CITY OF LINCOLN NEBRASKA

LINCOLN PARKS & RECREATION DEPARTMENT
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MEMORANDUM

DATE: May 8, 2018

TO: City of Lincoln Parks and Recreation Department, Lower Platte South Natural Resources District Board of Directors, Nebraska Game and Parks Commission, and Nebraska Chapter Pheasants Forever, Inc.

FROM: Tom Malmstrom
Natural Resources Coordinator - Parks and Recreation Department
Saline Wetlands Conservation Partnership

RE: Saline Wetlands Conservation Partnership – 2017 Progress Report

On behalf of the Saline Wetlands Conservation Partnership (SWCP) I want to make you aware of the activities, which occurred in 2017. The SWCP was initiated in 2003 and continues to progress. The City of Lincoln has been awarded five Nebraska Environmental Trust Fund (NET) grants since 2002 for the eastern saline wetlands. In 2016, the City of Lincoln received a $795,000 grant over a three year period from 2016 to 2019. The SWCP has also utilized Federal Section 6 grants, Federal Section 319 grants, and State Wildlife grants. These grants have been used for land acquisition, wetland restoration, education, and land management purposes and provide matching funds for other grant opportunities.

Efforts of the SWCP are to protect, restore, and manage the rare and unique saline wetland habitat. The Partnership continues to utilize the "Implementation Plan for the Conservation of Nebraska's Eastern Saline Wetlands (2003)," for guidance in efforts to conserve the saline wetlands. An update of this Plan reflecting upon the past 15 years will be completed in 2018.

Since its inception, approximately 1,610 acres of habitat containing saline wetlands, freshwater wetlands, native prairie, and other associated upland habitat have been conserved through fee-title acquisition from willing sellers. Activities continue with education, saline wetland restoration and conservation projects, and the operation and maintenance of conservation areas.

Illustration 1 identifies saline wetland properties, which have been acquired through fee-title acquisitions or conservation easements since the 1980's. Illustration 2 identifies other saline wetland locations including Pioneers Park and saline wetland conservation easements.

Illustration 1

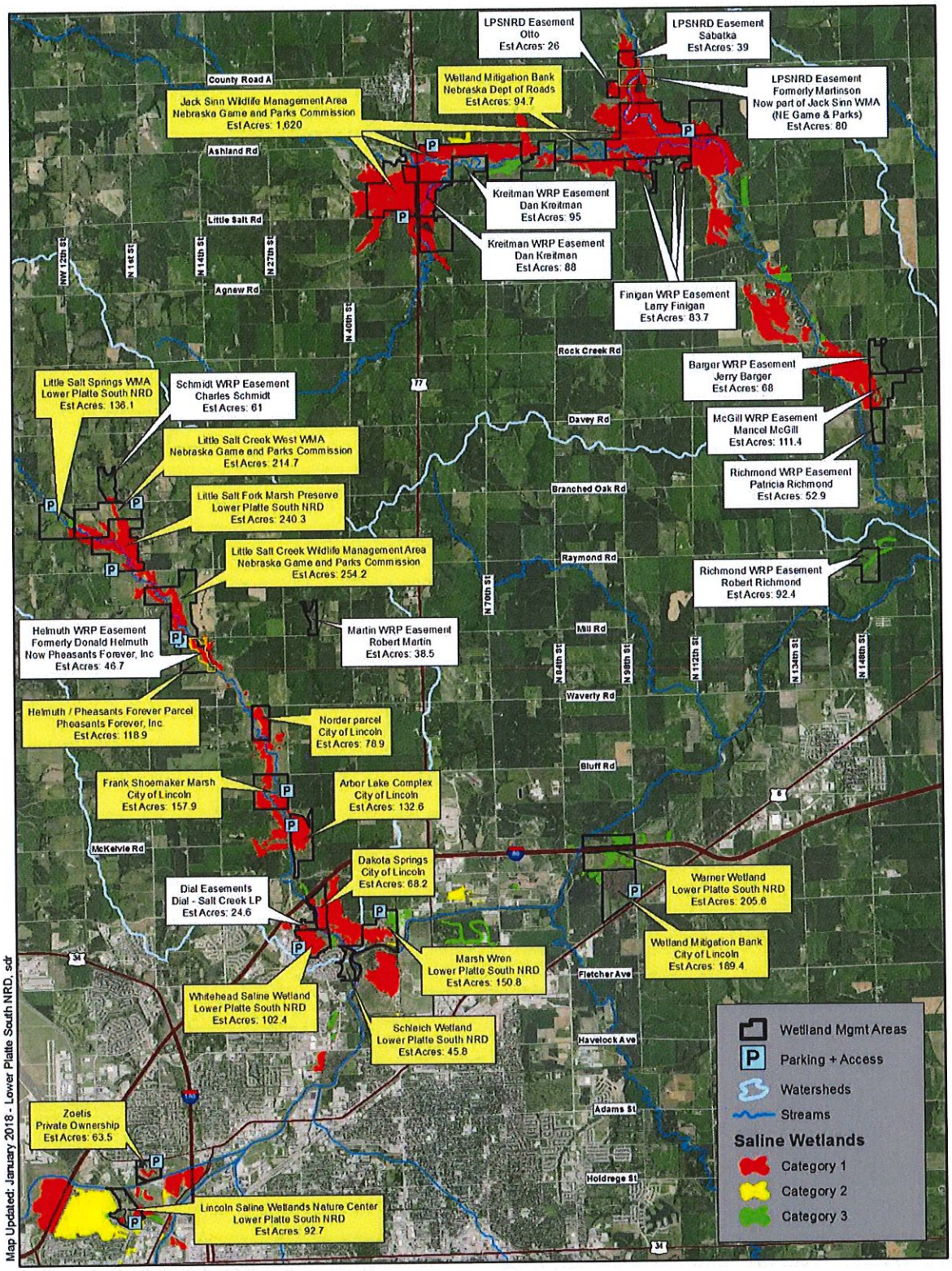
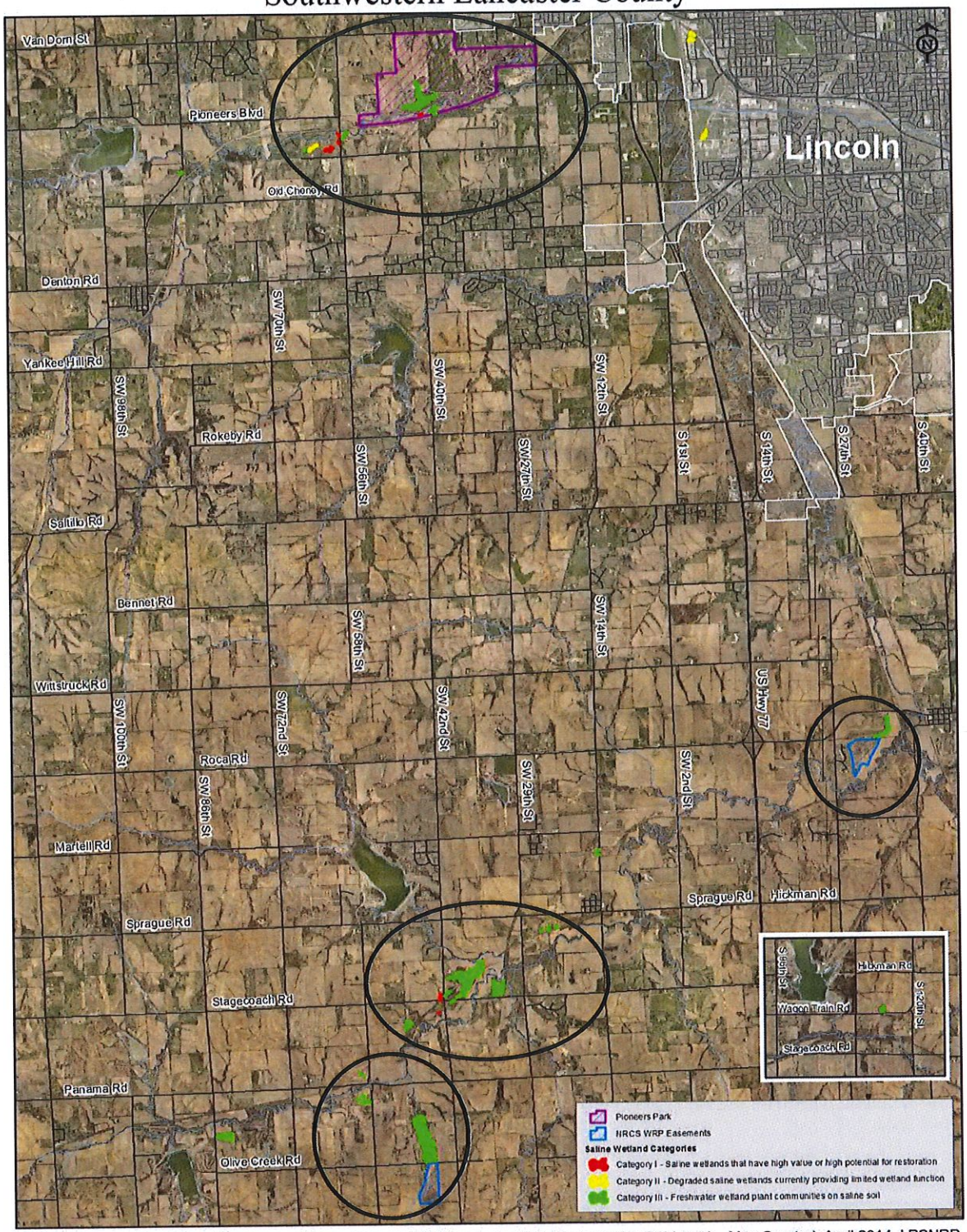


