

**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**

**November 2018**

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

This report is primarily for work conducted in 2018.

Project Type:	Surface backfilling of dangerous sinkholes caused by collapse of underground mines.
Primary Locations:	In 2018, work was completed on six properties near the cities of Beulah, Heil, New Leipzig, Richardton, Wilton and Zenith North Dakota.
Project Dates:	July 21 to November 27, 2017 and June 17 to November 9, 2018.
Contractor:	Pleasant and Sons Construction, Inc. of Greenville, KY.
Project Cost:	The two-year contract was closed December 6, 2018 and the total contract cost was \$209,714. \$105,723.50 was spent in 2018.

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. About 340 sinkholes were filled during this two-year project. In 2016, approximately 163 sinkholes were filled near Beulah, Bowman, Garrison, Hanks, New Salem, Noonan, Velva, Williston and Wilton. An additional 177 sinkholes were filled near Beulah, Heil, New Leipzig Richardton, Wilton and Zenith in 2018. 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 Matt Fischer, NDPSC, recording data for a sinkhole located on ND Game & Fish Property near Beulah on October 26, 2018. It was about 25 feet in diameter and 20 feet deep. Approximately 25 dangerous sinkholes were filled near Beulah in 2018.*

**2017-2018 Sinkhole Project**

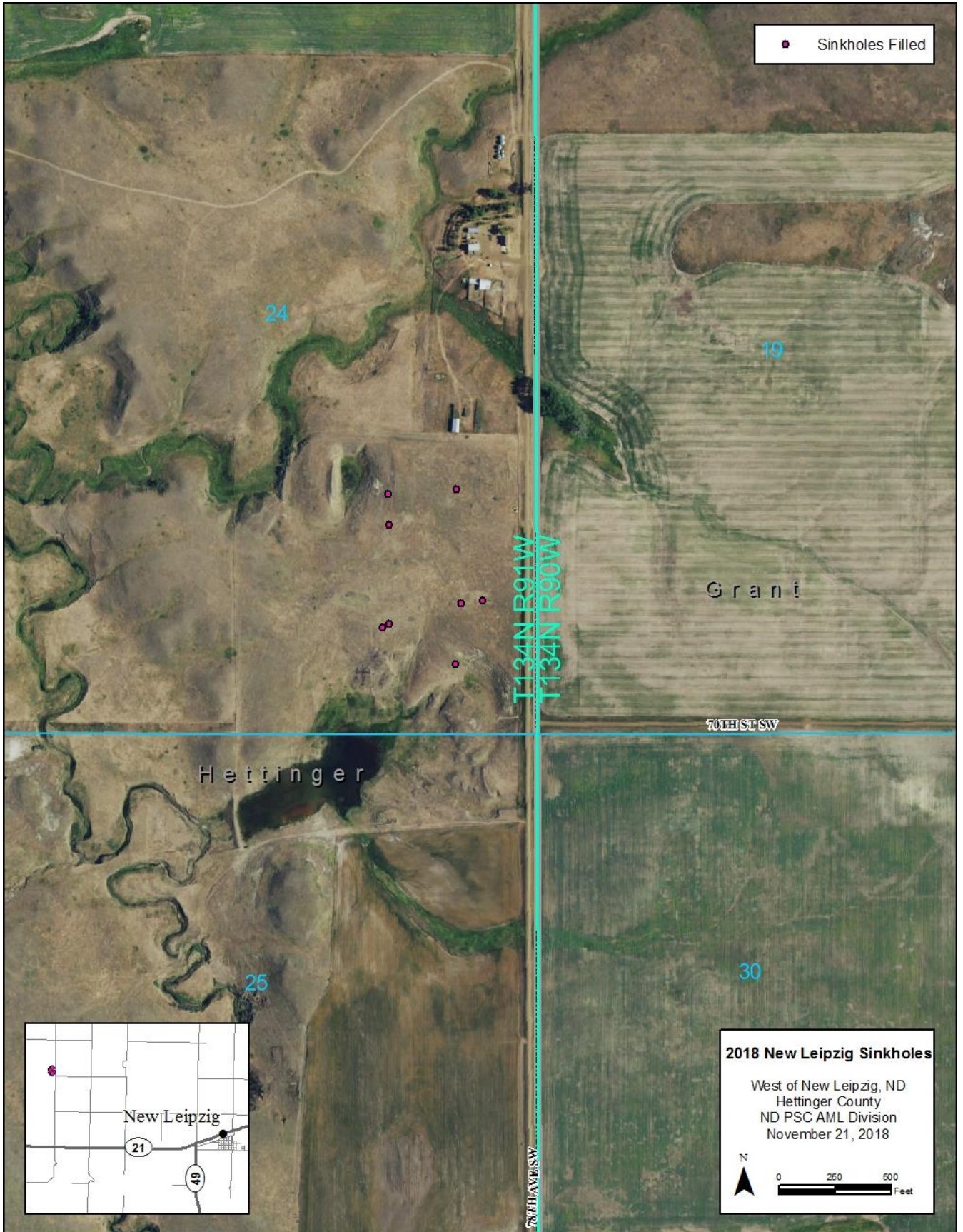
**2018 Sites**

Data by Site and Landowner

Project	Site	Owner/Renter	Dates	Location				Part	Sinkholes	CYD	Cost
				Twp	Rg	Sec					
2018 Sinkholes	New Leipzig	Ackerman Trust, Lee Gross	June 18	134	91	24	SE <sup>1</sup> / <sub>4</sub>	8	75	\$1,696.25	
	Heil - Cornet	Ulrich	June 19-July 9	133	88	3	NE <sup>1</sup> / <sub>4</sub>	80	5563	\$49,976.25	
	Richardton	Zimmerman & City of Richardton	September 13	139	92	5	NE <sup>1</sup> / <sub>4</sub>	2	100	\$1,895.00	
	Zenith	Zarak	Oct 17-18	139	98	6	W <sup>1</sup> / <sub>2</sub>	16			
	Wilton	Krzmarzick	Oct 19-24	139	99	1	SE <sup>1</sup> / <sub>4</sub>	4	372	\$4,391.00	
		Bailey	Oct 24	142	79	6	NE <sup>1</sup> / <sub>4</sub>	1	5	\$587.50	
	Beulah	NDGF	Oct 26-Nov 8	144	87	7	NW <sup>1</sup> / <sub>4</sub>	23	4021	\$36,175.75	
		Eslinger	Nov 9	144	88	12	NE <sup>1</sup> / <sub>4</sub>	2	123	\$1,611.25	
	<b>TOTALS</b>							<b>177</b>	<b>11259</b>	<b>\$105,723.50</b>	



