Project Summary

408.19.03.003

2019 Morton County Phase 2 AML – Project

Abandoned Mine Lands Division

North Dakota Public Service Commission

Bismarck, North Dakota

Historic mining shovel located at the Helm Brothers site

December 2019

NORTH Dakota | Public Service Commission
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Contents

Introduction

North Dakota Public Service Commission and Abandoned Mine Lands

North Dakota has records for about 1,700 abandoned coal mines which are 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 coal mined since that time. 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.

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

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. 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.

Project Objective

The 2019 Morton County Phase 2 AML – Project reclaimed about 4900 feet of dangerous highwalls at five abandoned surface coal mines in Morton County. This project was a continuation of a previous project aimed at reclaiming several small, yet hazardous mines in Morton County. A total of 28 acres were reclaimed. The highwalls ranged between 10-30 feet high. Two sites contained water filled pits at the base of the highwall. Reclamation involved backsloping the highwalls and backfilling with spoil material. The water filled pits were also eliminated.

Logan Valley Inc. of Minot, ND, was the general contractor for this project, awarded through competitive bidding. The subcontractor, Thomas and Sons Construction,was responsible for erosion control and seeding operations.

Heavy equipment used in this project included two Cat 627B Scrapers, two 850C JD Dozers, one 1050K JD Dozer, one 850 Dresser Motorgrader, a disk and other farm equipment for seeding and mulching.

The final cost was $276,451.20, about 12% less than the original contract price of $314,071. The contract was closed October 22, 2019.

Project Locations and Property Owners

Site	Location	Acreage	Earthwork	Construction Cost
Helm Brothers	Sec. 17-T140N-R82W	15.12	101,300 yd^3	$153,861.80
Hoger	Sec. 34-T140N-R84W	3.07	4,700 yd^3	$23,828.80
Flemmer	Sec. 32-T140N-R84W	3.73	15,730 yd^3	$32,704.00
Adolf Thiel	Sec. 33-T138N-R84W	2.02	6,100 yd^3	$19,653.80
August Timpe	Sec. 32-R138N-R84W	4.12	15,700 yd^3	$46,402.80