Illustration 2

Southwestern Lancaster County



Q:\ArcGIS_projects\Wetlands\ManagementAreas_Grouped\SW_Lancaster\SW_LancasterCo_8x11.mxd - Map Created: April 2014, LPSNRD

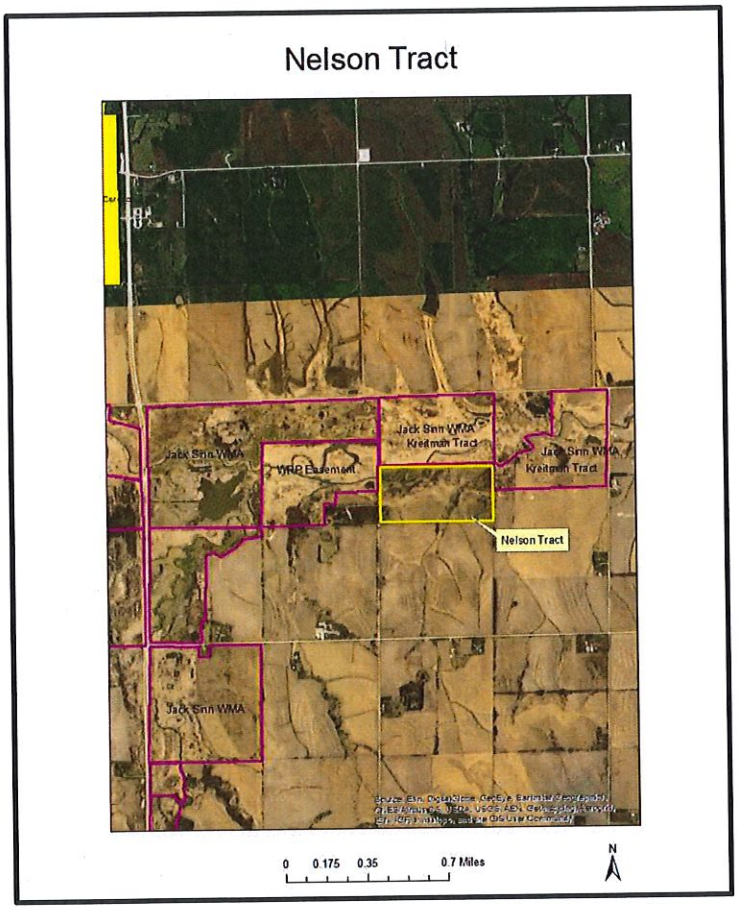
SUMMARY OF 2017 ACTIVITIES

LAND ACQUISITION

- **Jack Sinn Wildlife Management Area Addition (Laurel Nelson property) – On West Branched Oak Road between NW 12th and NW 27th streets**

Size:	79.8 acres
Purchase price and date:	$378,000 on December 29, 2017
Funding sources:	Pittman-Robertson funds through the Nebraska Game and Parks Commission (NGPC)
Owner:	NGPC

Notes – The property is located along Rock Creek in northern Lancaster County, and is adjacent to the 1,540 acre Jack Sinn Wildlife Management Area (WMA) that is owned by the Nebraska Game and Parks Commission. Jack Sinn WMA is managed for the conservation and preservation of the Eastern Saline Wetlands that occur on the area.



Management activities will be consistent with those completed on the Jack Sinn Wildlife Management Area, which may include noxious weed control, prescribed grazing and fire, haying, woody vegetation removal, and public access improvements. The area will be open to the public in accordance to the NGPC Wildlife Management Area Regulations.

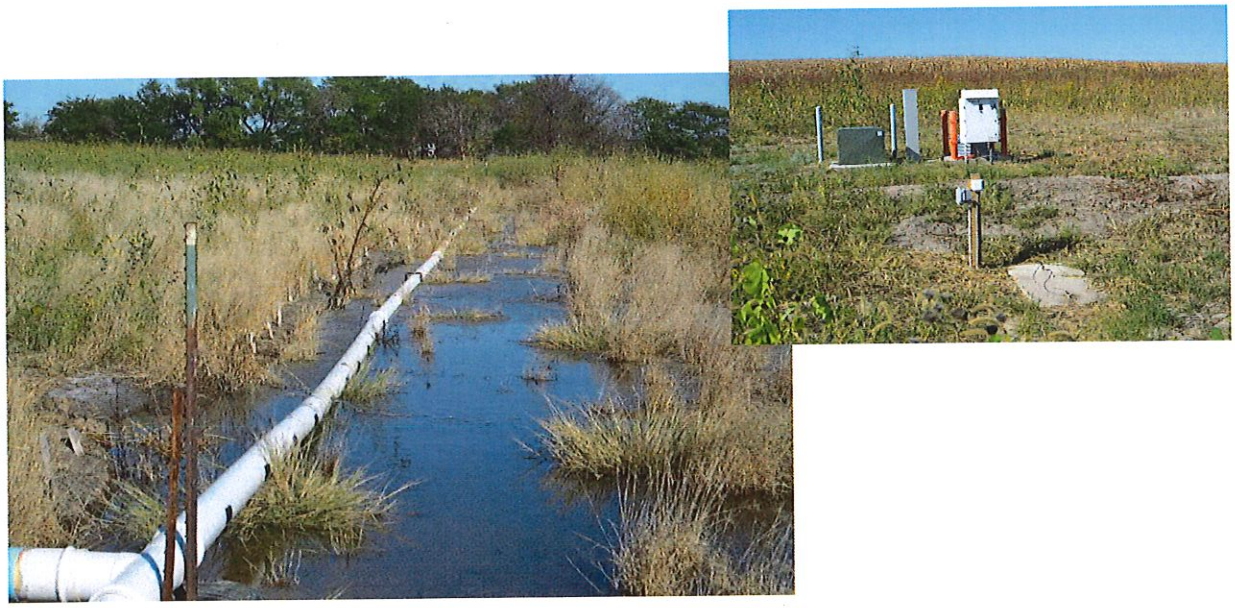
WETLAND RESTORATION

Marsh Wren Community Wetland Area

The property is owned by the Lower Platte South Natural Resources District (LPSNRD). This is a saline wetland restoration project of Marsh Wren which is located on the north side of Salt Creek between approximately North 40th Street. and North 48th Street on the north edge of the City of Lincoln. The property includes approximately 150-acres containing saline wetlands and other habitat.

The Marsh Wren saline wetland restoration project was initiated with the cooperation of the Saline Wetlands Conservation Partnership. Funding for this project was provided by the LPSNRD and a 2012 Nebraska Environmental Trust grant for saline wetlands through the City of Lincoln. Construction commenced in June 2016 and was completed in 2017.

The comprehensive project did include traditional restoration methods. But in order to meet a primary goal of saline wetland restoration, physical manipulation of hydrology through pumping of saline groundwater to the wetland surface was used as a design measure.



Norder Project

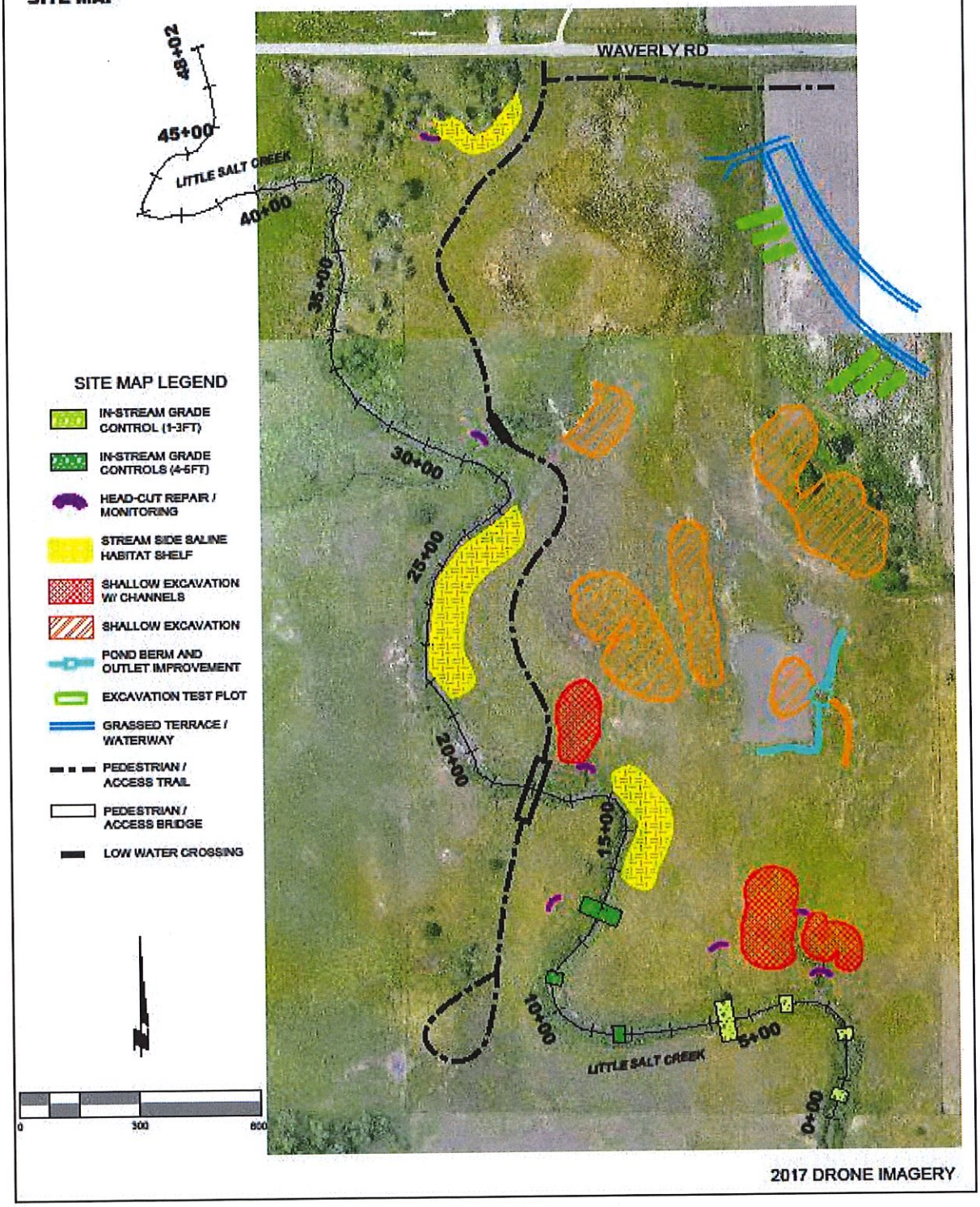
A consultant was hired in March 2017 to assist with a planning and design project for the Norder Tract. The evaluation of the property occurred through multiple seasons of the year. The collaborative efforts with the Saline Wetlands Conservation Partnership used information generated from data collection and field investigation, coupled with on-site group investigations and evaluations, to analyze proposed restoration design interventions for the property owned by the City of Lincoln.

