

Drainage Water Management Plan

Someone

Somewhere, USA

February 20, 2014



Producer Information

Producer Name:

Someone
1234 Somewhere NW
Midwest, USA 12345
555-555-5555

Farm Number: 9105

Field/Tract Number: 13453

Cropping System:

- Corn, Soybean, Wheat rotation
- Dry fertilizer (spring urea, fall potash)

Plan prepared by:

Nathan Utt
Agricultural Engineer
Ecosystem Services Exchange
Mobile: 402-405-3995
Email: Nathan@EcoExch.com

Address:
P.O. Box 446
Adair, IA 50002

Objectives

- Improve water quality by reducing nitrate loading from the tile drain system to surface waters
- Manage the tile system for improved soil moisture during the growing season

Special Notes

- RTK topo data collected by ESE
- Wetlands were previously determined within the field, but are exempt
- Tile map provided by the landowner

Summary of Control Structures

This field is divided into two halves by a ditch running through the middle. On the east side of the ditch, one structure at the outlet can be used to get sufficient coverage. On the west side of the ditch two structures will be required to manage the field. One standing structure could be placed at the outlet with a buried Water Gate (manufactured by Agri-Drain Corp.) placed on the main line, one foot of elevation higher than the standing structure.

Zone	Impacted Area (ac)	Pipe Size	Depth at Outlet	Structure Height	Structure Type
A	6.0	6" Plastic	3.07 ft	5.0 ft	Above Ground
B	5.8	6" Plastic	4.16 ft	6.0 ft	Above Ground
C	5.1	6" Plastic	-	-	8" Water Gate
Total	16.9	-	-	-	-

Management Instructions

Winter Management:

Insert stop logs in the control structures to the management elevation (6 inches below the ground surface) within 30 days after harvest is completed. Remove stop logs about two weeks before the anticipated start of spring field work. The management elevations will likely need to be modified if growing wheat or cover crops.

Growing Season Management (optional):

Insert stop logs in the control structure to the management elevation immediately after spring field work is complete. Remove stop logs a few weeks before harvest, if necessary. The management elevations given below will allow the water table to be maintained two feet below the ground surface. Additional recommendations from North Carolina State University are given below.

Zone	Management Elevation (ft)		
	Control	Winter	Growing Season
A	620.5	620.0	618.5
B	620.0	619.5	618.0
C	621.0	620.5	619.0

Additional management recommendations provided by North Carolina State University

Period	Production Activity	Control Setting (in)	Comments
Jan 1 – Mar 15	Fallow	12 – 18	Minimize drainage outflow and encourage denitrification
Mar 15 – Apr 5	Tillage, corn seedbed preparation, planting	30 – 36	Just deep enough to provide trafficability and good conditions for seedbed preparation
Apr 15 – May 15	Corn establishment and early growth	24 – 30	Deep enough to promote good early growth root development
	Nitrogen side dressing	24 – 36	Just low enough to allow trafficability
May 15 – Aug 15	Corn Development and maturity	18 – 24	Temporary adjustment during wet periods
Aug 15 – Oct 15	Harvesting, tillage; planting of wheat	30 – 36	Lower enough to provide trafficability
Oct 15 – Mar 1	Wheat establishment	18 – 24	Lower during extremely wet periods
Mar 1 – Mar 15	Side dressing wheat	30 – 36	Low enough to provide trafficability
Mar 15 – Jun 15	Wheat development	18 – 24	Temporary adjustment during wet periods
Jun 15 – Jul 15	Harvesting wheat; tillage, planting of soybeans	30 – 36	Depends of rainfall
July 15 – Nov 1	Soybean development	18 – 24	Temporary adjustment to allow cultivation
Nov 1 – Dec 15	Soybean Harvesting	36 – 42	Low enough to provide trafficability
Dec 15 – Mar 15	Fallow	12 – 18	Minimize drainage outflow and encourage denitrification

a Values shown are the control setting (depth below average surface elevation) and should not be considered the actual water table depth in the field, which will be lower except during drainage periods.

b Most adjustments are related to trafficability and must take into account weather conditions and soil water status at the time:

- in an unusually dry season, control can be 3 to 6 inches higher;
- in an unusually wet season, control should be 3 to 6 inches lower;
- in coarse-textured soils, trafficability can be provided with the water table approximately 6 inches higher.