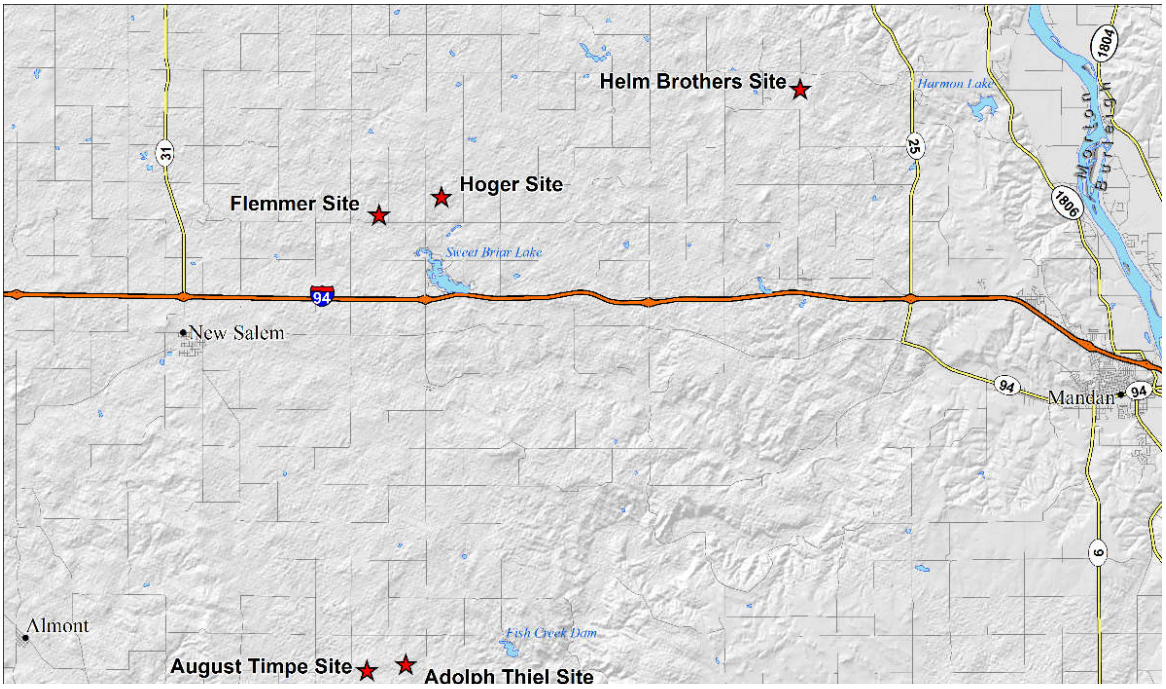

Figure 1 - Project Location Map

Helm Brothers Site

The Helm Brothers site was the largest of the five project areas. The site contained three dangerous highwalls that total 2,000 feet in length and averaged twenty-five feet in height. The site also contained three water filled pits and several pieces of historic mining equipment. The property owner requested that the mining equipment not be disturbed. The abandoned mine site is primarily used for grazing cattle and hunting, with a portion of highwall bordering cropland. A well-established trail allowed public access to the highwalls. The property owner was also concerned about erosion in the southeast corner of the site.

Photo 1 - Helm Brothers Pre-reclamation (looking southeast)

At the request of the property owner, the site was fully reclaimed and all of the existing ponds were eliminated. The site was graded to an average slope of 3.2%. Approximately 101,300 yd^3 of earthen material was moved at this site. A small hill, which supports the abandoned mine tipple, was reshaped and left in place. All of the historic mining equipment remained undisturbed throughout the project.

Photo 2 - Helm Brothers Post-reclamation

Earthmoving operations on the Helm Brothers site began June 18 and were completed July 25. Topsoil re-spread was completed on July 29. The contractor primarily utilized two Cat 627B Scrapers and one 1050K JD Dozer for earthmoving operations. The water in the southeast pit was first moved into the southwest pit. Water was then drained from the southwest pit to the center of the project site where it evaporated and infiltrated the newly graded ground. No water was discharged off site.

Photo 3 - Contractor backfilling the Southeast pit (looking northwest)

Photo 4 - Contractor backfilling the Southwest pit (looking northeast)

The site was deep tilled, fertilized and planted with a native grass mix in September. Fiber rolls were placed to prevent erosion before vegetation can be established. Silt fencing was also installed on the northwest perimeter of the site to prevent sediment from leaving the site.