A design memorandum was recently completed, which outlines the data collection and field investigation efforts and summarizes recommended design interventions. The design intervention summaries of the memorandum are intended to complement the conceptual design plans.

Approximately 10 acres of cropland in the Northeast corner of the property was planted with a high diversity local ecotype in February 2017. The upland seeding included over 150 species of local ecotype prairie plants and the saline soils over seeding included 11 species.

NORDER TRACT WETLAND COMPLEX
CONCEPTUAL RESTORATION DESIGN
SITE MAP

PROJECT NO.	SHEET NO.
LINC-2017-01	SITE MAP
Date: 1-29-2018	Drawn: STAFF
Scale: 1" = 150'	Checked: —
	Approved: —



SALINE WETLAND RESEARCH

The SWCP has worked with partners on a variety of projects within the saline wetlands. Funding for projects has come from the Nebraska Environmental Trust, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, and the Nebraska Game and Parks Commission.

Electromagnetic Surveys on Upper Little Salt Creek Saline Wetland Management Areas

In the fall of 2017 the SWCP along with the consultants of the Norder Project partnered with the University of Nebraska-Lincoln to use a geophysical mapping device (Dualem 1-S electromagnetic induction sensor) to measure soil salinity in the upper 0 to 1.5 m (shallow) and 1.5m to 3m (deep) of the soil profile throughout the planning area. UNL processed the data and provided electrical conductivity data (mS/m) on a 5m grid for each sampling date. The consultant then generated raster images for the shallow and deep datasets, along with the ratio of shallow to deep. The ratio allows the user to view the magnitude of which soil profile has higher conductivity to guide saline wetland restoration interventions. For instance, a shallow to deep ratio of 2 indicates the shallow soil profile has twice the conductivity of the deep soil profile. The raster images were generated using inverse distance weighted interpolation. Raster images were clipped using a 20m buffer from the driving path (40m total) to the sampling area to account for inaccessible areas (water features, dense trees, steep terrain, etc.).

The properties included Helmuth Marsh, Little Salt Creek WMA, Little Salt Fork Marsh Preserve, Little Salt Creek West WMA, and Little Salt Springs. Maps are provided for each public property within the planning area in the Attachment.

ENDANGERED SPECIES

Efforts of the SWCP are to protect, restore, and manage the rare and unique saline wetland habitat and not just endangered species. The Salt Creek tiger beetle and Saltwort plant are indicator or bio species where their presence in Nebraska's eastern saline wetlands can indicate certain environmental conditions, such as soil type, pollution levels, etc. Therefore it is imperative the SWCP helps to monitor the endangered species of these wetlands for conservation efforts, as well as monitoring other indicator species.

The Salt Creek tiger beetle (*Cicindela nevadica lincolniana* Casey) was listed a state endangered species in 2000 and Federal endangered species on October 2005. It is endemic to the saline wetlands in Lancaster and southern Saunders counties. Saltwort (*Salicornia rubra*) is a state listed endangered species. In Nebraska, the Saltwort is only found in these saline wetlands.

The final revision to designate 1,110 acres of critical habitat for the Salt Creek tiger beetle was approved on May 5, 2014. Critical habitat is identified along four streams that contain sufficient potential habitat to support viable populations of Salt Creek tiger beetle; Little Salt Creek, Rock Creek, Oak Creek, and Haines Branch Creek. It is estimated the critical habitat can support at least six viable populations of Salt Creek tiger beetles and will ensure recovery of the species.

The critical habitat units include land under private ownership, lands owned by the Nebraska Game and Parks Commission, the City of Lincoln, the Lower Platte South Natural Resources District, and Pheasants Forever. Approximately 29 percent of the critical habitat is protected from future disturbance by conservation easements or fee title land acquisitions as a result of a conservation plan developed in 2003 by Nebraska Game and Parks Commission, City of Lincoln, Lancaster County, Lower Platte South Natural Resources District, and The Nature Conservancy.

Salt Creek Tiger Beetle Research

The following research information provided by:

Stephen M. Spomer
Entomology Department, University of Nebraska-Lincoln
Federal Permit #TE37351A-0, State Permit #552

Robert R. Harms
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service

2017 Salt Creek tiger beetle Surveys and Research

Field Collection and Rearing in 2017:

Recovery permits authorize pairing of male and female Salt Creek tiger beetles. Pairs originated from wild Salt Creek tiger beetle larvae that were produced and overwintered in 2016-2017 were supplemented with two wild males and two wild females collected on June 19, 2017. Male and female pairs were placed in rearing chambers at Omaha's Henry Doorly Zoo and Aquarium where they bred and later layed eggs. After mating and egg-laying occurred the adult Salt Creek tiger beetles were re-introduced to wild population sites at Frank Shoemaker Marsh. Progeny from these adults are being reared by Omaha's Henry Doorly Zoo and Aquarium, Lincoln Children's Zoo, and UNL.

Approximately 150 larvae were raised at the UNL Entomology Department in 2017.

Population Estimates for 2017:

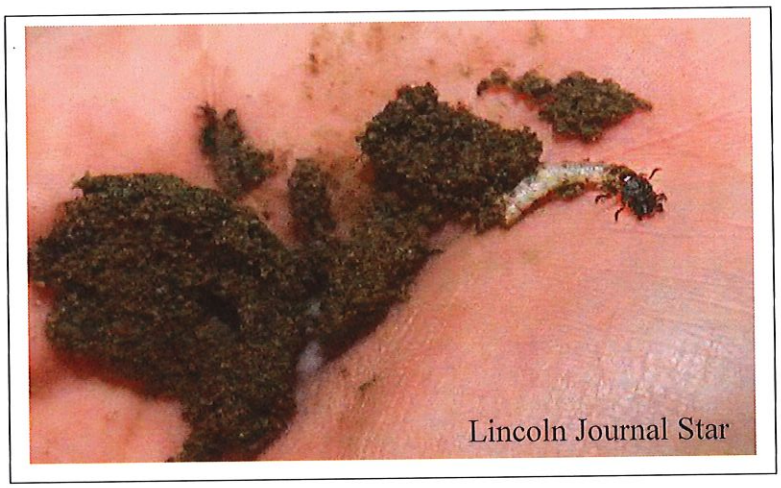
Preliminary population estimates began on May 22, 2017. The first sighting of a Salt Creek tiger beetle adult was on June 2, 2017. Significant rain events leading to flooding of Little Salt Creek occurred on June 12, 2017. Population estimates were conducted between June 16, 2017 and June 21, 2017. All adults had disappeared by the mid-to-late July. A total of 370 wild Salt Creek tiger beetles were observed. The number of beetles per site surveyed ranged from 0 to 97.

In the past five years wild Salt Creek tiger beetles observed annually have ranged from 143 to 370 individuals. The 370 observed in 2017 was a slight increase of 348 observed in 2016.

Re-introduction Efforts

To assist with the re-introduction of Salt Creek tiger beetles reared in the zoos, data loggers, commonly referred to as HOBO units, are placed at locations where the beetles were released or locations which have future potential for release. The HOBO units monitor soil temperature at various depths and soil moisture just below the soil surface throughout the year.

Approximately 104 larvae of the Salt Creek tiger beetle reared in 2016 were released in on May 9, 2017. A total of 140 adults were re-introduced in late June and early July. There were no fall re-introductions. This was accomplished through a cooperative captive rearing program among the USFWS, NGPC, UNL, Omaha Henry Doorly Zoo and Aquarium, and the Lincoln Children Zoo. Researchers monitor the released larvae.



Salt Creek tiger beetle larvae

In order to monitor the beetle release locations and gather data from the HOBO units the U.S. Fish and Wildlife Service and Nebraska Game and Parks Commission worked with the Nebraska Master Naturalist program. Volunteers worked in pairs throughout the summer at each location; visiting the sites where releases occurred on a weekly basis and those sites with HOBO units monitoring saline wetland habitat for potential release on a monthly basis.

