

**Project Summary  
2017-2018 Sinkhole Filling AML Project  
Contract AM-783-17**



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

**December 2017**

**North Dakota Public Service Commission  
2017-2018 Sinkhole Filling AML Project Summary**

(This report is only for work conducted in 2017. The two-year contract will continue in 2018)

Project Type:	Surface backfilling of dangerous sinkholes caused by collapse of underground mines.
Primary Locations:	Twelve properties near the cities of Beulah, Bowman, Garrison, Hanks, New Salem, Noonan, Velva, Williston and Wilton, North Dakota.
Project Dates:	July 21 to November 21, 2017.
Contractor:	Pleasant and Sons Construction, Inc. of Greenville, KY.
Project Cost:	\$103,990.50 during this period. The two-year contract will continue in 2018. This report is only for the work conducted in 2017.

The Public Service Commission administers the Abandoned Mine Lands (AML) Program on behalf of the State of North Dakota. The AML program is charged with eliminating existing and potential public hazards resulting from abandoned surface and underground coal mines. It is funded by a federal production fee on lignite coal mined in the state.

The 2017-18 Sinkhole Filling Project was conducted to fill dangerous sinkholes caused by collapse of abandoned underground coal mines in Western North Dakota. Approximately 163 sinkholes were filled near the cities of Beulah, Bowman, Garrison, Hanks, New Salem, Noonan, Velva, Williston and Wilton, North Dakota between July 21 and November 21, 2017. Standard requirements for sinkhole filling under this contract were as follows:

1. Remove and stockpile topsoil or suitable plant growth material from around and within the sinkholes.
2. Excavate each sinkhole (as directed) with a backhoe or excavator.
3. Backfill the sinkhole with approved fill material, compaction with loader or excavator required between lifts.
4. Grade area to blend with adjacent topography and re-establish drainage.
5. Respread topsoil over disturbed areas and finish-grade.
6. Seed (broadcast seeder allowed) disturbed areas with required mixture.
7. Till the seeded areas with a Harley Box Rake or equivalent.

The required seed mixture for native grassland areas consisted of the following species and rates.

<u>Species</u>	<u>Rate/Acre – Lbs. (PLS)</u>
Thickspike Wheatgrass	4
Streambank Wheatgrass	4
Western Wheatgrass	4
Slender Wheatgrass	2
Green Needle Grass	2
Sideoats Grama	2
Switchgrass	4

This AML Project reduced the likelihood of death or injuries to property owners and the public, and minimized the probability of property damage by filling numerous deep and dangerous sinkholes. However, there are many more sinkholes that need to be filled and new 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.

**Cover Photo:** The cover photo shows Jordan Burns, NDPSC, and John Sieving, OSMRE, inspecting a sinkhole on property owned by the City of Bowman, along 146<sup>th</sup> Avenue, SW, near the Bowman Landfill. It was about 30 feet long, 20 feet wide and 18 feet deep. The City of Bowman put a snow fence around the hole to protect the public. It was filled with waste concrete and dirt in July 2017. Minor settling of the site was repaired in October.

