement of drainage material on sidewalls should be completed by pushing the material up. Placement of drainage material around, adjacent or over leachate collection pipe and leachate collection pipe trenches should be carefully monitored.

Documentation and testing for the drainage blanket construction must include:

1. Hydraulic Conductivity. One test, at minimum, for every 2000 cubic yards of material with a minimum of one test per borrow area. At minimum, every site must be tested for at least four samples.
2. Gradation. Minimum of one (1) gradation to a 200-mesh sieve per 1000 cubic yards placed, with a minimum of one per borrow area.
3. Porosity. Calculated in conjunction with the hydraulic conductivity tests.

Lab hydraulic conductivity of the drainage blanket must be of a sample remolded to in-place density. Constant head permeability tests (D 2434) are appropriate for this material. The Department may require that leachate be used in the tests and may require both chemical and physical durability be tested. Appropriate survey control should be used to document drainage layer thickness.

#### **XI. Leachate Collection Transmission Pipes**

Pipes must be placed in locations and elevations as shown on plans provided with the permit application. Transmission line joints and PVC pipes should be sealed with solvent-based glue. Slip joints for leachate collection lines may be approved if calculations suggest that substantial subsidence may occur. Pipes should be properly supported to prevent movement and concentration of loads. The coarse aggregate used as pipe bedding and cover should be tested for gradation and compared with gradation of drainage blanket at a frequency of twice per cell. Geomembrane, granular filters or filter fabric placed around the pipe bedding should be appropriately specified, based on results of material gradations, and properly placed. Deflection testing of the collection pipe should be conducted using a mandrel. The cable should be strung through the pipe sections as they are installed. The mandrel should be attached and pulled through the pipe following placement of the granular drainage layer.

#### **XII. Landfill Caps**

Construction of the landfill cap should be completed in a manner similar to the construction of landfill clay liners. Special precautions are necessary to assure the disposed waste will support the landfill cap as constructed.

#### **XIII. Quality Assurance/Construction Documentation Report**

Authorization to utilize a new facility is usually contingent upon Departmental review and approval of a quality assurance/construction documentation report.

An acceptable report includes, at a minimum, the following information:

1. As-built engineering drawings depicting the following information:

- a. Completed subbase elevations.
  - b. Final liner grades.
  - c. Top of drainage blanket grades.
  - d. Leachate collection lines, clean-outs and manholes with spot elevation every 100 feet along the lines and at all manhole entrances and exits.
  - e. Drainage features.
  - f. All monitoring devices.
  - g. Spot elevations at all breaks and slope and on approximate 100-foot centers.
  - h. All test locations.
  - i. Other site information as appropriate.
2. Engineering cross sections, a minimum of one east-west and one north-south through the completed area.
  3. A comprehensive narrative explaining how construction of the project was accomplished along with an analysis of the soil, liner and any other testing data. This report should also include an appendix containing all the raw data from the field and laboratory testing.
  4. A series of 35mm color prints documenting all major aspects of the site construction.
  5. Construction of the site should be certified by a registered professional engineer to have been completed in accordance with the approved plans. Any deviations from the plan should be noted and explained.

The Department reserves the right to require any measures necessary to assure proper construction and documentation of the landfill or disposal cell.

#### **XIV. References:**

Daniel, David. 1989. Landfill liner case studies, presentation at "Sanitary Landfill Design" course, University of Wisconsin.

Mitchell, Gene. 1989. Implementing leachate control systems and liners, presentation at "Sanitary Landfill Design" course, University of Wisconsin.

U. S. Environmental Protection Agency. 1986. Draft Technical Resource Document, Design, Construction and Evaluation of Clay Liners for Waste Management Facilities.

Daniel, David. 1985. Summary of testimony before Illinois Pollution Control Board. Day, Steven R. and Daniel, David E. 1985. Hydraulic Conductivity of Two Prototype Clay Liners.