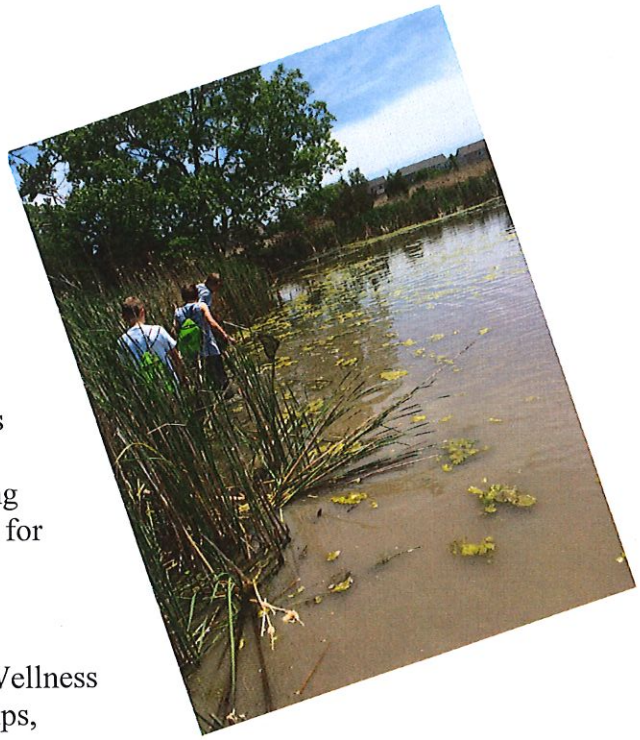
Asclepias spp. (Milkweed) Survey

The following survey information provided by:

Mercy Dinwiddie
Wildlife Biologist
Nebraska Game and Parks Commission
Nebraska Wildlife Federation

The survey was initiated in 2017 to identify abundance of Asclepias spp. The information gathered will provide guidance to assist in conservation decision making. The sites selected are based on high diversity native plantings conducted by a vendor on conservation lands. Arbor Lake saline wetland was surveyed and 115 Common milkweed (Ascelpias syriaca) were found on the selected survey site (7.2 acres). Preliminary data from the planted locations indicates an expectation of 786 Ascelpias spp. per hectare (2.47 acres).

EDUCATION



The Lower Platte South NRD provides opportunities for local schools to visit the saline wetlands to learn about saline wetland soils, vegetation, and hydrology. Students also examine invertebrate health within the wetlands and in streams to indicate stream health. In the spring and fall of 2017 the NRD hosted field trips with High School Biology students, Middle School 7th grade Environmental Studies students, and 5th grade students at the Lincoln Saline Wetlands Nature Center. Over 400 students enjoyed netting insects at the site, learning about the vegetation and potential wildlife and netting for macroinvertebrates in the water!

The Coordinator continues to present "saline wetland jeopardy" to fifth grade students attending the Earth Wellness Festival. Other presentations were given to local groups, UNL classes and conservation agencies.

The City of Lincoln on behalf of the SWCP executed a contract with Michael Forsberg Photography, Inc. in 2017 to update the NEBRASKAland publication "Nebraska Salt Marshes - Last of the Least." It is expected the update will be published in late summer of 2018.

SUMMARY OF SALINE WETLANDS AND SOILS PROTECTED (2001-present)

In order to preserve and restore these wetlands, an Implementation Plan for the Conservation of Nebraska's Eastern Saline Wetlands was completed in 2003. This plan identifies four Landscape Objectives, which establish projection and restoration targets for the conservation of the Eastern Saline Wetlands. A summary of acres acquired through fee-title acquisition since 2001 by the SWCP is provided below. Acres of saline wetlands that have been acquired but have not yet been restored and conservation easements are not provided in the table summary.

LANDSCAPE OBJECTIVE	ACRES OF WETLAND PROTECTED OR RESTORED
1 – Permanently protect 100% (148 acres) of intact Category 1 saline wetlands and their associated conservation zones to ensure that the wetlands and their functions are sustained	43.3
2 – Restore and Protect 80% (1,412 acres) of unprotected degraded Category 1 saline wetlands and their associated conservation zones to ensure that the wetlands and their functions are sustained	288.5
3 – Restore (to intact Category 1 wetlands) and protect 50% (167 acres) of unprotected Category 3 saline wetlands and their associated conservation zones to ensure that the wetlands and their functions are sustained as intact Category 1 wetlands	62.0
4 – Restore (to intact Category 1 wetlands) and protect 50% (2,360 acres) of unprotected current non-wetland areas on saline hydric soils so that they become intact and sustained Category 1 saline wetlands	287.4
TOTAL	**681.2**

Source: Ted LaGrange and Rachel Simpson of the NGPC

WETLAND MANAGEMENT

Three seasonal employees hired by the Lower Platte South NRD performed management on the saline wetland areas. Members of the SWCP establish management activities to be addressed within the saline wetlands complex. These employees primarily worked on noxious weed and woody vegetation removal, structure maintenance, and access. Funding for these positions is provided with stewardship funds through an agreement between the LPSNRD and The Nature Conservancy to support saline wetland management areas. Approximately 808 hours were worked by the seasonal employees in 2017 on saline wetland management activities from May through November. The Coordinator and LPSNRD provided supervision of the employees.

The LPSNRD has one fulltime Maintenance Technician who assists the seasonal employees with work performed on the saline wetlands. This work is also compensated through the stewardship fund. The Coordinator also holds an annual meeting of the land managers of the saline wetland management areas to share and discuss issues and methods of land management on these areas.

Well Distribution

In 2017, discussion was initiated by the LPSNRD to re-purpose solar well pumps located at the Arbor Lake Complex. The solar pumps were used to power several wells for research and wetland restoration. The LPSNRD published a Request For Proposal to remove the solar pumps and place at two locations for watering livestock; Warner Wetland and Little Salt Springs. Material not re-purposed will be placed in storage. The project will commence in 2018.

The following Table provides a summary of the well distribution throughout the saline wetland management areas. Information gathered from the wells assist with the understanding of saline wetland hydrogeology of Nebraska's eastern saline wetlands.

Saline Wetland Management Area	Wells # (depths)			
	15-40 feet	41-90 feet	90 feet +	Other
Frank Shoemaker Marsh	3 (20', 25', 25')	3 (72.5, 75', 87.5')		1 (unknown depth)
Dakota Springs	3 (15', 25', 30')	2 (88', 79')	1 (98')	
Little Salt Creek WMA	2 (15', 15')	3 (77.5', 78', 83.5')	1 (182')	
Little Salt Fork Marsh Preserve	4 (9', 12', 25', 33')		2 (155', 201')	
Arbor Lake Complex	3 (14', 25', 28')	1 (41')	4 (113', 100', 120', 180')	
Little Salt Springs				1 (livestock)
Marsh Wren			2 6" (E. 216' and W. 155')	
Lincoln Saline Wetland Nature Center				1
Whitehead Saline Wetland	5 (15', 22', 23', 29'(?), 40')	1 (78')	2 (113', 188')	1 (unknown depth) 1 (Dial easement 30')
Jack Sinn WMA	1 (34.5')	4 (43', 45', 45', 63')	4 (93', 143', 143', 191')	2 (unknown depth)

FUNDING RESOURCES

The following funding resources provide a summary of recent awards. It does not include all of the grant awards received since the inception of the SWCP in 2002.

- Federal Section 6 Land Recovery Acquisition grants – In 2013, the NGPC through the U.S. Fish and Wildlife Service was awarded $190,300 for the acquisition of a property containing saline wetlands. The funding remains available for saline wetland acquisition.

  In 2016, the NGPC through the U.S. Fish and Wildlife Service was awarded $206,536 for the acquisition of a property containing saline wetlands. The funding remains available for land acquisition of saline wetlands.

- A grant was submitted to the Nebraska Environmental Trust in 2011 for the "Eastern Saline Wetlands Project – 2012." The grant was approved in the amount $1.4 million for land acquisition, restoration, and planning activities for a three year grant period. The grant received two one year extensions to accommodate the Marsh Wren wetland restoration project. The grant funds have been expended and the Final Report was submitted in July 2017.

- In 2012, The Nature Conservancy and the Lower Platte South Natural Resources District amended a previous grant agreement to specifically build, enhance and/or maintain effective ecological stewardship of the saline wetlands. Beginning June 30, 2012 and through July 1, 2019 The Nature Conservancy will disburse $7,500 annually contingent upon corresponding disbursement of matching funds from the Lower Platte South Natural Resources District for the Project.

- In 2002, the Nebraska Game and Parks Commission obtained a *2001 State Wildlife Grant* from the U.S. Fish and Wildlife Service entitled "Eastern Nebraska Saline Wetland Conservation Partnership". The grant award was for $620,000. The grant has been used to fund a variety of planning and implementation activities for the Partnership, including land acquisition, wetland restoration, wetland management, equipment purchases, and support for the Coordinator position. The grant funds have been spent and the grant was closed in 2015.

- A grant was submitted to the Nebraska Environmental Trust in 2015 for the "Eastern Saline Wetlands Project – 2016." The grant was approved in the amount of $795,000 primarily for wetland restoration/engineering/management and planning activities for a three year grant period. Year three of funding was recently approved for $265,000.

SUMMARY OF OTHER COORDINATOR ACTIVITIES

- Attended meetings regarding City and County projects regarding construction activities scheduled near or on saline wetland areas

- Presentations on saline wetlands and the partnership to Nebraska Game and Parks Commission Habitat Partners, the LPSNRD Recreation, Forestry, and Wildlife sub-committee, Nebraska Natural Legacy conference, and UNL classes

- Land management – Supervision of seasonal employees, annual saline wetland discussion with agency land managers, and noxious weed and woody vegetation control and GPS location identification at saline wetland sites.