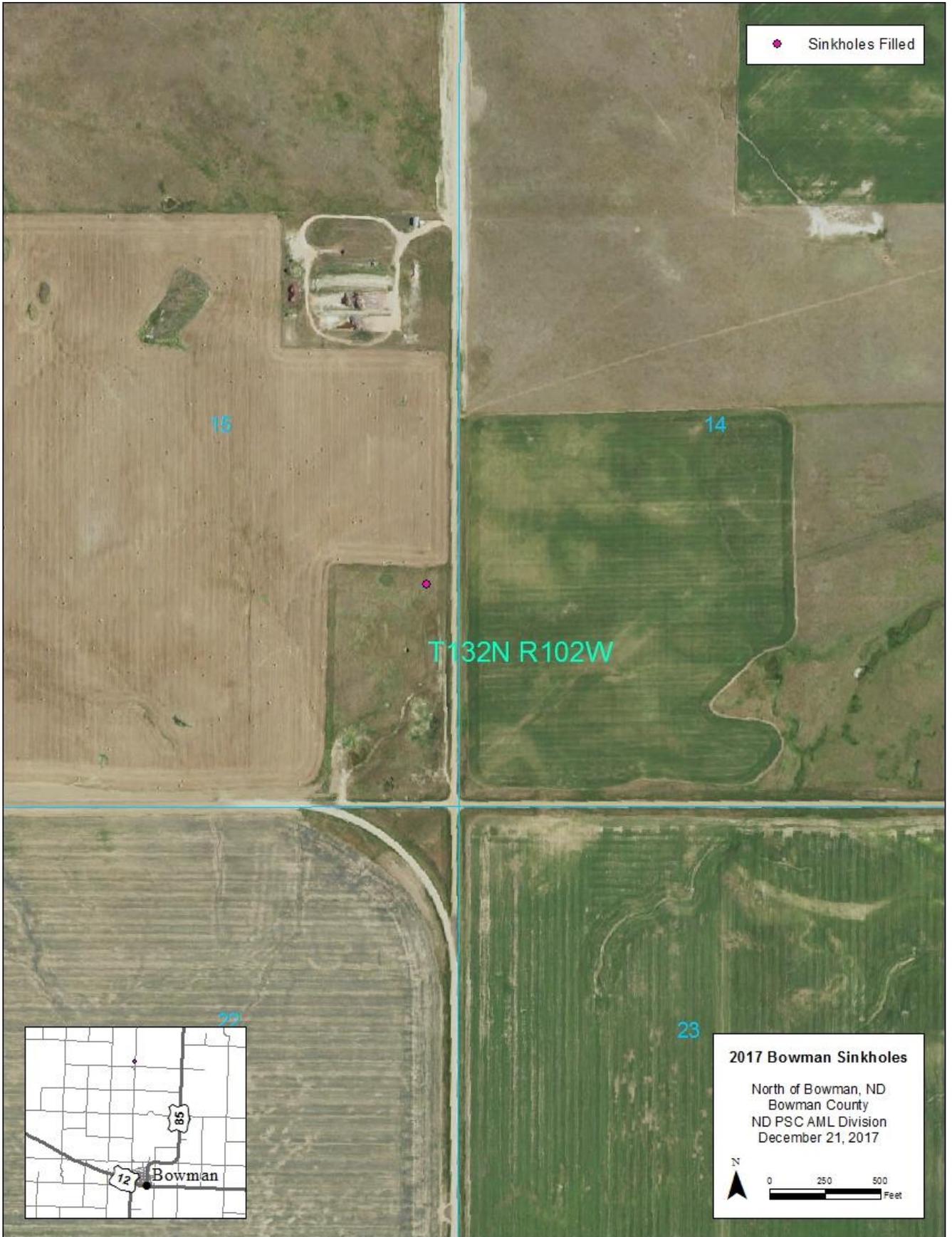
**2017-2018 Sinkhole Project**

**2017 Sites**

Data by Site and Landowner

Project	Site	Owner/Renter	Dates	Twp	Rg	Sec	Part	Sinkholes	CYD	Cost	Location			
2017 Sinkholes	Bowman	City of Bowman	July 21-Aug 1	132	102	15	SE¼	1	594	\$6,237.50				
	Williston	Bohannon, Fairbanks	Oct 11-12	154	100	17	NW¼	2	100	\$1,875.00				
	Hanks	Kohlman	Oct 12	159	102	12	SE¼	3	100	\$1,875.00				
	Noonan	Kimball	Oct 12-18	162	95	9	NE¼	13	200	\$2,870.00				
	Velva	Lindahl	Oct 16-Nov 6	152	81	28	NW¼	31	1000	\$9,750.00				
	Garrison	Mautz	Oct 19	148	84	17	NW¼	13	100	\$1,995.00				
	Wilton	Krzmarzick	Oct 24-26	142	79	5	All	9	125	\$1,463.75				
		McGinnis	Oct 24-26	142	79	6	NW¼	6	50	\$687.50				
		Krzmarzick	Oct 24-26	143	80	36	SE¼	5	75	\$906.25				
		Sorch	Oct 24-26	142	79	15	NW¼	2	100	\$1,125.00				
	New Salem	Lehde	Oct 27	139	85	15	SW¼	8	125	\$2,093.75				
	Beulah	NDGF, Taylor	Nov. 7-21	144	87	18	N½	42	4758	\$43,096.50				
		NDGF	Nov. 7-21	144	87	7	NE¼	28	3263	\$30,015.25				
	<b>TOTALS</b>							<b>163</b>	<b>10590</b>	<b>\$103,990.50</b>				