# 2018 Sinkhole Filling Approximate Locations of Sinkholes at New Leipzig Site







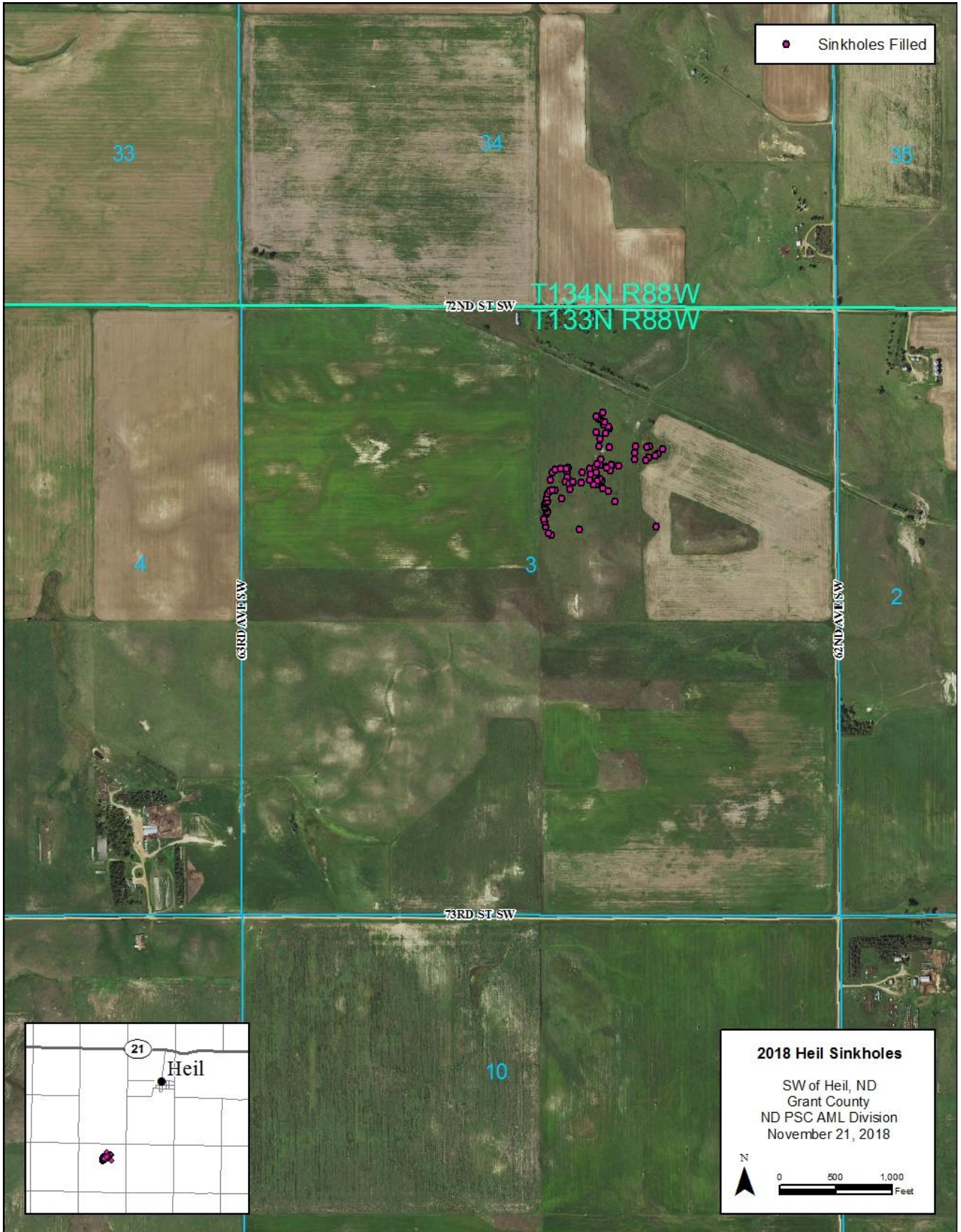
This sinkhole was on land owned by Ackerman Trust and rented by Lee Gross, about ten miles west of New Leipzig. It was eight feet in diameter and eight feet deep. Lee lost a calf in one of the sinkholes on this property in the spring of 2018.



Eight sinkholes were filled at the New Leipzig site on June 18, 2018. This photo shows one that was filled, topsoiled, tilled and seeded to a seed mixture of native grasses. The contract cost for this work was \$1696.25.