U. S. Environmental Protection Agency. 1983. "Lining of Waste Impoundment in Disposal Facilities," EPA-SW-870, 448 pp.

Day, Steven R. and Daniel, David E. 1985. Field permeability test for clay liners, "Hydraulic Barriers in Soil and Rock," American Society of Testing and Materials (ASTM) 04-874004-38.

Parametrix, Incorporated. 1987. Solid Waste Landfill Design Manual, Washington State Department of Ecology: Belview, Washington, 578 pp.

USEPA Summary, Research and Development EPA/600/SR-93/183 September 1995: Quality Assurance and Quality Control for Waste Containment Facilities, 11pp (available on USEPA 8 website).



## GUIDELINE 24 - GENERAL NATIVE GRASS SEEDING

North Dakota Department of Health – Division of Waste Management

918 E. Divide Ave., Bismarck, ND 58501-1947

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Updated 04-2009

Native grass plantings on solid waste facilities help control erosion and minimize longer term closure costs. Most native grass species develop a strong root system that helps control erosion and contributes to an increase in soil fertility by recycling nutrients while alive and returning vital nutrients to the soil as the roots decompose. Because many native grasses are adapted to survive in almost any soil conditions, they require no fertilizer or irrigation after planting. Thus, over the long-term, planting native grasses (and wildflowers) can reduce maintenance costs. The North Dakota Department of Health recommends facility owners review their reclamation plans with staff and consult with local Natural Resources Conservation Service (NRCS) offices. Because of the specialties of landfill closure and the need to have long-term durable plantings, seeding rates are recommended to be higher than native grassland not impacted by waste management activities. The Department of Health's guideline on "Evaluating Final Vegetative Cover of Closed Landfill Areas" also can help guide facility owner/operators in this essential element of facility closure.

### Suggested Native Grass Mixture

Species	PLS* Pounds/Acre	Percent of Mixture**	Warm or Cool Season	Bunchgrass or Rhizomatous	Minimum Root Depth
Western Wheatgrass ( <i>Pascopyrum smithii</i> )	4	21%	Cool	Rhizomatous	20" +
Green Needlegrass*** ( <i>Nassella viridula</i> )	4	21%	Cool	Bunchgrass	14" +
Slender Wheatgrass ( <i>Elymus trachycaulus</i> ) or Canada Wildrye ( <i>Elymus Canadensis</i> )	2 2	10.5% 10.5%	Cool Cool	Bunchgrass Bunchgrass	16" + 16" +
Sideoats Grama*** ( <i>Bouteloua curtipendula</i> )	2	10.5%	Warm	Rhizomatous	12" +
Switchgrass ( <i>Panicum virgatum</i> )	2	10.5%	Warm	Rhizomatous	12" +
Big Bluestem*** ( <i>Andropogon gerardii</i> )	2	10.5%	Warm	Bunchgrass, sometimes with short rhizomes	20" +
Little Bluestem*** ( <i>Schizachyrium scoparium</i> )	1.5	8	Warm	Bunchgrass, sometimes with short rhizomes	14" +
Blue Grama*** ( <i>Bouteloua gracilis</i> )	1.5	8	Warm	Bunchgrass, forming short rhizomes	16" +
<b>Total Seed (min)</b>	<b>19 pounds</b>	<b>100%</b>			

\*PLS - Pure Live Seed (based on 50 PLS/sq feet)

\*\*Percent Mixture – Contingent upon soil requirements. Adjust mixture based on NRCS map.

\*\*\*Chaffy or awned seeds (i.e., bluestems, indiagrass and blue grama) are extremely difficult to plant with a grain drill. It is recommended that a grass drill be used for these types of grasses. Proper agitation is needed to prevent "bridging" of seed in the seedbox, and the feeder mechanism must be capable of metering a uniform flow of seed at the desired rate. Very few grain drills have this capability. Use of debarbed seeds is strongly recommended when considering seeding chaffy or awned seeds in a grain drill.

1. The seedbed should be firmly packed (footprints left in the soil should be less than 1/2-inch deep).
2. Erosion control and establishing a cover crop.