# 2017 Sinkhole Filling Approximate Locations of Sinkhole at Bowman Site





Work began on the 2017-2018 Sinkhole Filling AML Project on July 21, 2017, about 4 miles north of Bowman. This sinkhole was about 30 feet long, 20 feet wide and 18 feet deep. It was located on property owned by the City of Bowman (see cover photo).



This shows the contractor tilling and seeding the same area after the sinkhole was filled. Approximately 60 truckloads of waste concrete and dirt were needed to fill this large and dangerous sinkhole. The contract cost for this work was \$6237.50.

# 2017 Sinkhole Filling Approximate Locations of Sinkholes at Williston Site



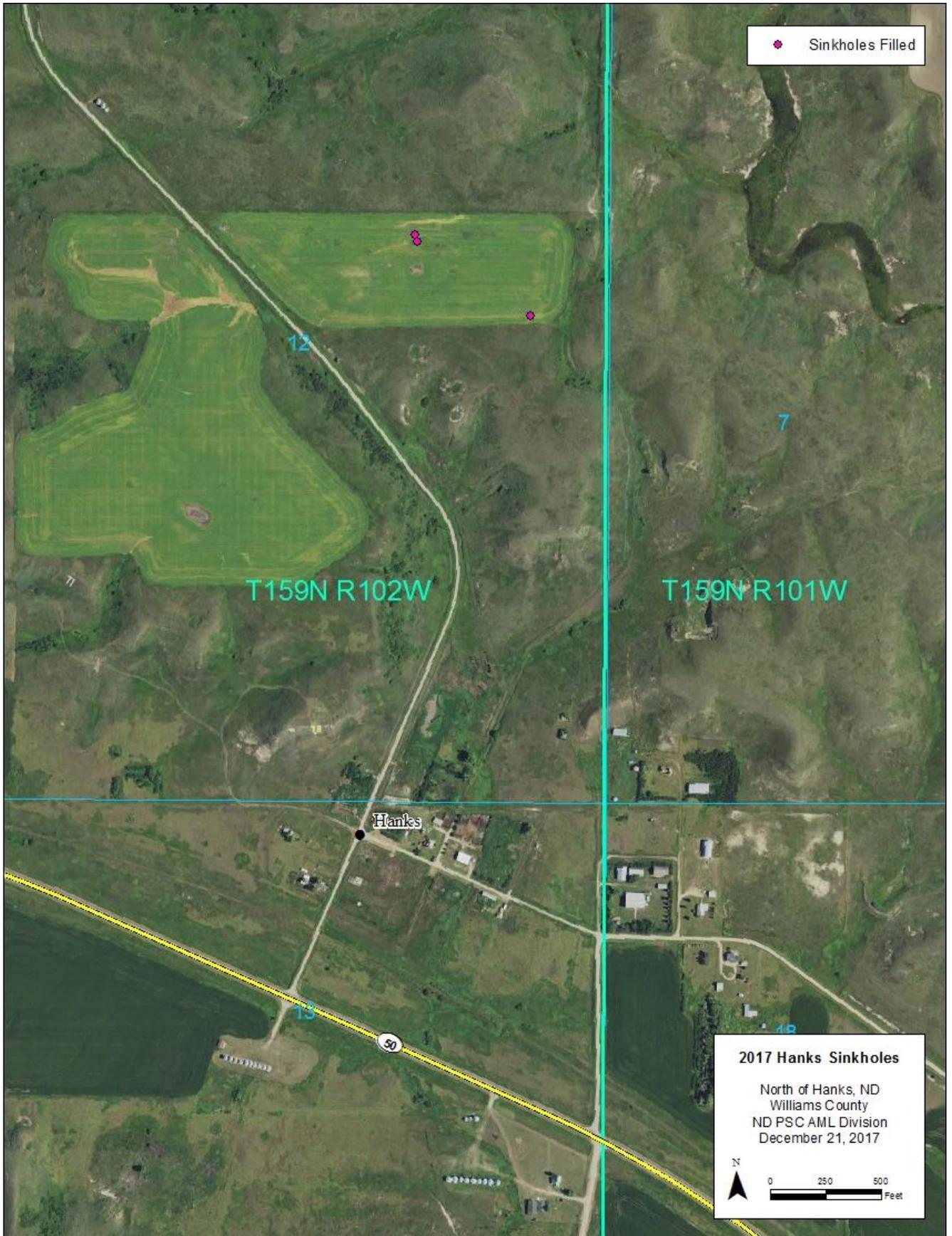


This dangerous sinkhole occurred near Shift Services, LLC, a Williston business that specializes in oilfield services. It was reported by Barry Bohannon, the business owner, on May 1, 2017. The hole was about ten feet in diameter and ten feet deep.



This sinkhole and another one, on nearby commercial property owned by Sand Draw, LLC, were excavated and filled October 10-11, 2017. The approximate cost for this work was \$1875. An AML drilling and grouting project is planned here for 2018.

# 2017 Sinkhole Filling Approximate Locations of Sinkholes at Hanks Site





This shows two of the three sinkholes filled on cropland owned by Dennis Kohlmann, north of Hanks. The sinkhole in the background was avoided but a wheel dropped into the one in the foreground during harvest.



Three sinkholes and a couple settled areas were filled at the Hanks site on October 11-12. The approximate cost for this work was \$1875. About twenty dangerous sinkholes have been filled on this field over the past ten years.