Project Imagery

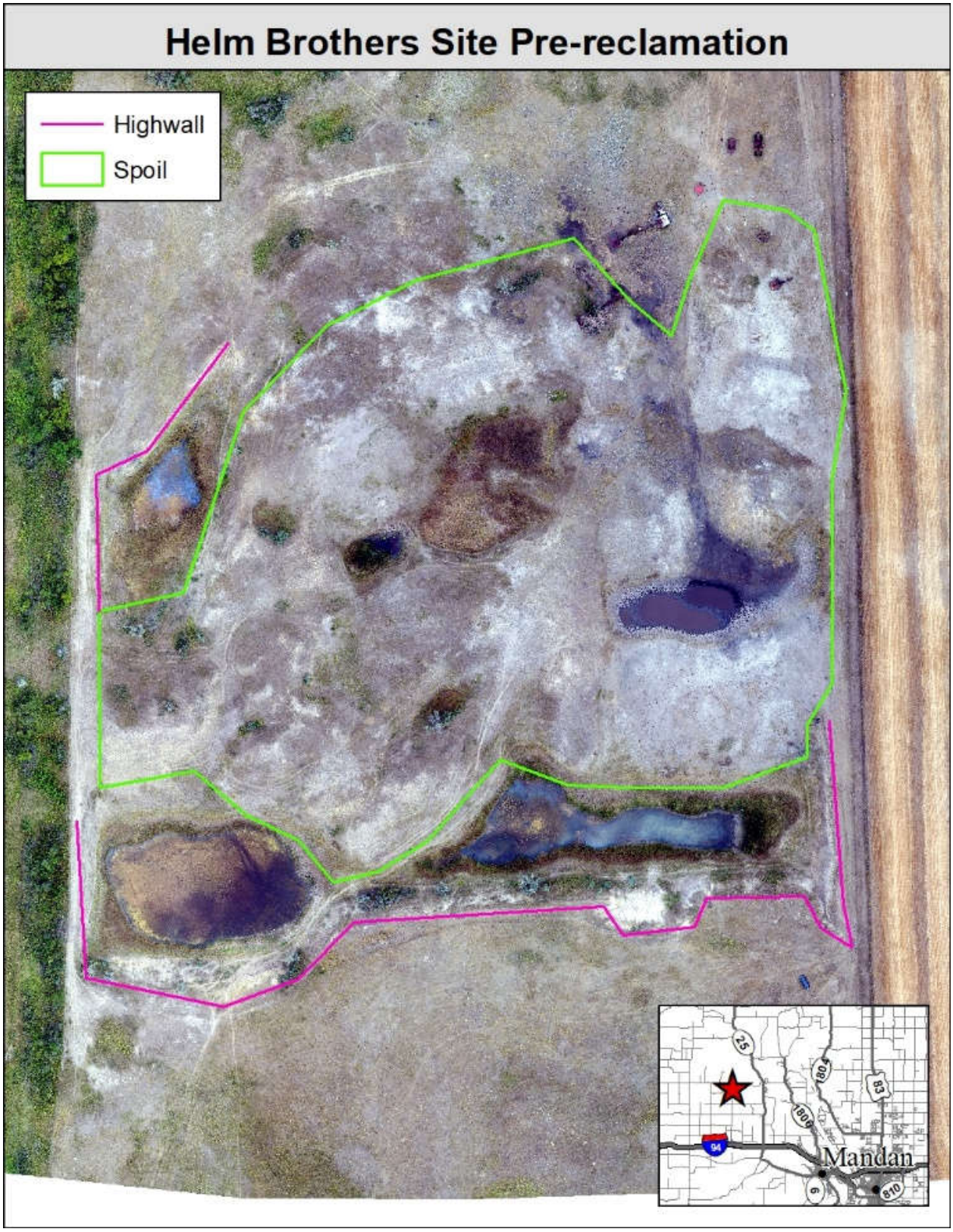

Figure 2 - Helm Brothers site - Pre-reclamation

Figure 3 - Helm Brothers site - Post-reclamation

Hoger Site

The Hoger site was the smallest site in the project. Two separate areas were reclaimed. The east portion of the site contained one highwall with spoil piles that were partially submerged in a man-made pond. Before the project began the property owner, Wayne Hoger, opened the outlet structure to partially dewater the pond. The exposed spoil piles were used to backfill the highwall and match the existing grade. The reclaimed highwall slopes range from 20% - 40%.

Photo 5 - Spoil piles and highwall on the East Site

Photo 6 - Contractor backfilling the highwall on the East Site

Photo 7 - Contractor backfilling the highwall on the East Site

Photo 8 - East Site after reclamation

The west portion of the site involved backfilling a pit and reshaping the 10 foot highwall.

Photo 9 - Subcontractor installing silt fence on the West Site

Photo 10 - Contractor backfilling the pit at the West Site

Earthmoving operations started at the Holger site on July 31 and were completed August 2. Topsoil re-spread was completed on August 8. For this site, the contractor used two 850C JD Dozers and one Deere 160D excavator. Approximately 4,700 yd^3 of earthen material was moved at this site.

Photo 11 - West Site after reclamation

The site was deep tilled, fertilized and planted with a native grass mix in September. Fiber rolls were placed to prevent erosion before vegetation can be established. Silt fencing was also installed at the edge of the pond, on the eastern site, and at the perimeter of the natural drainage, on the western site.