# 2018 Sinkhole Filling Approximate Locations of Sinkholes at Heil (Comet) Site







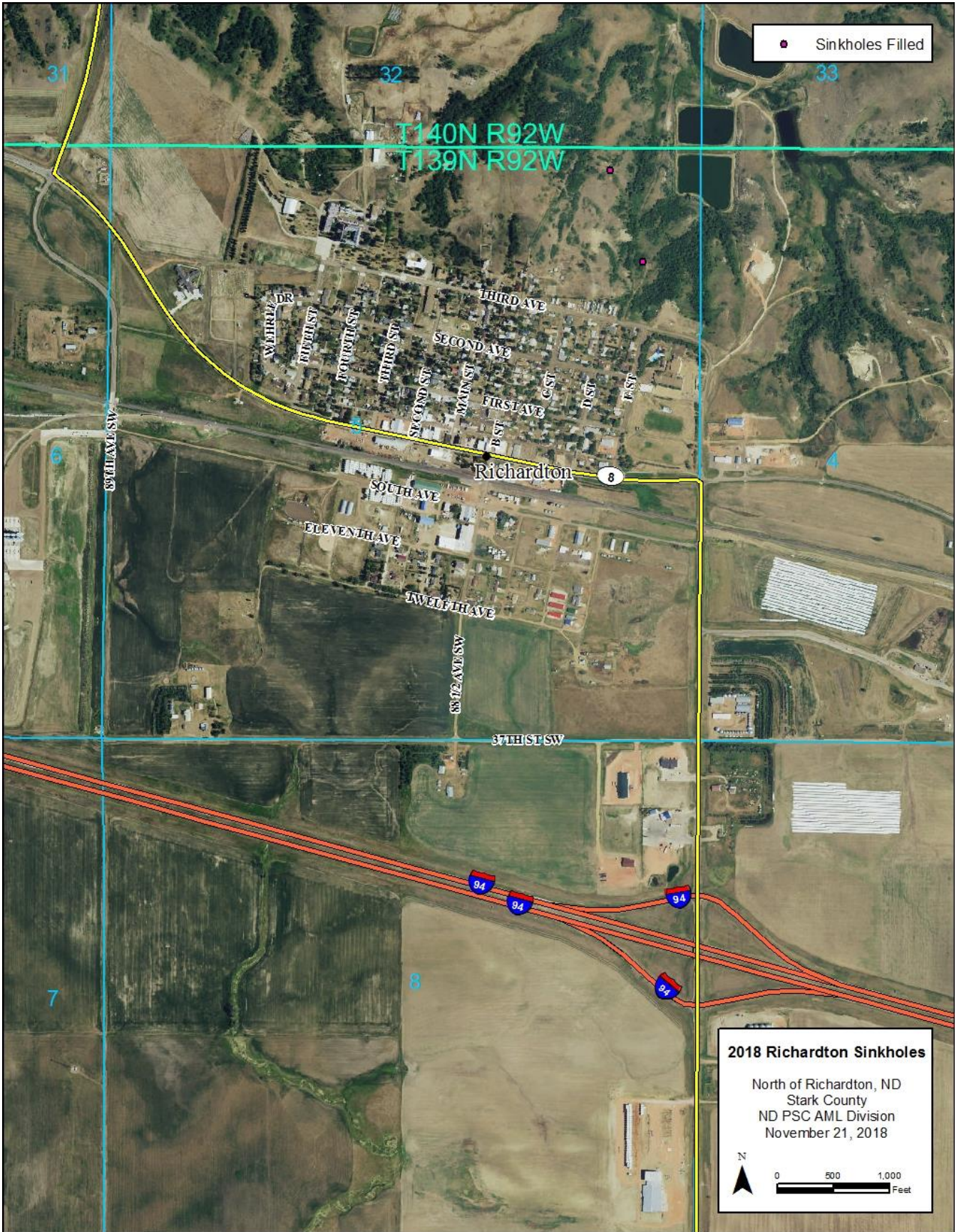
This shows a series of sinkholes at the Heil (Comet) site, owned by Rocky Ulrich and located about 2 miles southwest of Heil. Eighty sinkholes were filled on pastureland and cropland at this site. Inert waste had to be crushed and buried in many of them.



This shows a truck being loaded with fill dirt. The dirt piles in the background are topsoil which was removed from around the sinkholes. Work was conducted at this site between June 19 and July 9 and the contract cost for this work was \$49,976.25.