- Toured saline wetland areas with Platte Basin time-lapse team, UNL Soils instructors, and Prairie Plains Resource Institute

- Youth education – presented and participated in the Earth Wellness Festival, UNL Career Day, and assisted with Regional High School FFA Land Judging competition

- Monitored 27th Street Right-of-Way widening project adjacent Frank Shoemaker Marsh with Lancaster County Roads and the NGPC

- Worked with LPSNRD Forester on tree replacement plan and contractors for border fencing and parking lot development for Frank Shoemaker Marsh due to 27th Street widening project

- Attended NGPC Habitat Partners meeting, The Midwest Wildlife Society annual conference, Head Cut Remediation Webinar, Five Rivers RCD invasive weed seminar, and Nebraska Natural Legacy conference,

- Field tour with Lincoln Electrical System regarding tree removal on properties with overhead power lines

- Worked with USFWS and NGPC on endangered species monitoring efforts, re-introduction site locations, accessibility issues for Master Naturalist teams to gather monitoring information, and participated in release of endangered species

- Marsh Wren restoration project - Provided assistance to LPSNRD, site visits with contractor and consultant, construction meetings, presentation and site tour with LPSNRD Board, and monitoring of completed project

- Initiated an update along with Saline Wetlands Conservation Partnership of the "Implementation Plan for the Conservation of Nebraska's Eastern Saline Wetlands." The update will be completed in 2018

- Worked with City legal counsel in the development of Waiver, Release, and Access Agreements for private haying of City owned land; executed agreements with one cooperator and monitored work conducted per agreement

- Executed contract with Michael Forsberg to update the "Last of the Least" publication and met with contractor and provided assistance as needed
- Executed contract The Flatwater Group, Inc. to conduct planning and engineering services for the Norder Tract.
- Assisted with several field tours with consultants and Saline Wetlands Conservation Partnership representatives to assist with design of Norder Tract Project
- Toured Jack Sinn WMA with NGPC and Ducks Unlimited staff to discuss wetland restoration projects and resource needs
- Assisted with and participated in Nebraska Nature Conservancy Birding Day at Little Salt Fork Marsh Preserve
- Discussions with NGPC on digitalization of saline wetland historical slides and photos
- Completed Digital Imaging agreement with City Legal Counsel for execution with NGPC and Pheasants Forever, Inc.
- Completed 2012 NET Final Report. Submitted in July 2017 and approved by NET Board
- Attended and completed Pesticide Re-certification training
- Assisting the LPSNRD and UNL student on Master Degree project using cameras to capture saline wetland images throughout the year for future educational project using a mobile application method
- Assisted LPSNRD with RFP for solar pump re-purposing project to supplement prescribed grazing activities
- Participant of Prairie Corridor technical advisory committee, core team representative of Nebraska Wetland Assessment grant project, U.S. Corps of Engineers Nebraska inter-agency wetland group, Technical Advisory Group of the LPSNRD Water Quality Management Plan
- Attended several Prairie Corridor resource group meetings
- Work with landowners, fund administrators and agency representatives regarding the acquisition of land
- Miscellaneous grant administration and participation in grant applications through conservation agencies regarding wetland projects

SALINE WETLAND PROPERTIES

- **Frank Shoemaker Marsh** – 27th Street and Bluff Road

Size:	160 acres
Purchase price and date:	$472,000 on June 12, 2003
Funding sources:	2001 State Wildlife Grant through the USFWS ($222,000)
	2002 NET grant ($250,000)
Owner:	City of Lincoln

Activity summary – Noxious weed removal continued and included the documentation of several new locations of Phragmites. Approximately 20 acres hayed and a concentrated effort on removing Cedar trees and spraying hemlock in upland areas. Communication with neighbors on parking lot accessibility during closed hours.

Lancaster County Roads Department finalized agreement with the City of Lincoln for right-of-way acquisition along the east side of property on 27th Street. The tree removal and grading projects were completed by Lancaster County contractors. Fencing and parking lot development completed through City contractors. Construction work completed in 2017. A tree replacement plan is to be completed in 2018.

- **Dakota Springs** – South of Arbor Road and East of 27th Street

Size:	68.7 acres
Purchase price and date:	$204,700 in January 2004
Funding sources:	Federal Section 6 ($153,525)
	2002 NET grant ($51,175)
Owner:	City of Lincoln

Dakota Springs Extension Purchase (Dial Realty, 7.45 acres)

Purchase price and date:	$48,500 on December 31, 2008
Funding source:	Federal Section 6

Activity summary – Noxious weed and woody vegetation removal continued. Approximately 15 acres hayed.

- **Warner Saline Wetlands** - 98th Street and Interstate 80

Size:	140 acres
Purchase price and date:	$298,580 on December 7, 2004
Funding sources:	Federal Section 319 ($179,148)
	LPSNRD ($43,043.20)
	SWCP ($76,388.80)
Owner:	LPSNRD

Activity summary – Noxious weed control and woody vegetation removal continues with honey locust and cedars. Trees removed and piled for burning on North parcel.

- **Little Salt Creek Wildlife Management Area** – 1st Street and Raymond Road

Total Size:	256.5 acres
Purchase price and date:	$476,000 in June 2004 (original 156 acres)
Funding sources:	Federal Section 6 ($276,000)
	2004 NET grant through NGPC ($200,000)
Owner:	NGPC

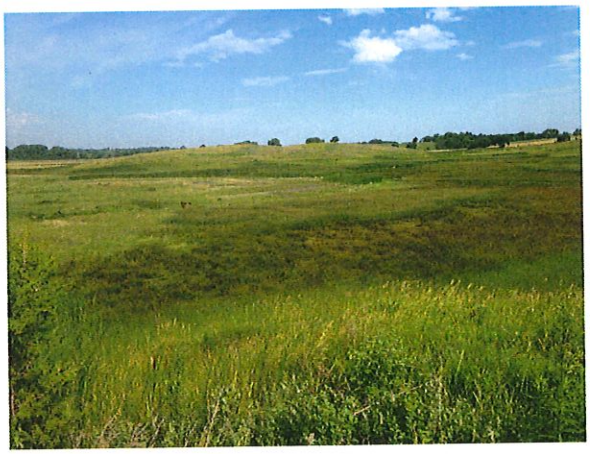
Noble Tract Extension (100.5 acres) - Along Little Salt Creek, between Mill Road and the southern boundary of the original Little Salt Creek Wildlife Management Area.

Activity summary – Prescribed grazing and haying of upland was conducted. Cedar removal and noxious weed control continues. Platte Basin time lapse camera location.

- **Little Salt Creek West Wildlife Management Area** – South of Branched Oak Road between NW 12th and 1st Streets

Total Size:	220.0 acres
Purchase price and date:	$979,000 on October 9, 2009
Funding sources:	Federal Section 6 ($560,000)
	2005 NET Grant ($42,838.58)
	2008 NET Grant ($366,250.42)
	Ducks Unlimited ($10,000)
Owner:	Nebraska Game and Parks Commission

Activity summary – Prescribed grazing was conducted. Cedar removal and noxious weed control. Food plots are established and shrub plantings for wildlife completed.



- **Arbor Lake Complex** – North of Arbor Road and east of 27th Street.

Total Size:	132.5 acres
Owner:	City of Lincoln

Arbor Lake Extension Purchase (Anderson Property, 69.2 acres)

Purchase price and date:	$361,710.67 on September 1, 2004
Funding source:	2002 NET grant through City of Lincoln

Activity summary –Wetland restoration construction was completed in May 2012. Post-restoration monitoring is continual. Noxious weed and woody vegetation removal.

- **Marsh Wren** – Between 40th and 56th Streets and north of Salt Creek

Total Size:	80.0 acres
Purchase price and date:	$320,000 on May 27, 2009
Funding sources:	Lower Platte South NRD ($25,000) SWCP ($25,000) City of Lincoln floodplain acquisition funds ($178,000 ($89,250 each from the City of Lincoln and the LPSNRD) 2005 NET Grant ($91,500)
Owner:	Lower Platte South Natural Resources District

Marsh Wren addition (Anderson property) – East of 40th Street and immediately north of Salt Creek

Size:	49.4 acres
Purchase price and date:	$270,000 on June 19, 2012
Funding sources:	Federal Section 6 ($135,000) 2008 NET Grant ($130,000) SWCP ($5,000)
Owner:	Lower Platte South Natural Resources District

Activity summary – Noxious weed and woody vegetation removal continued. Construction completed on wetland restoration project. Area opened to public in September 2017. Saline water distribution system was activated and monitored for water release and any necessary modifications.

- **Little Salt Fork Marsh Preserve addition (Allen property)** – Between Branched Oak Road and Raymond Road and west of 1st Street

Size:	66.6 acres
Purchase price and date:	$304,000 on February 17, 2010
Funding sources:	Lower Platte South NRD ($76,000) SWCP ($75,000) 2008 NET Grant ($153,000)
Owner:	Lower Platte South Natural Resources District

Activity summary – Noxious weed and woody vegetation removal continued. Monitor 2017 native seeding.

- **Little Salt Springs** – NW 12th Street and Branched Oak Road

Size:	123 acres
Purchase price and date:	$472,188 on July 31, 2007
Funding sources:	Lower Platte South NRD ($187,960.35) 2005 NET grant ($227,227.95) Partnership Funds ($57,000)
Owner:	Lower Platte South NRD

Little Salt Springs Addition (Downs Property) – West Branched Oak Road between NW 12th and NW 27th streets

Size:	13.3 acres
Purchase price and date:	$175,000 on October 15, 2015
Funding sources:	Lower Platte South NRD ($43,201.17)
	2012 NET Grant ($131,798.83)
Owner:	Lower Platte South NRD

Activity summary – Continue to control noxious weeds and woody vegetation removal. Farm site dump area cleaned up.

- **Helmuth Marsh** – South of Mill Road and west of 14th Street

Size:	119.0 acres
Purchase price and date:	$630,000 on November 23, 2010
Funding sources:	Federal Section 6 ($275,000)
	2001 State Wildlife Grant through the
	U.S. Fish and Wildlife Service ($131,666.50)
	NGPC ($23,333.50)
	Donation from Helmuth family ($200,000)
Owner:	Pheasants Forever, Inc.