# 2017 Sinkhole Filling Approximate Locations of Sinkhole at Noonan Site



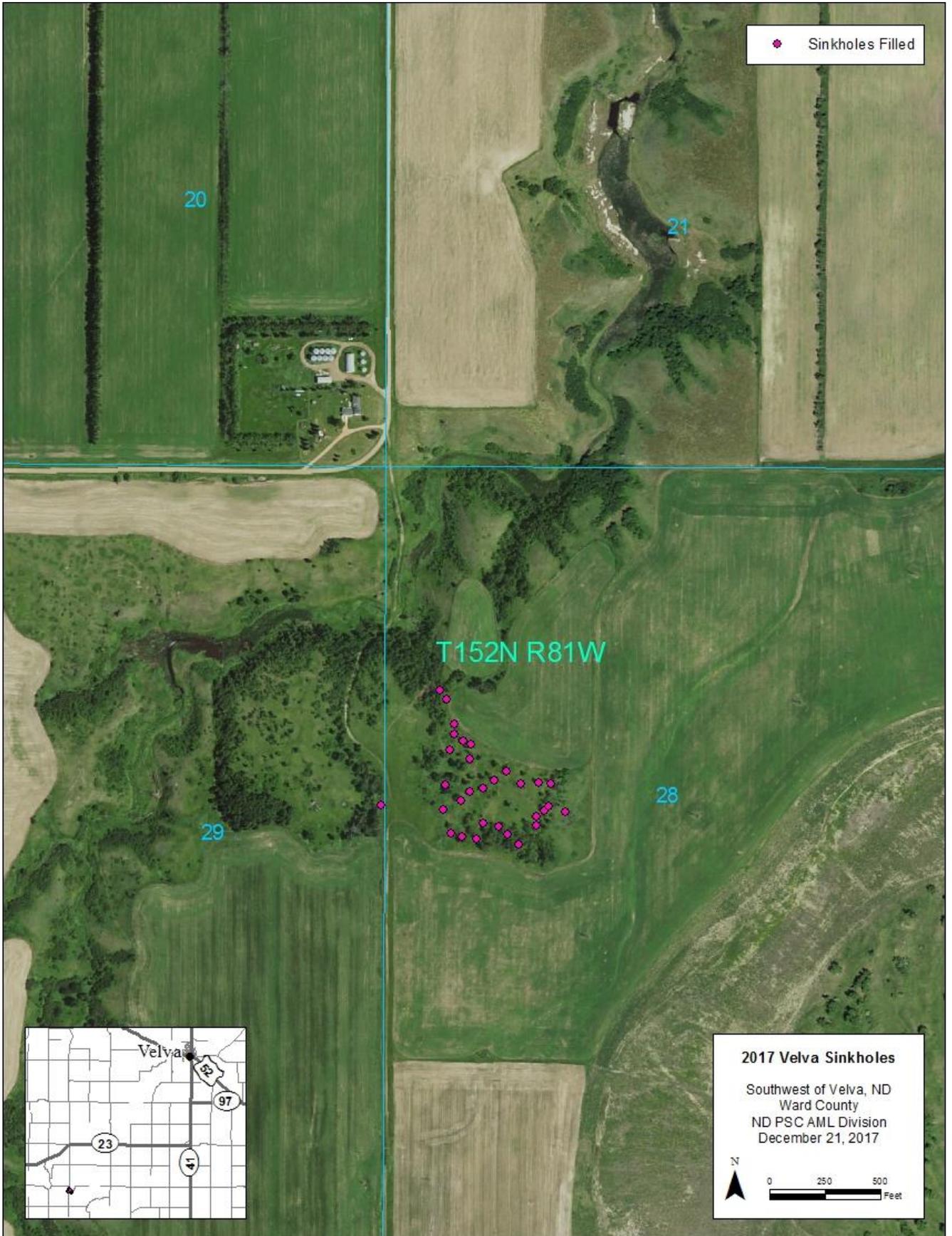


Approximately 13 sinkholes were filled on property owned by James Kimball a mile south of Noonan on October 12-18. This shows topsoil removal and excavation of fill dirt from a borrow area at the west end of the site.



This shows an off-road truck dumping dirt into a sinkhole, while a bulldozer is leveling dirt on another sinkhole. The excavator in the background is excavating fill dirt from the borrow area. The approximate cost of sinkhole filling at this site was \$2870.

