

# 2019 PROJECT SUMMARY

## 2019-2020 SINKHOLE FILLING PROJECT

**December 2019**

### **Project Type: Sinkhole Filling**

Surface backfilling of dangerous sinkholes caused by collapse of underground mines.

### **Locations**

- Wilton: Portions of  
Sections 5, 6 & 8, T142N, R79W  
Section 36, T143N, R80W
- Beulah: Portions of  
Sections 6, 7 & 18, T144N, R87W  
Sections 12 & 13, T144N, R88W
- Williston: 5132 134th Ave NW

*Contract AM-808-19*  
*\$199,996.26*

### **Contractor**

Earthworm Excavating of Tolna, ND

### **2019 Project Cost: \$72,081**

This was the first year of a two year project.



### **Contents**

- ND PSC AML Mission & Funding
- Work Summary
- Project Data & Maps
- Photos

Contractor, Earthworm Excavating, respreading topsoil on a filled sinkhole near Wilton.

# 2019 Sinkhole Filling Statistics

|  |                                  |
|--|----------------------------------|
| Project Dates                                  | May 13-15; October 7-November 16 |
| Total Work Days                                | 33                               |
| Sinkholes filled by location:                  |                                  |
| Wilton   | 28                               |
| Beulah   | 74                               |
| Williston                                      | 2                                |
| Cost per site:                                 |                                  |
| Wilton   | \$9,081.79                       |
| Beulah   | \$62,529.55                      |
| Williston                                      | \$469.82                         |
| Average cost per cubic yard of material placed |                                  |
| Wilton   | \$9.97                           |
| Beulah   | \$7.28                           |
| Williston                                      | \$19.58                          |



Reclamation of a borrow area at Wilton. A box rake is attached to the front of the Bobcat. This borrow area was a series of large non-hazardous sinkholes that were reshaped to fit the landscape.

## North Dakota Public Service Commission and Abandoned Mine Lands

North Dakota has records for about 1,700 abandoned coal mines which are mostly in the western half of the state. The Surface Mining Control and Reclamation Act of 1977 (SMCRA) provides for the reclamation of abandoned mine lands with fees collected on actively mined coal. In 1981, the North Dakota Legislature approved an Abandoned Mine Lands (AML) Program to be administered by the Public Service Commission (PSC) on behalf of the State of North Dakota.

### ND PSC AML Mission

The AML Program is charged with eliminating existing and potential public hazards resulting from abandoned surface and underground coal mines. The AML Program is a service (not regulatory) program aimed at protecting North Dakotans by reclaiming hazardous abandoned mines. Mines eligible for reclamation may be in our 1,700 plus abandoned mine inventory, found through exploratory drilling or reported to us. The PSC's selection of reclamation projects is based on prioritization of abandoned mine related hazards. It also requires federal approval. Emergency projects are conducted when AML problems are an immediate and serious danger to the public.

### Program Funding

Reclamation costs are covered through a federal fee on actively mined coal. The current rate for lignite coal is 8¢ per ton. The federal government, through the Office of Surface Mining Reclamation and Enforcement (OSMRE), reallocates the money to each state or tribe with an AML program through a grant program. North Dakota's allocation is about \$3 million per year. Federal fee collection is scheduled to end in 2021 unless reauthorized by the United States Congress.

### Subsidence

Reclamation of subsidence issues by filling sinkholes that open is only a temporary fix and does not necessarily fix the underlying problem. In high-use areas like near homes and business or along roadways, drilling and grouting is used to pump a cement-like grout mixture is pumped into the mine workings. Drilling and grouting projects are expensive. On land like pasture and crop fields, sinkhole filling is more economical than drilling and grouting. All AML work conducted by the ND PSC AML Division is done at no cost to the property owner.