Activity summary – Prescribed grazing and haying of upland was conducted. Shrub plantings for wildlife completed.

- **Jack Sinn Wildlife Management Area (Kreitman addition)** – Between North 70th and North 84th streets and south of Ashland Road

Size:	183.5 acres
Purchase price and date:	$375,000 on June 4, 2014
Funding sources:	Nebraska Game and Parks Commission ($225,000)
	2012 NET Grant ($150,000)
Owner:	Nebraska Game and Parks Commission

Activity summary – Noxious weed and woody vegetation removal. Fencing plan developed to allow for prescribed grazing

- **Norder Tract** – Between North 14th and North 27th streets and south of Waverly Road

Size:	78.9 acres
Purchase price and date:	$457,000 on September 15, 2014
Funding sources:	Federal Section 6 ($270,000)
	2012 NET Grant ($187,000)
Owner:	City of Lincoln

Activity summary – Preliminary planning and engineering project completed for site. Noxious weed and woody vegetation removal. Field gates installed

The following saline wetland properties were acquired prior to the inception of the SWCP in 2002. The properties are supported through the activities identified in the "Implementation Plan for the Conservation of Nebraska's Eastern Saline Wetlands (2003)."

- **Seacrest Range** (43 acres) – Located west of Folsom Street along both the north and south sides of Rosa Parks Way. The area is owned by the City of Lincoln. Efforts continued to remove woody vegetation and to control noxious weeds (Leafy spurge). Flood control levee constructed on east boundary and south of Rosa Parks Way; hex baskets removed. Seeding of levee to be completed in 2018.

- **Lincoln Saline Wetlands Nature Center** (92.7 acres) – Located near Capitol Beach in Lincoln. The area is owned by the LPSNRD. Management activities in 2017 included noxious weed control (considerable phragmites) and woody vegetation.

- **Schleich Wetlands** (50.2 acres) – It is located southwest of Little Salt Creek near where it empties into Salt Creek and east of the Northridge subdivision in Lincoln. The area is owned by the LPSNRD. Management activities in 2017 were noxious weeds and removal of invasive trees.

- **Whitehead Wetlands** (98.8 acres) – It is located east of 27th street and a short distance south of Interstate 80. The area is owned by the LPSNRD. Management activities in 2017 were noxious weed control and removal of woody vegetation.

- **Little Salt Fork Marsh Preserve** (174.2 acres) – Located northwest of north 1st Street and Raymond Road and owned by the Lower Platte South NRD. Management activities in 2017 included control of noxious weeds. Discussion continues with Lancaster County regarding Raymond Road Bridge improvements.

- **Jack Sinn Wildlife Management Area** (1,620.0 acres) – Located south of Ceresco in Saunders and Lancaster counties. The area is owned by the NGPC. Management activities in 2017 were noxious weed control, woody vegetation removal, and prescribed fire and grazing.

This program has been very successful and continues to accomplish many of the goals of the Implementation Plan for the Conservation of the Eastern Saline Wetlands. Your continued support for the conservation of these natural areas is appreciated. If you have any questions, please contact me at 402-441-7063 or tmalmstrom@lincoln.ne.gov at the City Parks and Recreation Department or 402-476-2729 or tmalmstrom@lpsnrd.org at the NRD.

You can visit the saline wetland website at
http://lincoln.ne.gov/city/parks/ParksFacilities/wetlands/index.htm

ATTACHMENT

Electromagnetic Mapping Figures for the Upper Little Salt Creek Planning Area Properties

Norder Tract Conceptual Design Memo

ATTACHMENT
Electromagnetic Mapping Figures for the Upper Little Salt Creek Planning Area Properties

In the fall of 2017 (September - November) the SWCP and TFG partnered with UNL to use a geophysical mapping device (Dualem 1-S electromagnetic induction sensor) to measure soil salinity in the upper 0 to 1.5m (shallow) and 1.5 to 3m (deep) of the soil profile throughout the planning area. UNL processed the data and provided electrical conductivity data (mS/m) on a 5m grid for each sampling date. TFG generated raster images for the shallow and deep datasets, along with a ratio of shallow to deep. The ratio allows the user to view the magnitude of which soil profile has higher conductivity to guide saline wetland restoration interventions. For instance, a shallow to deep ratio of 2 indicates the shallow soil profile has twice the conductivity of the deep soil profile. The raster images were generated using inverse distance weighted interpolation. Raster images were clipped using a 20m buffer from the driving path (40m total) to the sampling area to account for inaccessible areas (water features, dense trees, steep terrain, etc...).

Maps are provided for each public property within the planning area. 2017 Sampling dates for each property are listed below. The Little Salt Fork Marsh Preserve and Little Salt Creek West WMA properties contains multiple datasets, which results in some irregular results where they overlap.

Little Salt Springs WMA.....9/21

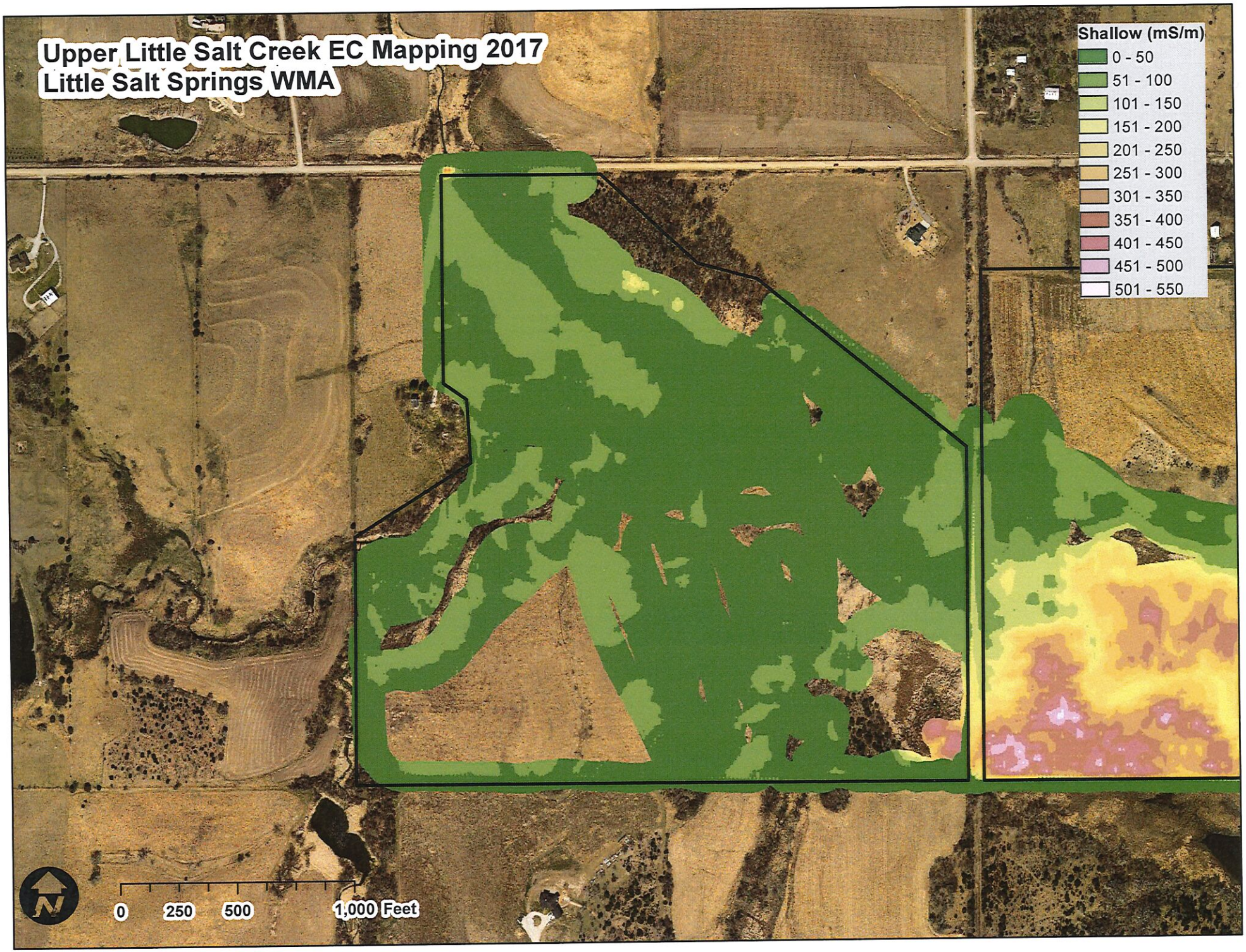
Little Salt Creek West WMA.....10/18-10/19, 10/25, 11/7