# 2017 Sinkhole Filling Approximate Locations of Sinkholes at Velva Site



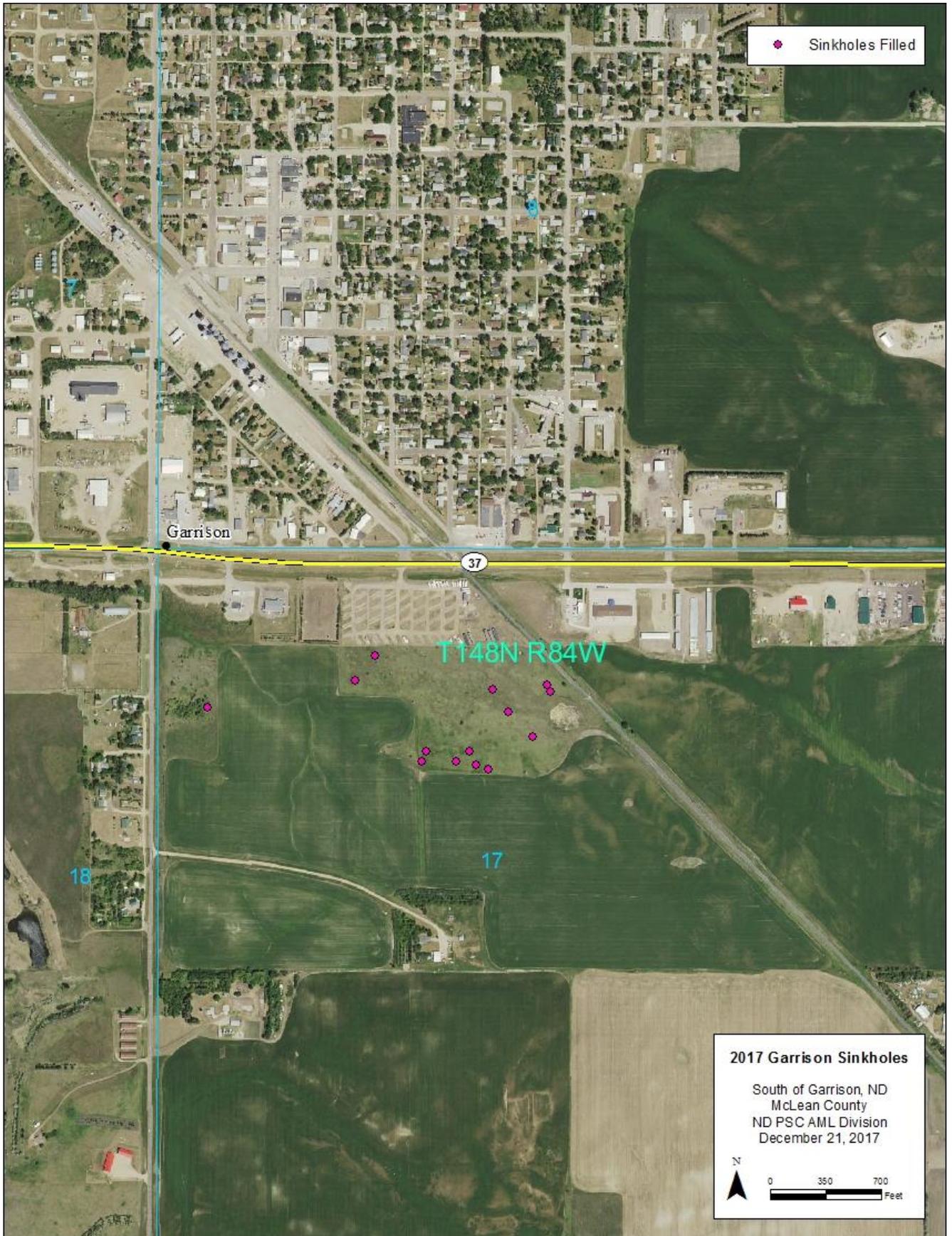


Approximately 31 sinkholes were filled October 16 through November 6 on a tract of about five acres owned by Albert Lindahl, southwest of Velva. This shows the contractor dozing dead trees and brush into a sinkhole, so Albert could burn them.



This shows the contractor saving topsoil from around a sinkhole during a snowstorm on November 3. Approximately 1000 cubic yards of dirt were moved to fill the 31 sinkholes at a cost of \$9750.