# How Sinkholes are filled in North Dakota

The North Dakota Public Service Commission Abandoned Mine Lands (AML) Division requirements for sinkhole filling are as follows:

- Remove and stockpile topsoil or other suitable plant growth material from around/within sinkhole and borrow areas.
- Excavate the sinkhole (as directed) with a backhoe or excavator.
- Backfill sinkhole with approved fill material; if trucks are used, compaction with backhoe bucket and wheels is required between dumps. If a scraper is used, holes shall be ramped into and filled in such a way to get maximum compaction.
- Grade area to blend with adjacent topography and re-establish drainage.
- Respread topsoil evenly over disturbed areas and finish-grade.
- Seed disturbed areas with the required mixture.
- Till all areas with a Harley Box Rake (or equivalent equipment) sufficiently to break up all clods, prepare the seedbed and cover all seed.

Fill material may be taken only from approved borrow areas as determined in consultation with the property owner.

Borrow areas will be located as near as possible to the sinkholes and haul distances may vary from 100 feet to a half-mile or more. Below is our standard native grass seed mix with seeding rate.

| Species                    | Rate/Acres — Lbs. (PLS) |
|----------------------------|-------------------------|
| Thickspike Wheatgrass..... | 4                       |
| Streambank Wheatgrass..... | 4                       |
| Western Wheatgrass.....    | 4                       |
| Slender Wheatgrass.....    | 2                       |
| Green Needle Grass.....    | 2                       |
| Sideoats Grama Grass.....  | 2                       |
| Switchgrass.....           | 4                       |

AML Sinkhole Filling Projects reduced the likelihood of death or injuries to property owners and the public. However, new hazardous sinkholes are reported each year. Sinkhole filling projects such as these have been conducted annually in North Dakota and will likely continue into the foreseeable future.

## 2019 Sinkhole Filling: Williston

In October the PSC AML Division received a call reporting two sinkholes near the 2019 Williams County Road 9 AML project area. The sinkholes (Top pictures) occurred in a berm between the access road and the parking area (Bottom picture). In 2018 over 300 cubic yards of grout was pumped into holes in the parking area just above the sinkholes. We do the best we can with our drilling and grouting projects, but we cannot guarantee that subsidence will not happen in the future. While these were relatively large holes, even a subsidence of a few inches can be disastrous for a building foundation. We do not recommend building on land that is undermined. Anyone with questions may contact the Public Service Commission AML Division for further information on our inventory of abandoned coal mines in North Dakota.

These sinkholes have been filled temporarily with about 30 tons of fine earth material. The holes will be completely reclaimed as the weather improves in 2020.



# 2019 Sinkhole Filling: Wilton

In April 2019, the ND Public Service Commission AML Division received a call from a renter about a large sinkhole in his pasture near Wilton (top picture and bottom left picture). The sinkhole measured 25 feet in diameter and over 30 feet deep. According to the tenant, the spot was full of water one day, the next day it was a large hole. The sinkhole was classified as an emergency due to its size and its proximity to a country road. During the emergency project 10 additional sinkholes in the vicinity were also filled.

Less than one month later, another tenant alerted the PSC AML Division to a sinkhole in his pasture less than one mile southeast of the emergency sinkhole (bottom right picture). This sinkhole measured 8 feet in diameter and 20 feet deep. Since the sinkhole was over 500 feet from a roadway, it was not designated as an emergency. The tenant fenced the sinkhole for filling in the fall. On the second mobilization to Wilton, this sinkhole and an additional 16 sinkholes were filled. The map on page 5 includes all the sinkholes filled near Wilton in 2019.