**Upon soil placement on landfill areas, erosion control measures must be incorporated immediately to minimize erosion of soil layers. Applying and incorporating wheat straw at a rate of at least 2,000 pounds per acre is a common practice. Other measures are appropriate, especially in erosion prone areas.** Straw mulch should be free of noxious weeds. Bromegrass is not an advisable mulch. Approximately 10 percent of the soil surface should be visible through the mulch. Excessive cover which will smother seedlings should be avoided.

**In spring:** A cover crop of oats or barley at 10 PLS pounds/acre is recommended for seeding the disturbed area prior to native grass seeding. It is ideal to mow the cover crop to a height of 8 inches when the grain in the head is forming but still immature to produce standing stubble.

**In fall:** The recommendation would be to seed a cover crop of winter wheat in September/October for an immediate cover crop. In the spring, the cover crop should be chemically killed with Roundup, and then the native grass seeded into the residual cover crop material. Winter wheat is aggressive and will make a good cover; however, because it is so successful in beating back the invasives, it will also tend to out-compete the native grass they try to seed later (hence the Roundup before seeding in the spring).

3. An early spring seeding (before May 24) is preferred, and should not extend past June 15 at the latest. A dormant fall seeding (after October 20) is acceptable; however, the mixture should be dominated heavily with cool-season species. If moisture levels and weather conditions are optimal, planting at other times may be considered. At anytime, if the planting is not successful, reseeding must be addressed when appropriate.
4. The native grass seed should be planted through the standing cover stubble during the following growing season at a soil depth of 1/2 inch, depending on site conditions. Precautions must be taken not to plant the seed too deeply in the soil or poor germination will result. A drill designed specifically for grass seeding will give the best results.
5. Fertilizer should not be applied before the native grass has established.
6. **Use North Dakota certified seed, northern origin cultivars, northern-adapted cultivars, or approved varieties by the NRCS.** Refer to Table 2 of the USDA-NRCS - North Dakota, May 2008, FOTG.

**Note:** This native grass mixture is a suggestion for general purposes (such as the closure of small inert waste landfills, disturbed waste sites, etc.), where there are not significant soil problems (salinity, wetness, high sand content, etc.) and where climactic factors or slope factors are not significant. Sites that have other factors affecting plant selection, especially in eastern or western North Dakota, steeper slopes, or where alternative covers are used, should consult the Department of Health and the local NRCS office to tailor the native seed selection. Sites with slopes exceeding 15 percent should plant at a heavier rate, such as 25-30 PLS pounds/acre. Alternative covers also should ensure a mixture of cool and warm season grasses, with both shallow and deep roots. Larger landfills also should have a seed selection tailored to their facility while addressing the principles outlined in this guideline.

**References:**

USDA-NRCS - North Dakota, May 2008, FOTG - Section I - Reference Subject - Plant Materials, Herbaceous Vegetation Establishment Guide.

USDA-NRCS - North Dakota, August 2002, FOTG - Section IV - Conservation Practices, Conservation Practice Standard – 342, Critical Area Planting.



## **GUIDELINE 26 - SOIL SURVEYS AND MANAGEMENT OF SUITABLE PLANT GROWTH MATERIAL AND PLANT ROOTING SOIL FOR SOLID WASTE DISPOSAL FACILITIES**

North Dakota Department of Health - Division of Waste Management

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### **I. Introduction**

Final reclamation and closure of solid waste facilities are one of the most important factors in minimizing long-term environmental degradation. Establishing an excellent stand of grass on closed facilities and minimizing long-term erosion hinges on the quality of soil used in the final closure. Excessive erosion will increase post-closure costs and the time of the post-closure maintenance. Erosion can expose waste and greatly increase leachate and gas generation.

Section 33-20-01.1-03 of the ND Administrative Code (NDAC), North Dakota Solid Waste Management Rules, states in part:

**“Suitable Plant Growth Material** means that soil material (normally the A and the upper B horizon which are dark colored due to organic staining) which, based upon a soil survey, is acceptable as a medium for plant growth when respread on the surface of regraded areas.”