# 2017 Sinkhole Filling Approximate Locations of Sinkholes at Garrison Site



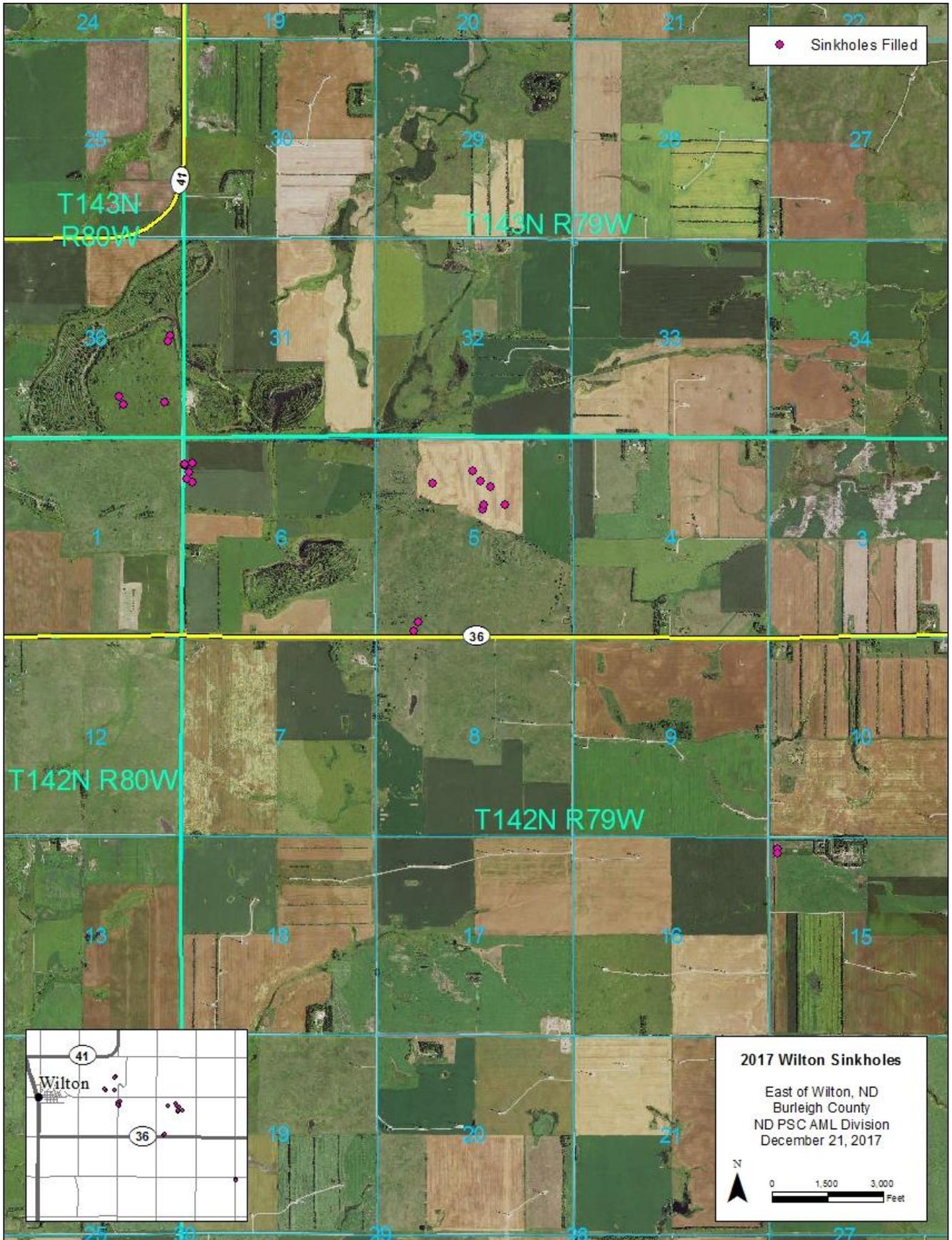


This shows the excavation of a sinkhole south of Garrison. It was about 8 feet in diameter and 10 feet deep. Thirteen sinkholes were filled at this site on October 19, 2017, and the contract cost for this work was \$1995.



Topsoil was removed before filling each sinkhole and replaced after the sinkhole was filled with dirt. After respreading topsoil, the contractor was required to till each disturbed area and seed it to a native grass seed mixture.

# 2017 Sinkhole Filling Approximate Locations of Sinkholes at Wilton Sites





This dangerous sinkhole occurred on property owned by Donald Sorch, about 5 miles southeast of Wilton. It was 12 feet in diameter and 16 feet deep. It was about 250 feet from 66<sup>th</sup> Street and 1000 feet from Don's house.



This shows the same sinkhole while it was being filled. Seven truckloads of dirt were needed to fill it. Then topsoil was respread and it was tilled and seeded. Twenty two sinkholes were filled near Wilton, October 24-26, and the contract cost was \$4182.50.