Information obtained from:

<http://www.bae.ncsu.edu/topic/drainageadvisory/guidelines.php>

Impact on Wetlands

- Management of this system will likely not impact the functionality of the wetlands

Summary of Soil Information

Name	Area (ac)	MU Sym	Drainage Class
Brookston	11.1	BroaaA	Poorly drained
Crosier	16.6	CsraaA	Somewhat Poorly drained

Schedule of Implementations

- NRCS EQIP practices included in this plan:
 - 554 – Drainage Water Management
 - 587 – Structure for Water Control
- Additional practices that could be used in conjunction with this plan:
 - 590 – Nutrient Management
 - Managing the amount, source, placement, and timing of plant nutrient and soil amendments
- Practices could be installed as early as Spring 2014 or when funds are available.

Additional Considerations

- All above ground control structures should be installed with at least 20' of non-perforated pipe both upstream and downstream of the structure.
- The Water Gates require 20' of non-perforated pipe on the upstream side only.

Signature Page

This Conservation Activity Plan for Drainage Water Management (CAP-130) was completed as requested by Someone. It was produced according to NRCS standards and is approved for submission.

Ecosystem Services Exchange, LLC (ESE) is not responsible for any issues related to the installation of the system detailed in this drainage plan. This includes, but is not limited to property damage, personal injury, or reduced functionality of the drainage system due to improper installation methods. Slight modifications to the planned system may be needed at the time of installation due to current field conditions and preferences of the contractor. The contractor should contact an ESE representative prior to making any adjustments to ensure that the proposed modifications will be in compliance with the management objectives of the system. Ultimately the contractor is responsible for drainage system.

In this plan ESE has outlined some basic management guidelines. Although these guidelines are based on the best available information, slight adjustments may be needed in order to achieve the optimum crop production and water quality results for this specific system. ESE is not responsible for any crop or property damage resulting from the mismanagement of this system.

Producer: Someone
1234 Somewhere NW _____ (sign)
Midwest, USA _____ (date)

Plan prepared by: Nathan Utt _____ (sign)
Agricultural Engineer
Ecosystem Services Exchange _____ 5/28/2014 (date)

Plan accepted by: Name (print): _____
Position: _____
_____ (sign)
_____ (date)

Check List for District Conservationist

The DWM Plan includes the following components¹:

- Farm and field information is provided.
- Objectives have been provided.
- A soil map with field boundaries is included in the plan.
- A tile map is provided in the plan.
- A map of wetlands in the field (if any) is included in the plan.
- A delineation of the drained area (s) of the field is part of the plan.
- A topographic map of the field (on 6" contours) is included in the plan.
- An overlay map with field boundaries, drain location and topographic contours, with a determination (location and area) of the impacted area (s) is provided.
- A water table management plan is included.
- A summary sheet that lists the pipe diameter of each proposed control structure, the area impacted by each structure and the depth to tile is provided as part of this plan.
- Each of the above components has been reviewed with the landowner and the landowner understands the plan.

¹ The District Conservationist will check off each item on this list before authorization of payment.



Legend

 Boundary

27.7 ac

Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA, USGS, AeroGRID, IGN, IGP, and the GIS User Community

0 125 250 500 Feet



Map created by Andy Mackrill 20 Feb 2014
andy@EcoExch.com



Legend

Soil

Soil Name

- Brookston
- Crosier



Sources: Esri, DigitalGlobe, GeoEye, IGN, USDA, USGS, AeroGRID, IGN, IGP, and the GIS User Community

0 125 250 500 Feet



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andy@EcoExch.com



Legend	
Tile	
Size (in)	
	4
	5
	6

Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA, USGS, AeroGRID, IGN, IGP, and the GIS User Community


0 125 250 500 Feet



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Legend


 Drained Area

15.2 ac.

7.4 ac.