Suitable plant growth material (SPGM) is commonly referred to as “topsoil.”

The closure standards for Municipal Solid Waste Landfills, Special Waste Landfills and Industrial Waste Landfills also require a 12-inch layer of soil capable of supporting plant roots be placed under the layer of SPGM. This plant root material is commonly referred to as “subsoil,” but if subsoil is not available or is not suitable, other material may be considered based on its characteristics.

**Soil**, as defined in terms of the solid waste soil survey requirements, can be considered to be the dynamic natural body or material occupying the unconsolidated portion of the earth’s surface capable of supporting plant life and having properties due to the combined effect of the five soil forming factors - climate and living organisms, as modified by topography and time, upon parent materials. A **soil survey** is the systematic examination, classification, and mapping of soils in an area. Soil surveys are classified according to the kind and intensity of field examination.

### **II. Professional Soil Classifier Requirements**

Solid waste facilities that are required to have a soil survey of their site need to use the services of a Registered Professional Soil Classifier. Section 43-36-23 North Dakota Century Code states as follows:

**“No person shall practice or offer to practice professional soil classifying as defined by this chapter unless such person is duly registered to practice under or exempt from the provisions of this chapter.”**

Following is a link to a roster of the [Professional Soil Classifiers Association of North Dakota](#). For more information on registration requirements, contact the North Dakota State Board of Registration for Professional Soil Classifiers at (701) 225-3381.

### III. Soil Survey Guidance

1. Soil mapping units should be established as follows:
  - Soil mapping units to be identified at the soil series or phase level;
  - Mapping units may be either consociations or complexes;
  - Similar soils five acres or more; and
  - Dissimilar soils one acre or more.
2. Collection of soil samples by genetic horizon from soil pedons at a rate of one pedon per 40 acres with an estimated 5 to 6 samples by horizon per pedon. A minimum of one pedon shall be collected per map unit, provided there are 10 or more acres of that map unit.
3. Laboratory analysis of soil samples must be performed by a state-certified laboratory. The soil parameters for analyses include pH, electrical conductivity (EC), sodium adsorption ratio (SAR) and organic matter. At minimum, a testing frequency of one soil profile per map unit shall be employed. Additional testing may be required depending on the complexity of soil types, and the best judgement of the soil scientist.
4. SPGM should have an EC of less than two millimhos per centimeter, a SAR of less than four, and an organic matter percentage of one or more. If adequate material for SPGM and the 12-inch plant root zone material is not available on site, the Soil Classifier should be consulted and/or retained to identify potential material that is to be used, subject to approval by the Department.
5. Upon consultation with the owner/operator, the landfill design engineer, and the Department, the soil survey might also examine what material, if any, would best serve as the 12-inch plant root zone material required to be placed on the final cover, underlying the required SPGM for municipal solid waste, industrial and special waste landfills. Soil material should be clay-rich and should have an EC of less than four millimhos per centimeter and a SAR of less than 10. If suitable plant root material is not on site, borrow sites should be identified. This should be addressed in the work plan. If volume of material is not adequate for closure, the Department may consider allowing materials with  $EC < 6$  and  $SAR < 12$ .
6. Some testing of the Soil C horizon and the deeper geologic soil materials is advised (probably will be addressed in characterization or pedons). A Soil C horizon and deeper materials may qualify as the root zone material.
7. Field observations should be based on soil color, horizons, texture, structure, salts (if any) and vegetation. If the vegetation appears adversely affected, assessment can be visually performed for salinity, sodicity and/or low available water holding capacity (relating to texture). Field observations shall be compared, when possible, with available laboratory data to complete topsoil and subsoil estimated stripping depths.

SPGM standards must be approved by the Department when evaluations for stripping depths are compiled. E horizons in hydric soils should be included as SPGM (topsoil) if the underlying horizons meet SPGM requirements.