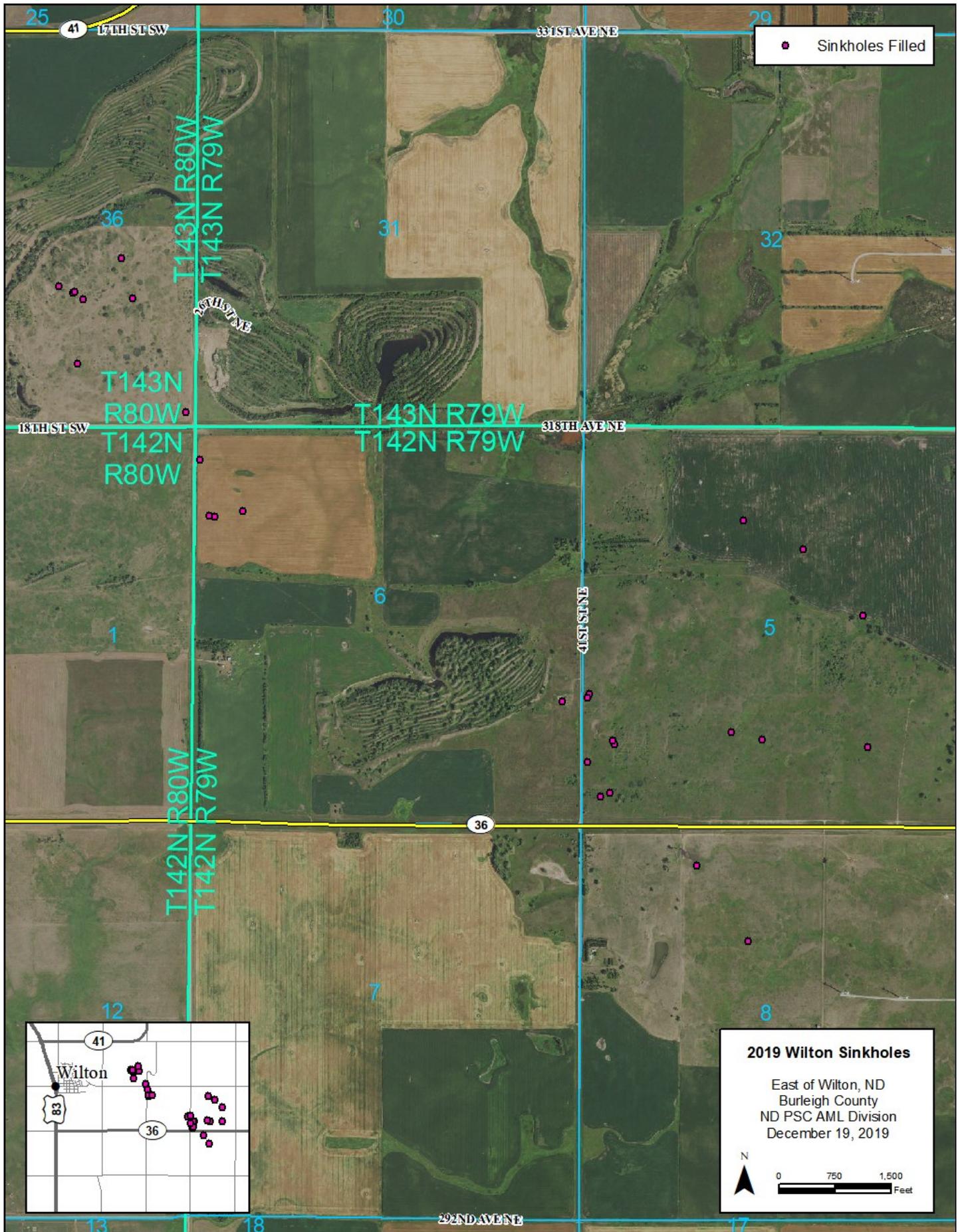
**2019-2020 Sinkhole AML Project  
2019 Sites**