# 2018 Sinkhole Filling Approximate Locations of Sinkholes at Richardton Site







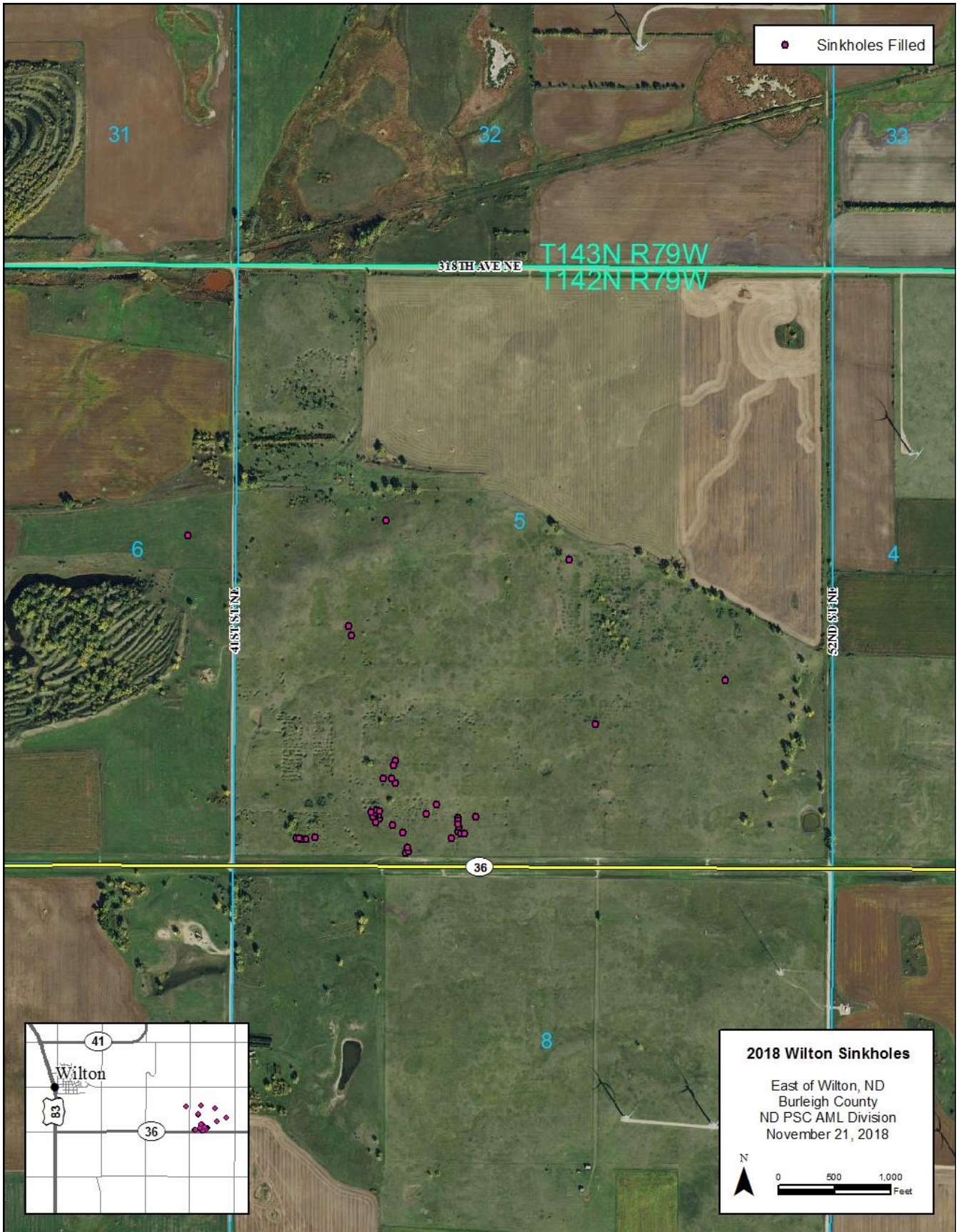
This shows property owner, Dave Zimmerman, near a dangerous sinkhole on his property north of Richardton. Although this sinkhole was only a few feet wide at the surface, it “belled” out to about 8-10 feet below the surface and was 12 feet deep.



Two sinkholes were filled at this site on September 13. The approximate cost for this work was \$1895. About 25 dangerous sinkholes have been filled near Richardton over the past ten years.