# 2017 Sinkhole Filling

## Approximate Locations of Sinkholes at New Salem Site



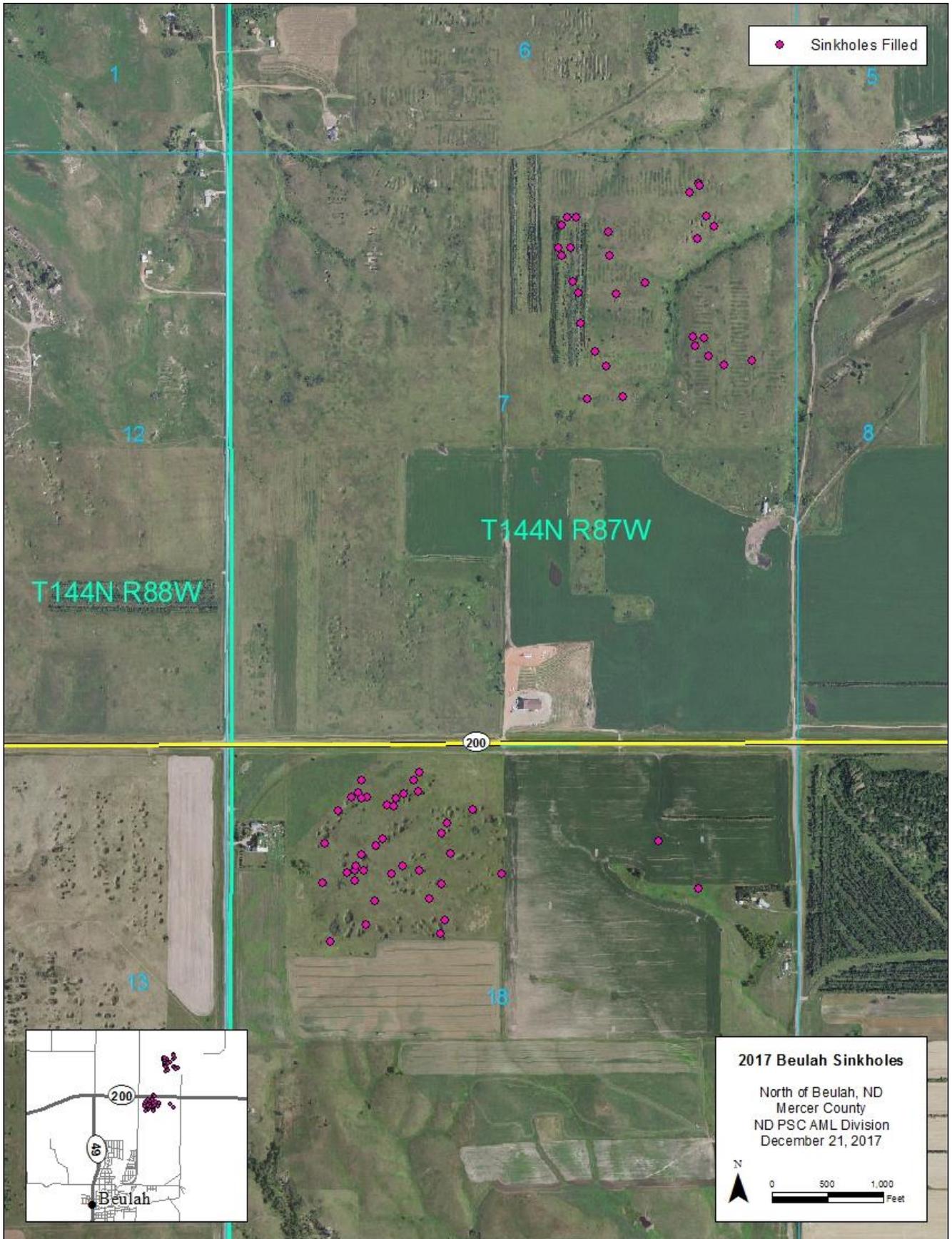


This shows AML employee, Jordan Burns, inspecting a sinkhole on a cropland field near New Salem. Although small in diameter at the surface, beneath the surface this dangerous sinkhole was 12 feet long, five feet wide and five feet deep.



Eight dangerous sinkholes were filled at the New Salem Site on October 31, with about twelve truckloads of dirt. The contract cost for this work was \$2093.75. More than 50 sinkholes have been filled at this site since 2005.

# 2017 Sinkhole Filling Approximate Locations of Sinkholes at Beulah Sites





This was a typical sinkhole on North Dakota Game & Fish property, north of Beulah. It was twenty feet in diameter and fifteen feet deep, and more than ten scraper loads of dirt were needed to fill it.



This hole was 45 feet long, 18 feet wide and 15 feet deep and required about 25 scraper loads of dirt. In 2017, seventy dangerous sinkholes were filled near Beulah at a contract cost of \$73,111.75. Over the past ten years, about 410 dangerous sinkholes have been filled near Beulah at an approximate cost of \$350,000.