8. Field sheets, preferably on an aerial photo base, shall be used for initial delineation. The original field sheet shall be provided to the Department, and a copy shall be maintained as part of the operating record of the landfill as required under Section 33-20-04.1-04 NDAC. The field sheets shall be used as a base for transferring the mapping boundaries to Mylar base maps of the same scale. The acreage base should be established and should provide landfill ownership boundaries, permit boundaries, and the proposed soil disturbance boundaries.

A soil survey legend and map of the site (preferably on an aerial photo) at the scale of 1:4800 or 1 inch = 400 feet identifying mapping units, SPGM thickness (topsoil and subsoil), sampling locations, pertinent site features and boundaries must be provided.

The NRCS soil survey map of the site (scale 1:20,000) for the same legal description along with NRCS map unit and soil series descriptions should also be provided with the report.

As appropriate for the facility, it would be beneficial to scan both the Order 1 soil survey and the NRCS/SCS soil survey map into a Computer Aided Drafting (CAD) program for the facility to use. The NRCS map could be enlarged to the same scale, 1:4800.

9. A written report must be provided discussing quantity (in cubic yards) and quality of SPGM to be removed, map unit and soil series descriptions, along with recommendations for reclamation and any soil amendments as appropriate for a site that will be planted to native or approved adapted grasses.
10. Before any earthwork, excavation or construction, areas should be staked on at least a 200-foot grid showing soil stripping depths. During stripping, a soil monument should be left at every other stake to show inspectors and/or the soil classifier the undisturbed soil profile. This SPGM monument may be stripped and stockpiled upon approval.
11. The soil classifier should provide some training to staff/equipment operators to train them on what soil depths should be removed.
12. The landfill plans should identify where the SPGM will be stockpiled, how it will be maintained, and include a summary of removed/stockpiled amounts in its operating record. SPGM stockpiling and any other stockpiled material should be only placed in approved and surveyed areas. Soil stockpiles should be seeded to provide erosion and stormwater control.

The Department is aware that some permitted areas may have been previously disturbed. Areas outside of the disposal foot print must be surveyed by a registered professional soil classifier to determine whether SPGM remains so the SPGM and/or subsoil can be removed. Such areas should include under haul roads, areas of land application of petroleum-contaminated soils or in areas of soil stockpiles, composting activities, etc. Any borrow areas should also be surveyed.

The goal of the soil survey, SPGM removal, and stockpiling is to save as much of the material that will support adapted grasses for final cover. The survey and analysis may also give important information on what amendments may be necessary to improve the soil. The soil chemistry may also provide information in determining what adapted grasses can be used for final site reclamation and for seeding disturbed areas during facility construction and operations.

#### **IV. Soil Survey Work Plan and Approval**

For efficiency and to avoid misunderstandings, the Department requests that a soil survey work plan be prepared and submitted for Departmental review and approval prior to any soil survey activities on any existing or proposed solid waste management facility. The work plan should be in accordance with these guidelines and be prepared by the Registered Professional Soil Classifier contracted to do a survey.

#### **V. Management of SPGM**

Section 33-20-04.1-09 NDAC states in part:

- “2. Construction and operation standards for solid waste management facilities regulated by this section:
- f. All disposal facilities shall identify, quantify, remove, stockpile, and maintain suitable plant growth material for later use in closure.
  - k. All earthen material must be maintained on site unless removal from the site is authorized by the department.”

SPGM (topsoil) and plant root zone material (subsoil or other approved material), when respread on closed areas, should be averaged based on the total volume of SPGM identified and salvaged. This thickness should be addressed in the plan to comply with Section 33-20-04.1-09 NDAC. If the amount of SPGM available exceeds the minimum 6 inches, it still must be respread on the closed facility as it is vital in reestablishing the protective vegetative cover and minimize long term erosion and post-closure costs. The management of SPGM 12-inch root zone material and cover soil is addressed in the state rules (above) and should be reflected in the landfill plans approved as part of the permit. Soil stockpiling activities, including location, runoff control, erosion control, vegetation and conservation must be addressed as part of the landfill plans and operation.