# 2018 Sinkhole Filling Approximate Locations of Sinkhole at Wilton Site







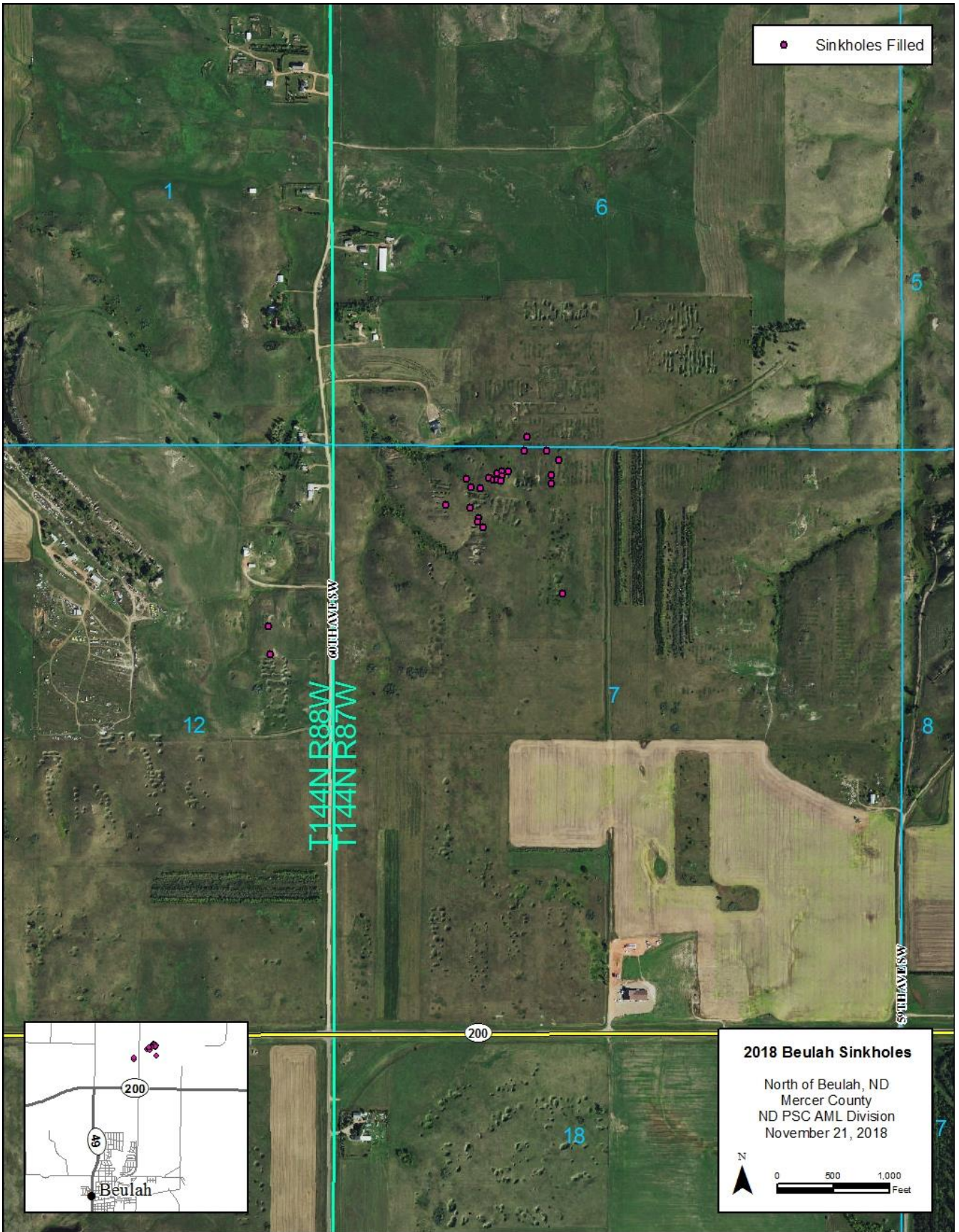
Approximately 41 sinkholes were filled on a pasture owned by Jim Krzmarzick about three miles southeast of Wilton. This shows an excavator saving topsoil from a dangerous sinkhole.



This shows a dozer spreading topsoil over a reclaimed sinkhole at the Wilton Site prior to tilling and seeding. The approximate cost of sinkhole filling at Wilton was \$9977.50.



# 2018 Sinkhole Filling Approximate Locations of Sinkholes at Beulah Site







Approximately 23 dangerous sinkholes were filled October 26 through November 8 on North Dakota Game and Fish property north of Beulah. The contractor was saving topsoil from a sinkhole that was about 25 feet long, 20 feet wide and 20 feet deep.



Although several dangerous sinkholes were filled, many more remain. These are each over 15 feet deep and appeared to be connected underground. Approximately 4144 cubic yards of dirt were moved to fill 25 sinkholes at Beulah, for a cost of \$37,787.