Project Imagery

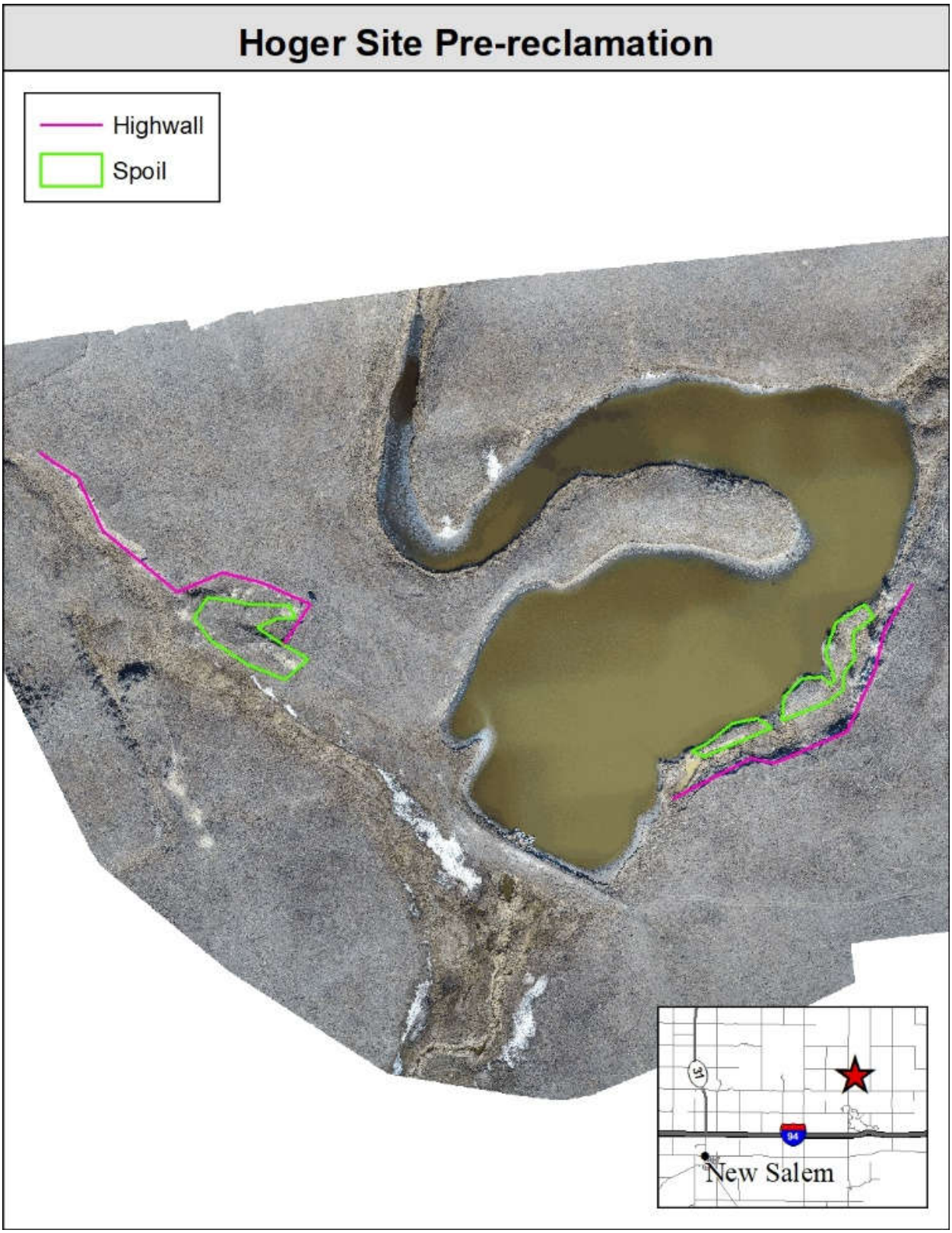

Figure 4 - Hoger Site - Pre-reclamation

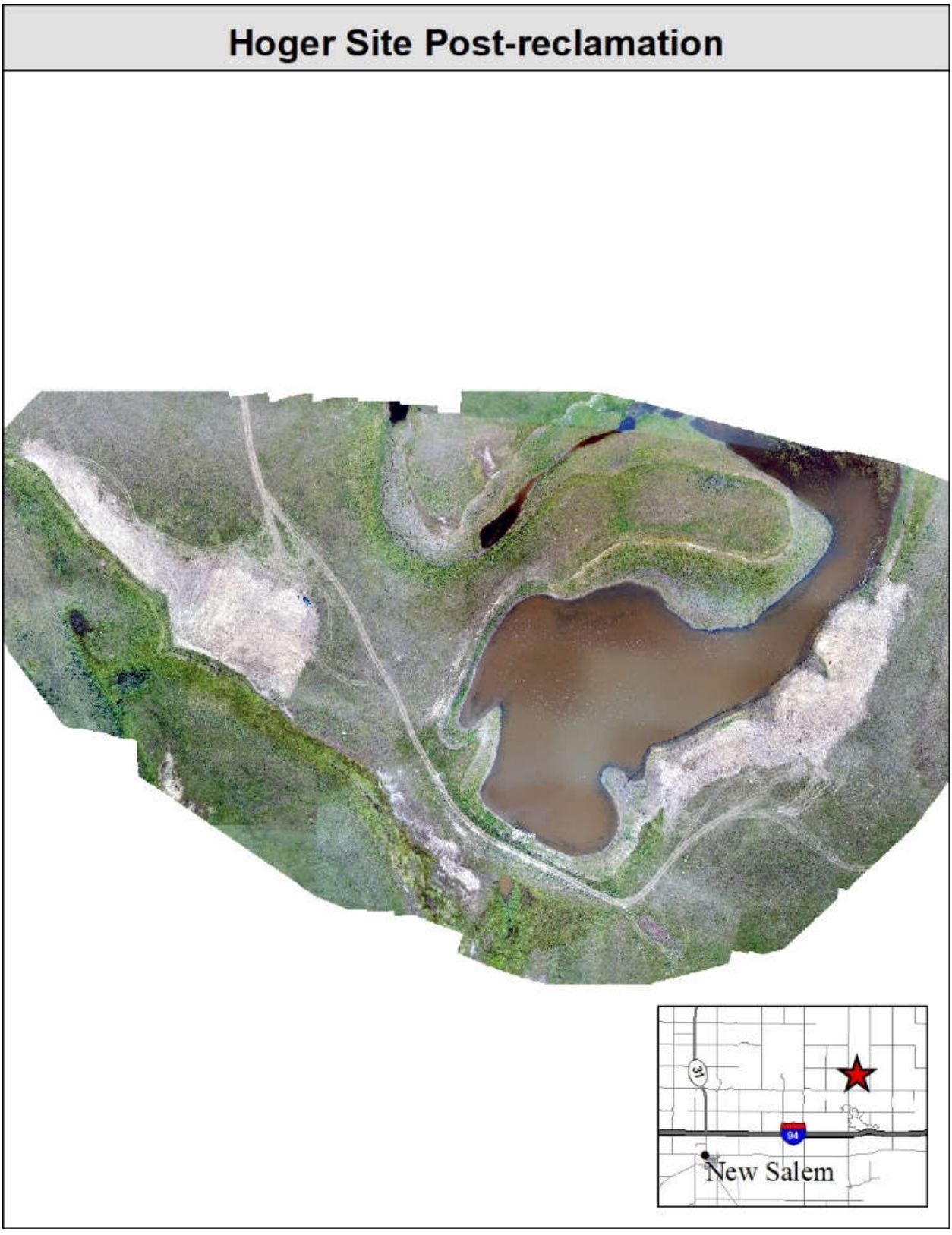

Figure 5 - Hoger Site - Post-reclamation

Flemmer Site

The Flemmer site contained one highwall, approximately 25 ft high, and one water filled pit. The spoil piles, located on the west side of the pit, were not used in the reclamation process. Instead, the design consisted of backsloping the highwall approximately 100 ft into a cultivated field owned by the property owner. The post-reclamation topography has an average slope of 9.1%.

The original design relocated the water by constructing a new pond to the south of the existing pit. After construction began it was discovered that the ground was too saturated to accomplish this task. The property owner was informed of the conditions and it was decided to direct the water into an adjacent drainage ditch owned by the property owner.

Photo 12 - View of the pit and highwall (looking southeast)

Photo 13 - Contractor clearing trees from the highwall

Photo 14 - Contractor stripping topsoil and removing trees and other vegetation

Photo 15 - David Doll, property owner, piling trees on site

Earthmoving operations started at the Flemmer site on August 5 and were completed August 8. Topsoil re-spread was completed on August 13. For this site, the contractor used two 850C JD Dozers, one Deere 160D excavator and one Cat 627B Scraper. Approximately 15,730 yd^3 of earthen material was moved at this site. David Doll, the property owner, assisted the contractor by piling trees and spreading manure before the seeding contractor arrived.

The site was deep tilled, fertilized and planted with a native grass mix in September. Fiber rolls were placed to prevent erosion before vegetation can be established. Silt fencing was also used to prevent sediment from leaving the site.

Project Imagery

Figure 6 - Flemmer Site - Pre-reclamation

Figure 7 - Flemmer Site - Post-reclamation

Adolph Thiel Site

The Adolph Thiel site contained one small highwall approximately 20 ft in height. The property owner requested that the spoil material be used to backfill the highwall and that the reclaimed topography be graded to a slope with allows an ATV to safely pass through the area. The reclaimed area will once again be used as grazing ground for cattle.

Photo 16 – Highwall pre-reclamation

Photo 17 - Contractor backfilling the highwall

Earthmoving operations began at the Adolph Thiel site on August 14 and were completed August 19. Topsoil re-spread was completed on August 22. The contractor used two 850C JD Dozers. Approximately 6,100 yd^3 of material was moved at this site. The average slope of the reclaimed topography is 12.6%. This grade easily accommodates the property owner's request to pass through the site on an ATV.

The site was deep tilled, fertilized and planted with a native grass mix in September. Fiber rolls were placed to prevent erosion before vegetation can be established. Silt fencing was also used to prevent sediment from leaving the site.