Site and Landowner Data

| Project               | Site          | Owner         | Dates         | Twp | Location |        |        | Part Sinkholes | CYD         | Cost               |
|-----------------------|---------------|---------------|---------------|-----|----------|--------|--------|----------------|-------------|--------------------|
|                       |               |               |               |     | Rg       | Sec    |        |                |             |                    |
| 2019 Emergency        | Wilton        | Krzmarzick    | May 13-15     | 142 | 79       | 5      | S 1/2  | 10             | 369         | \$3,520.22         |
|                       |               | McGinnis      | May 15        | 142 | 79       | 6      | SE 1/4 | 1              | 48          | \$457.91           |
| 2019 Sinkhole Filling | Wilton        | Backman       | October 7     | 142 | 79       | 8      | N1/2   | 2              | 86          | \$888.38           |
|                       |               | Krzmarzick    | October 8-9   | 142 | 79       | 5      | N 1/2  | 3              | 82          | \$847.06           |
|                       |               | McGinnis      | October 9     | 142 | 79       | 6      | NW 1/4 | 4              | 68          | \$702.44           |
|                       |               | Krzmarzick    | October 9     | 143 | 80       | 36     | SE 1/4 | 8              | 258         | \$2,665.78         |
|                       | Beulah        | NDGF          | November 4-11 | 144 | 87       | 6&7    |        | 37             | 6065        | \$44,123.53        |
|                       |               | NDGF          | October 23-24 | 144 | 87       | 7      | SW 1/2 | 14             | 845         | \$6,147.47         |
|                       |               | NDGF          | October 25    | 144 | 87       | 18     | N 1/2  | 1              | 271         | \$1,971.55         |
|                       | Sailer        | October 24    | 144           | 87  | 7        | SE 1/4 | 2      | 59             | \$429.23    |                    |
|                       | Boeckel       | October 25-27 | 144           | 88  | 13       | N 1/2  | 13     | 1123           | \$8,169.95  |                    |
|                       | Eslinger      | October 22-23 | 144           | 88  | 12       | NE 1/4 | 7      | 232            | \$1,687.82  |                    |
|                       | <b>Totals</b> |               |               |     |          |        |        | <b>102</b>     | <b>9506</b> | <b>\$71,611.34</b> |
|                       | Williston*    | Sand Draw     | December 17   | 154 | 100      | 17     | SW 1/4 | 2              | 27          | \$469.82           |
|                       | Dickinson**   | Stark County  | unknown       | 139 | 95       | 8      | SW 1/4 | 1              | unknown     | \$0.00             |
|                       | Parshall**    | Zacher        | unknown       | 152 | 89       | 19     | NW 1/4 | 1              | unknown     | \$0.00             |

\*Soil fines delivered by Knife River and placed in sinkholes holes by landowner/tenant.

\*\*Sinkholes filled by someone other than PSC



# 2019 Sinkhole Filling: Beulah

In September 2019 the ND Department of Transportation called to report a sinkhole in the north road ditch of US Highway 200 near the Beulah Cenex fertilizer plant. This is the second sinkhole in three years to occur in this area. Despite the excess rainfall and early snow storm, the contractor was

able to fill this sinkhole by October 25, 2019. Another 73 hole were filled at Beulah, 22 on privately owned land and the remaining on ND Game and Fish properties. Much of the Game and Fish access is closed to public access for safety reasons. The sinkholes are large and deep as shown by the photos below. Although 74 holes were filled at Beulah, hundreds of sinkholes remain to be filled. It is also very likely that new sinkholes will appear as the ground thaws in the spring. The map on page 7 includes locations of all the sinkholes filled near Beulah in 2019.



Former Assistant Director, Bill Dodd, and Curt Michaelson discuss a sinkhole Curt found while walking with his dog on Section 18 of the Game and Fish property near Beulah.