Sources: Esri, DigitalGlobe, GeoEye, IGN, USDA, USGS, AeroGRID, IGN, IGP, and the GIS User Community

0 125 250 500 Feet

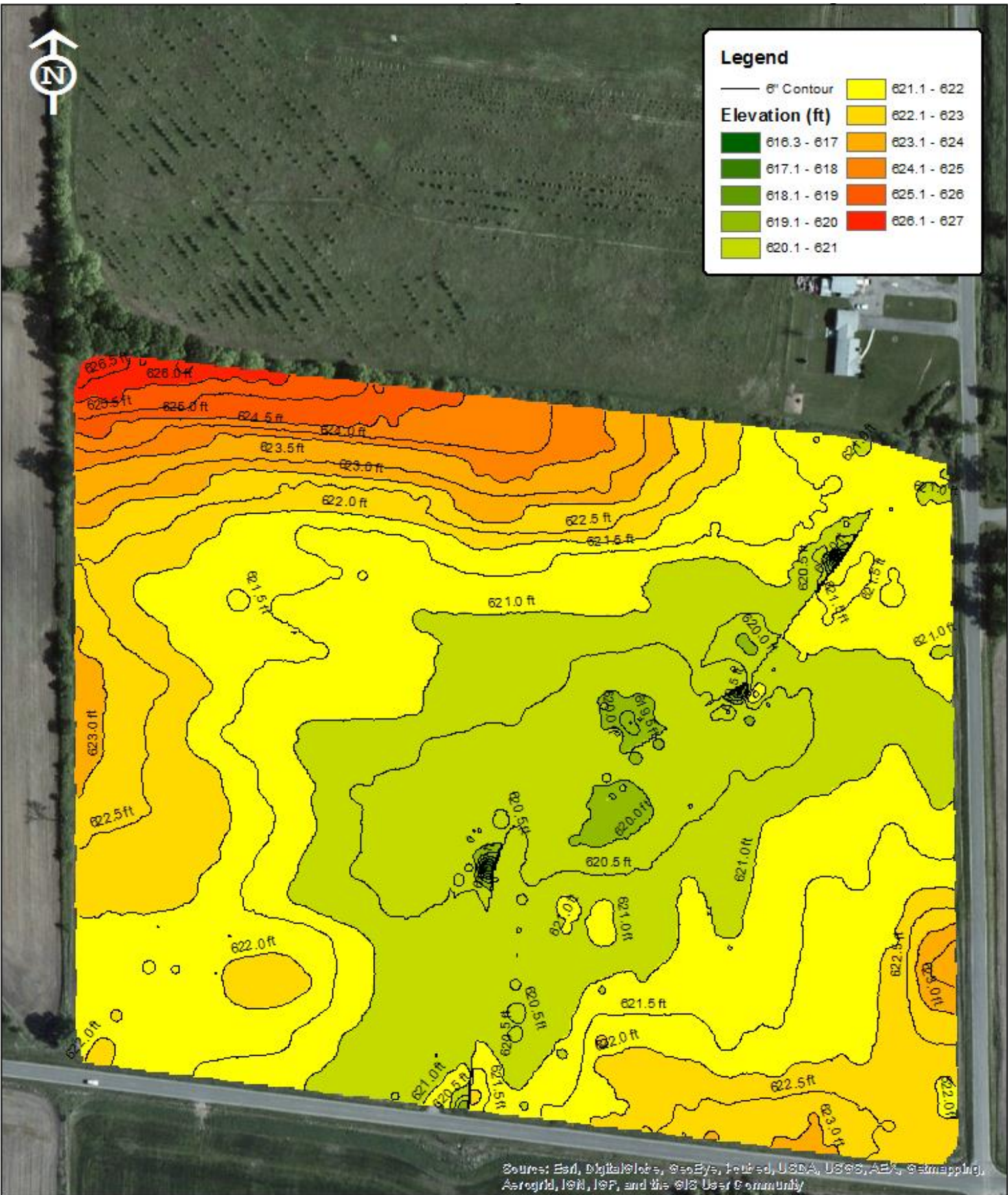


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Legend

— 6' Contour	621.1 - 622
616.3 - 617	622.1 - 623
617.1 - 618	623.1 - 624
618.1 - 619	624.1 - 625
619.1 - 620	625.1 - 626
620.1 - 621	626.1 - 627



Source: Esri, DigitalGlobe, GeoEye, IGN, GeoEye, USDA, USGS, Aero, Samba, GeoMapping, AeroGrid, IGN, IGN, and the GIS User Community