Project Imagery

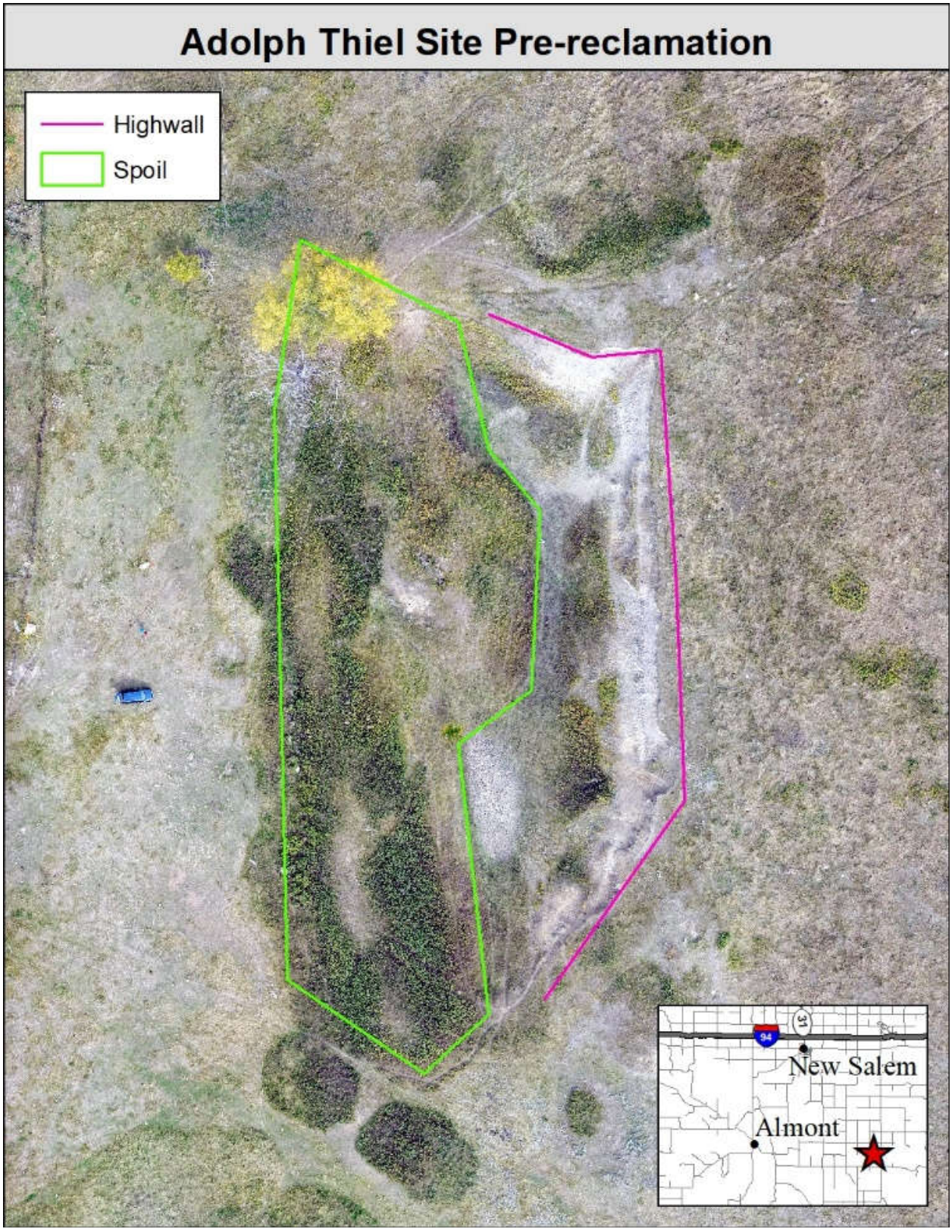

Figure 8 - Adolph Thiel Site - Pre-reclamation

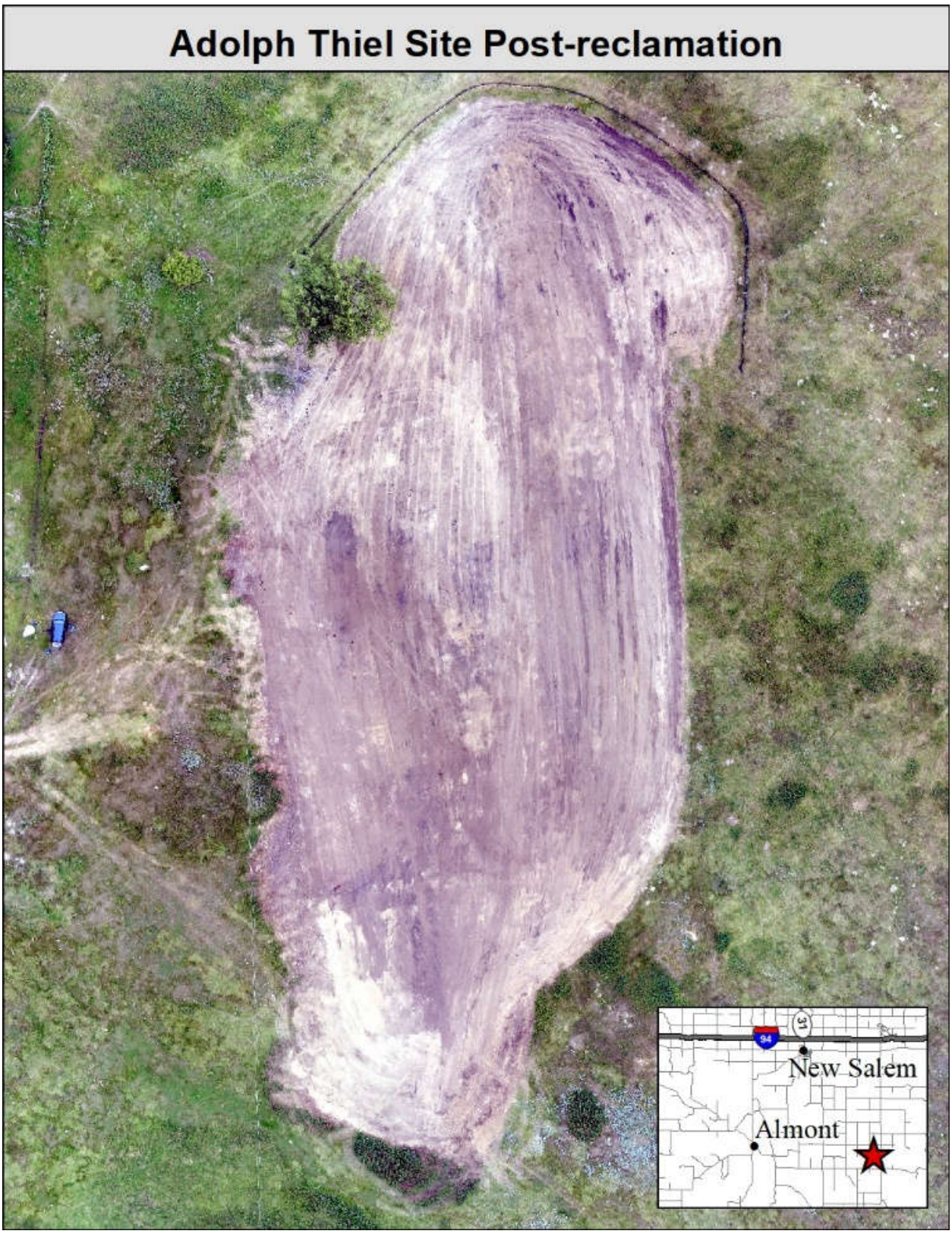

Figure 9 - Adolph Thiel Site - Post-reclamation

August Timpe Site

This site contained one dangerous highwall approximately 25 ft height topped by a substantial amount of inert waste. The pit also contained inert waste. The inert waste was buried on site following the North Dakota Department of Environmental Quality guidelines. The landowner requested that the site be tied into the field to the north, but the site lacked sufficient spoil material. The result is a bowl shape area that may experience ponding during storm events.

Photo 18 - Timpe pre-reclamation (looking east)

The site also contained 30 mature cottonwood trees. The trees were removed as part of the contract. The branches were buried as inert waste in the deepest part of the pit. The trunks were stock piled on site at the request of the property owner.

Photo 19 - Some trees that were felled by the contractor

Earthmoving operations began at the August Timpe Site August 20 and were completed August 27. Top soil was re-spread on August 28. The contractor used two Cat 627B Scrapers, two 850C JD Dozers and one Deere 160D excavator. Approximately 15,700 yd^3 of earthen material was moved at this site.

Photo 20 - Contractor moving dirt to the pit

The site was deep tilled, fertilized and planted with a native grass mix in October. Fiber rolls were placed to prevent erosion before vegetation can be established. A silt curtain was placed around the perimeter of the wetland to prevent any sediment from entering the wetland.