Little Salt Fork Marsh Preserve.....10/19, 10/25-10/26, 11/7

Little Salt Creek WMA.....10/26

Little Salt Creek WMA – Noble Tract.....10/30

Helmuth Property.....11/7


Upper Little Salt Creek EC Mapping 2017
Little Salt Springs WMA
Shallow (mS/m)
0 - 50
51 - 100
101 - 150
151 - 200
201 - 250
251 - 300
301 - 350
351 - 400
401 - 450
451 - 500
501 - 550
N
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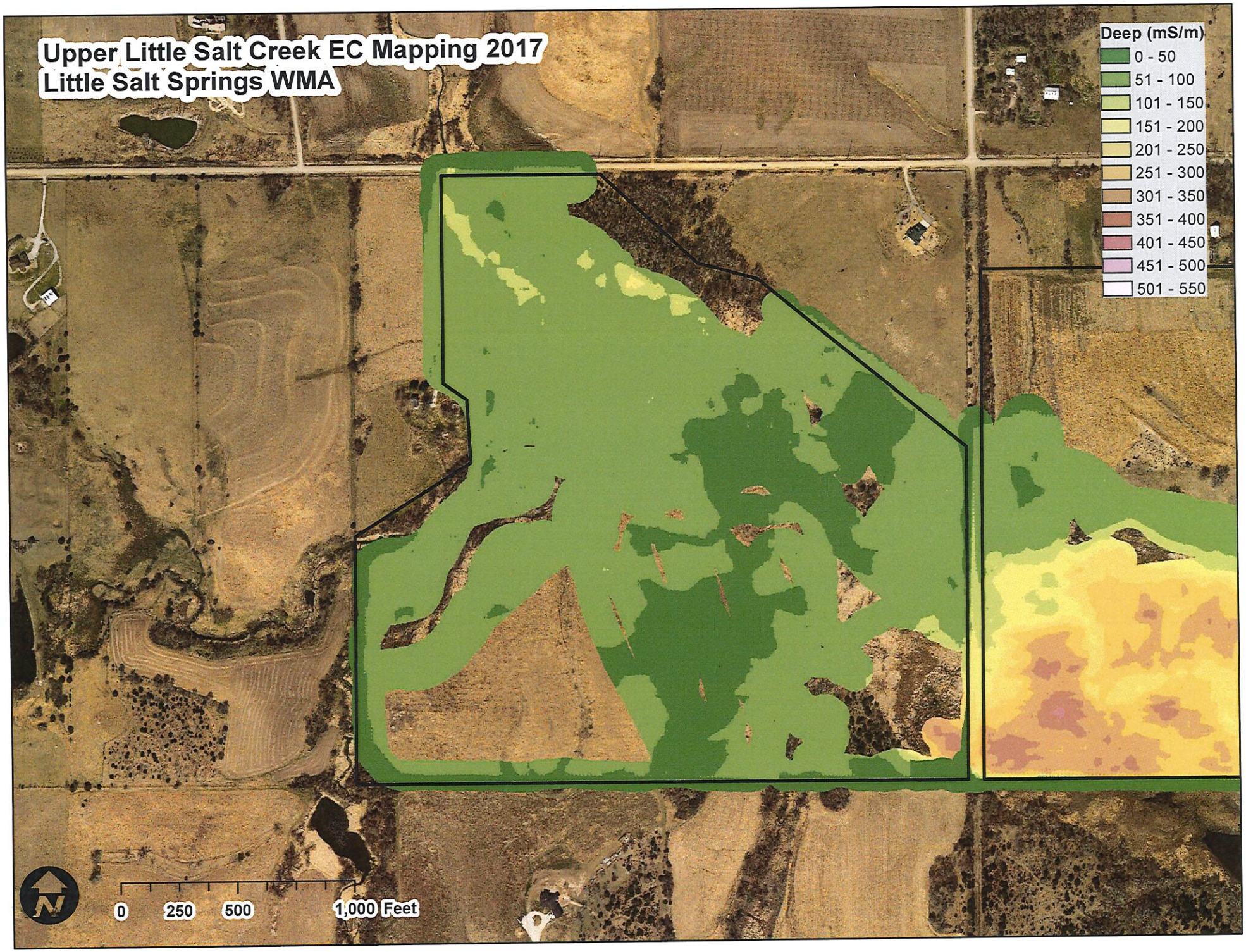
500
1,000 Feet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Little Salt Springs WMA
Deep (mS/m)
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51 - 100
101 - 150
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251 - 300
301 - 350
351 - 400
401 - 450
451 - 500
501 - 550
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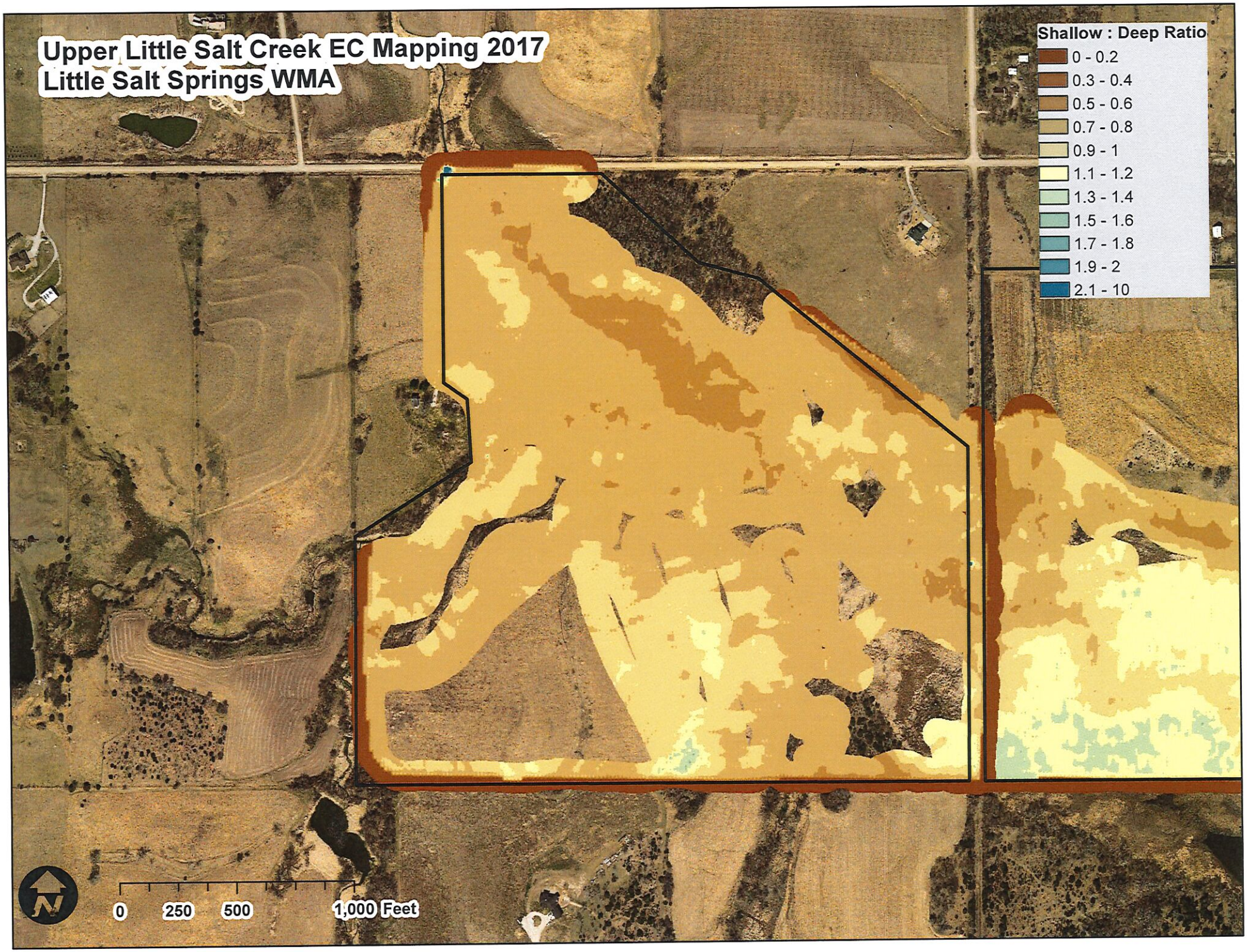
1,000 Feet