0 125 250 500 Feet

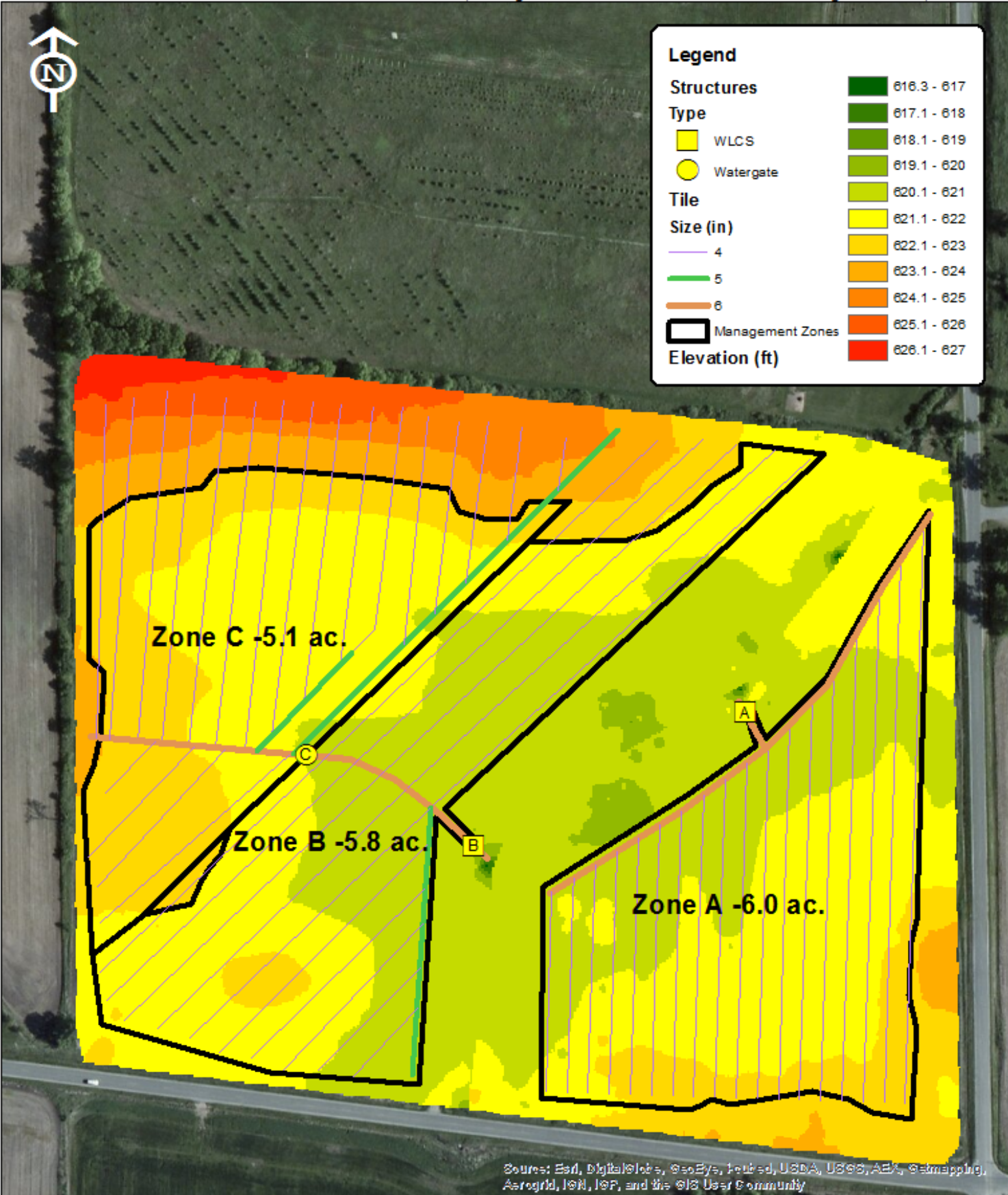


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Legend

Structures		616.3 - 617
Type		617.1 - 618
WLCS		618.1 - 619
Watergate		619.1 - 620
Tile		620.1 - 621
Size (in)		621.1 - 622
4		622.1 - 623
5		623.1 - 624
6		624.1 - 625
Management Zones		625.1 - 626
Elevation (ft)		626.1 - 627

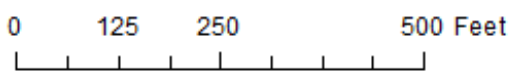


Zone C -5.1 ac.

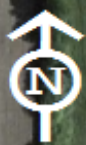
Zone B -5.8 ac.

Zone A -6.0 ac.

Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA, USGS, AeroGRID, IGN, IGP, and the GIS User Community

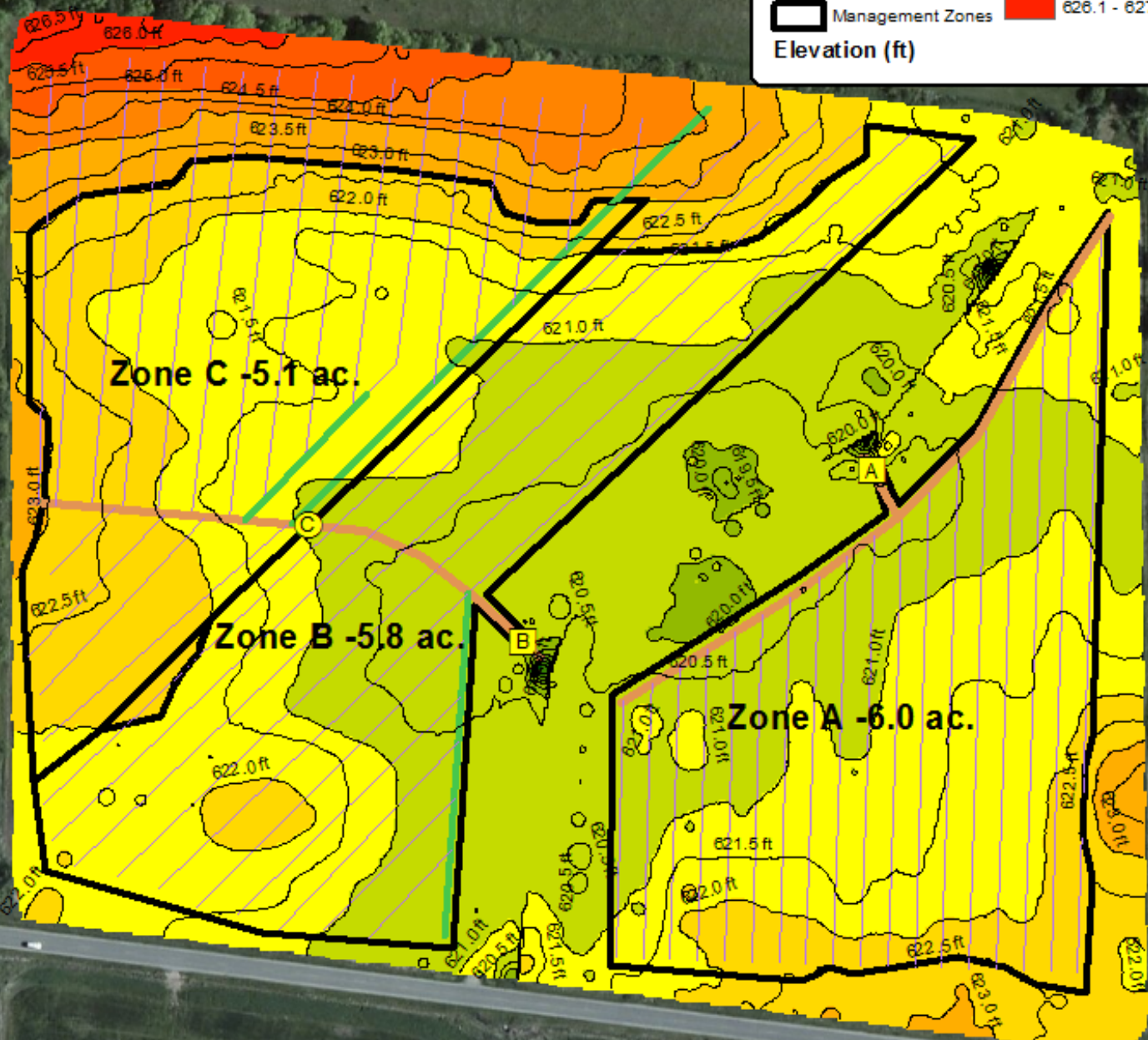


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Legend

— 6" Contour	816.3 - 817
Structures	817.1 - 818
Type	818.1 - 819
■ WLCS	819.1 - 820
● Watergate	820.1 - 821
Tile	821.1 - 822
— Size (in)	822.1 - 823
— 4	823.1 - 824
— 5	824.1 - 825
— 6	825.1 - 826
□ Management Zones	826.1 - 827
Elevation (ft)	