Photo 21 - Silt curtain protecting the wetland from runoff

Project Imagery

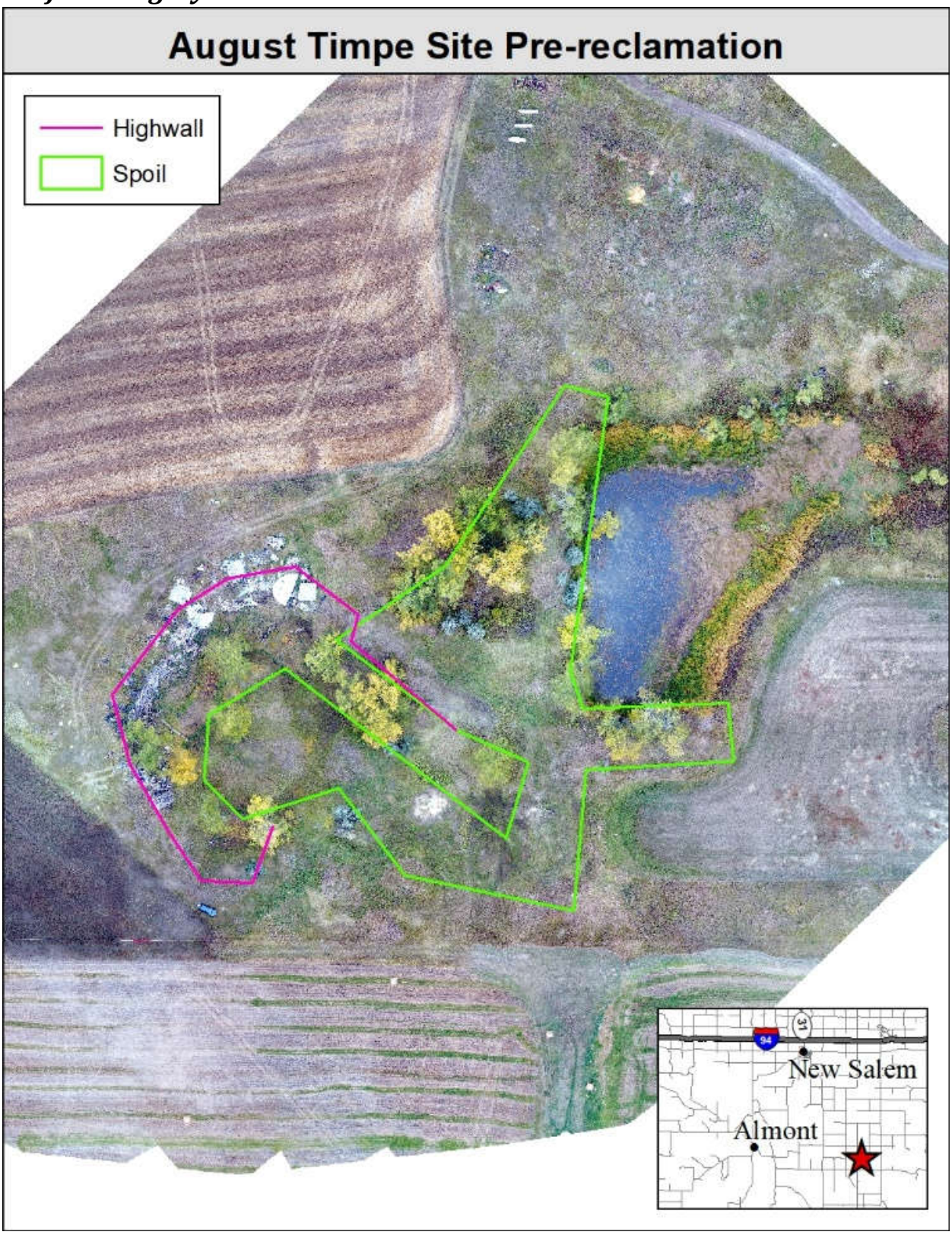

Figure 10 - August Timpe Site - Pre-reclamation

Figure 11 - August Timpe Site - Post-reclamation

Conclusion

The 2019 Morton County Phase 2 AML Project successfully eliminated 4900 ft of dangerous final pit highwalls. If necessary, maintenance will be performed at the project sites. The 2020 surface mine reclamation project will reclaim mines located in both Hettinger and Stark county.