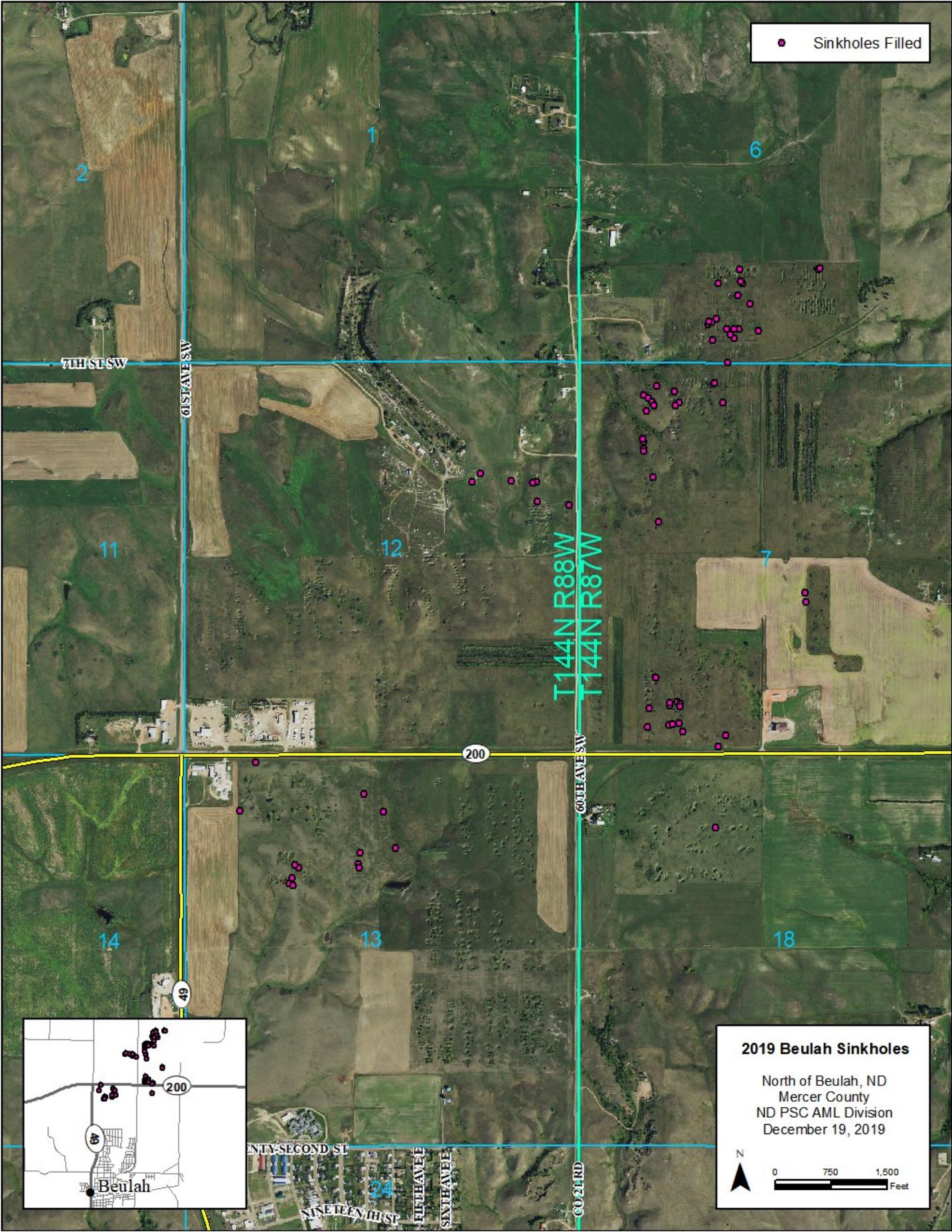
Inspector, James Thornburg, measuring and marking several holes on Section 13, T144N, R88W near Beulah.



Inspector, James Thornburg, measuring a sinkhole near Beulah.



Shawn Nixon, PSC Engineer, inspects the reclaimed borrow area on Section 7 of the Game and Fish Property near Beulah.



■ Sinkholes Filled

**2019 Beulah Sinkholes**  
 North of Beulah, ND  
 Mercer County  
 ND PSC AML Division  
 December 19, 2019

0 750 1,500  
 Feet

PLACE  
STAMP  
HERE

**North Dakota Public Service Commission**  
Abandoned Mine Lands Division  
600 East Boulevard Avenue, Department 408  
Bismarck, ND 58505-0480

# When a Hole Is Not Just a Hole

Underground coal mining was common in Western North Dakota in the early part of the twentieth century. After WWII, surface mining became more economical, and many underground mines ceased operation and became abandoned. The legacy left by abandoned underground mining is the potential for surface collapse.

If you live or work near an abandoned underground coal mine, please use caution. The ground can give way without warning. The sinkhole (8 feet diameter by 7 feet deep) in this photo was in a harvested soybean field. Luckily the farmer saw the hole before driving into it during harvest.

Always be aware on an abandoned mine site. You never know when a sinkhole may occur.



## Contact Us

To report a sinkhole or request more information about our program

**North Dakota Public Service Commission**  
Abandoned Mine Lands Division  
600 E. Boulevard Avenue  
Department 408  
State Capitol 13<sup>th</sup> Floor  
Bismarck, ND 58505-0480

(701) 328-2400  
(877)-245-6685

[ndpsc@nd.gov](mailto:ndpsc@nd.gov)

Visit us on the web at [www.nd.psc.gov](http://www.nd.psc.gov)