Sources: Esri, DigitalGlobe, GeoEye, IGN, GeoEye, Inc, USDA, USGS, Aero, GeoMapping, AeroGRID, IGN, IGP, and the GIS User Community

0 125 250 500 Feet




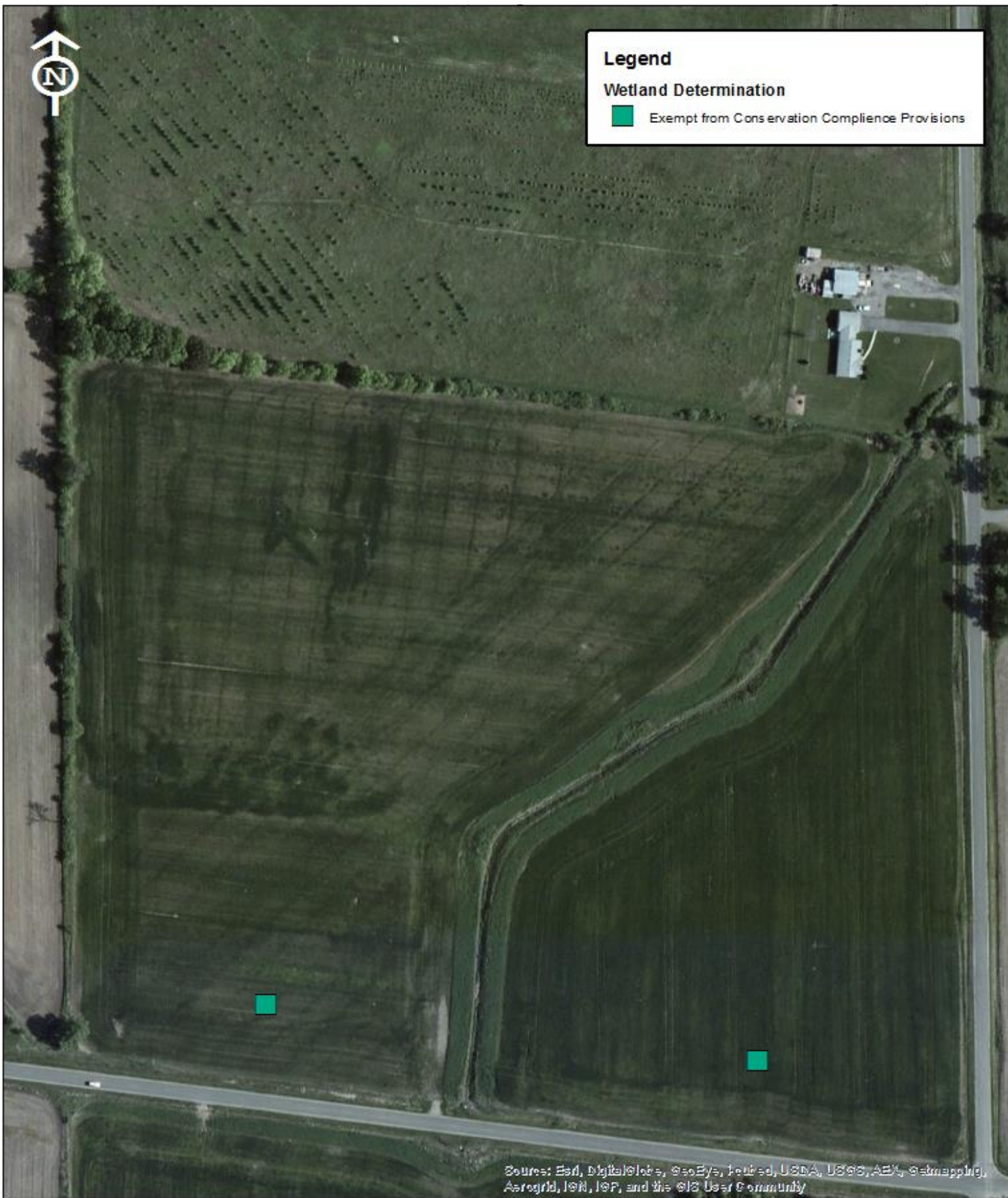
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Legend

Wetland Determination

-  Exempt from Conservation Compliance Provisions



Sources: Esri, DigitalGlobe, GeoEye, Earthstar, USDA, USGS, AeroGRID, IGN, IGP, and the GIS User Community

0 125 250 500 Feet



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