Upper Little Salt Creek EC Mapping 2017
Little Salt Springs WMA
Shallow : Deep Ratio
0 - 0.2
0.3 - 0.4
0.5 - 0.6
0.7 - 0.8
0.9 - 1
1.1 - 1.2
1.3 - 1.4
1.5 - 1.6
1.7 - 1.8
1.9 - 2
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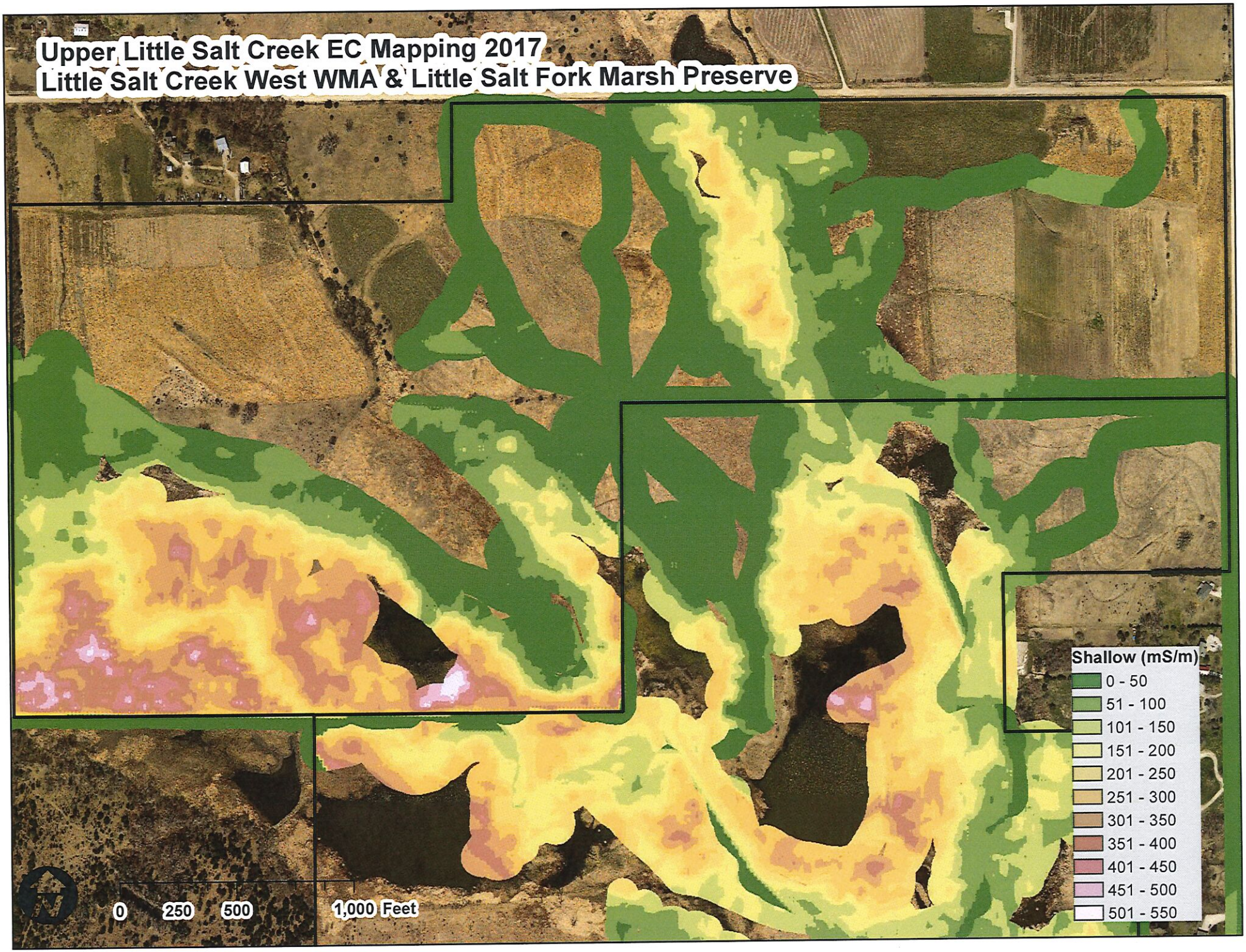
Upper Little Salt Creek EC Mapping 2017
Little Salt Creek West WMA & Little Salt Fork Marsh Preserve
Shallow (mS/m)
0 - 50
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201 - 250
251 - 300
301 - 350
351 - 400
401 - 450
451 - 500
501 - 550
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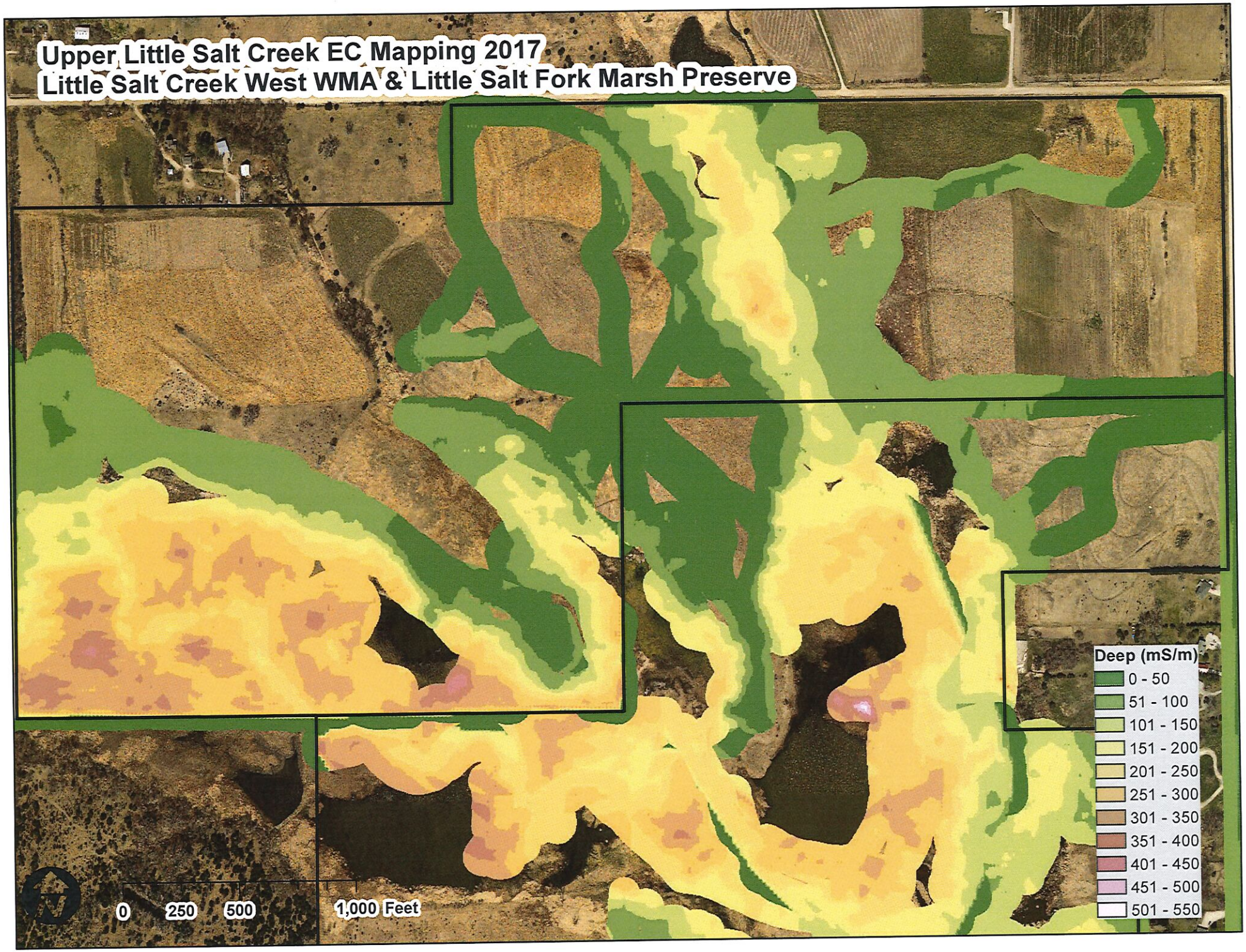
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Little Salt Creek West WMA & Little Salt Fork Marsh Preserve
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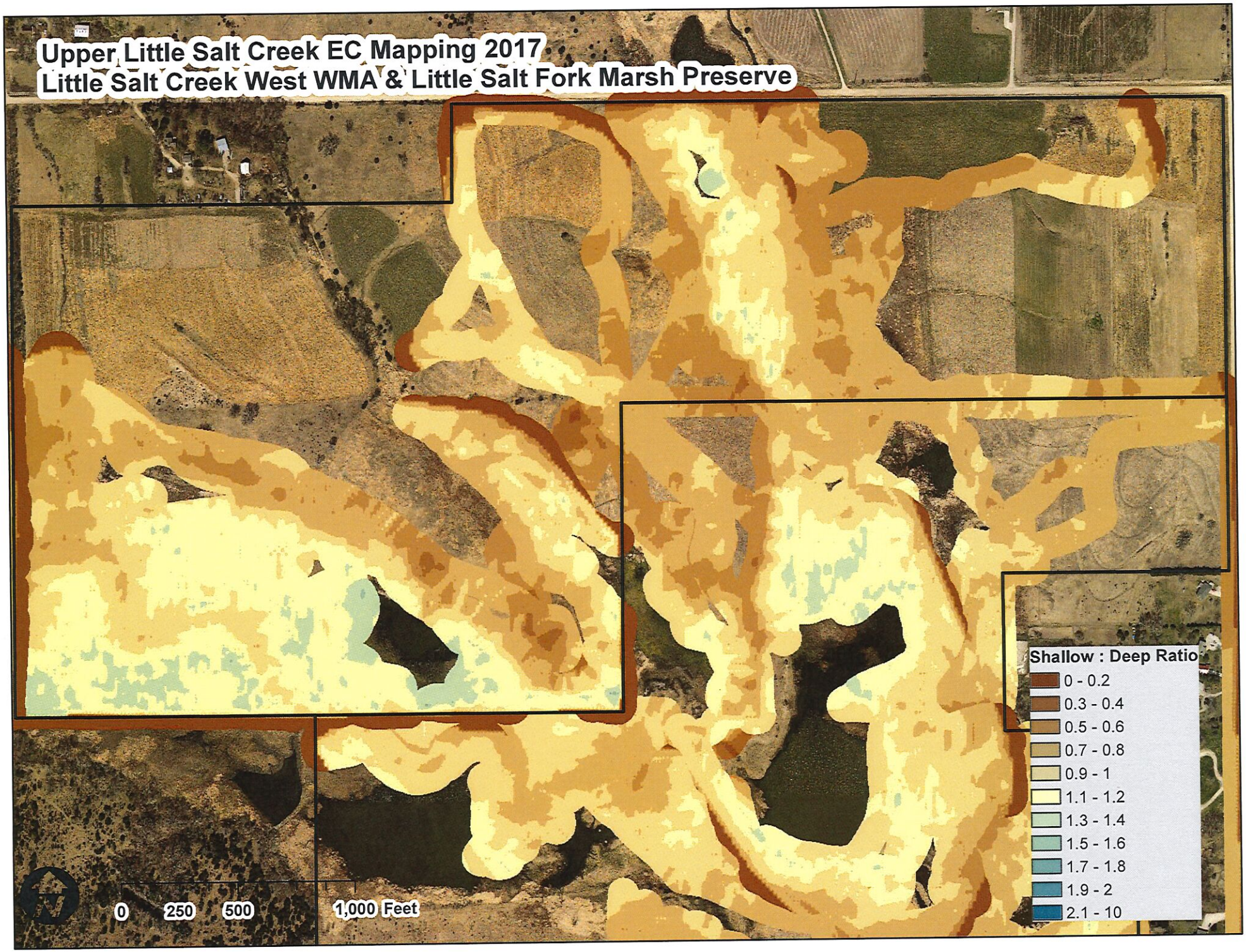
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Little Salt Creek West WMA & Little Salt Fork Marsh Preserve
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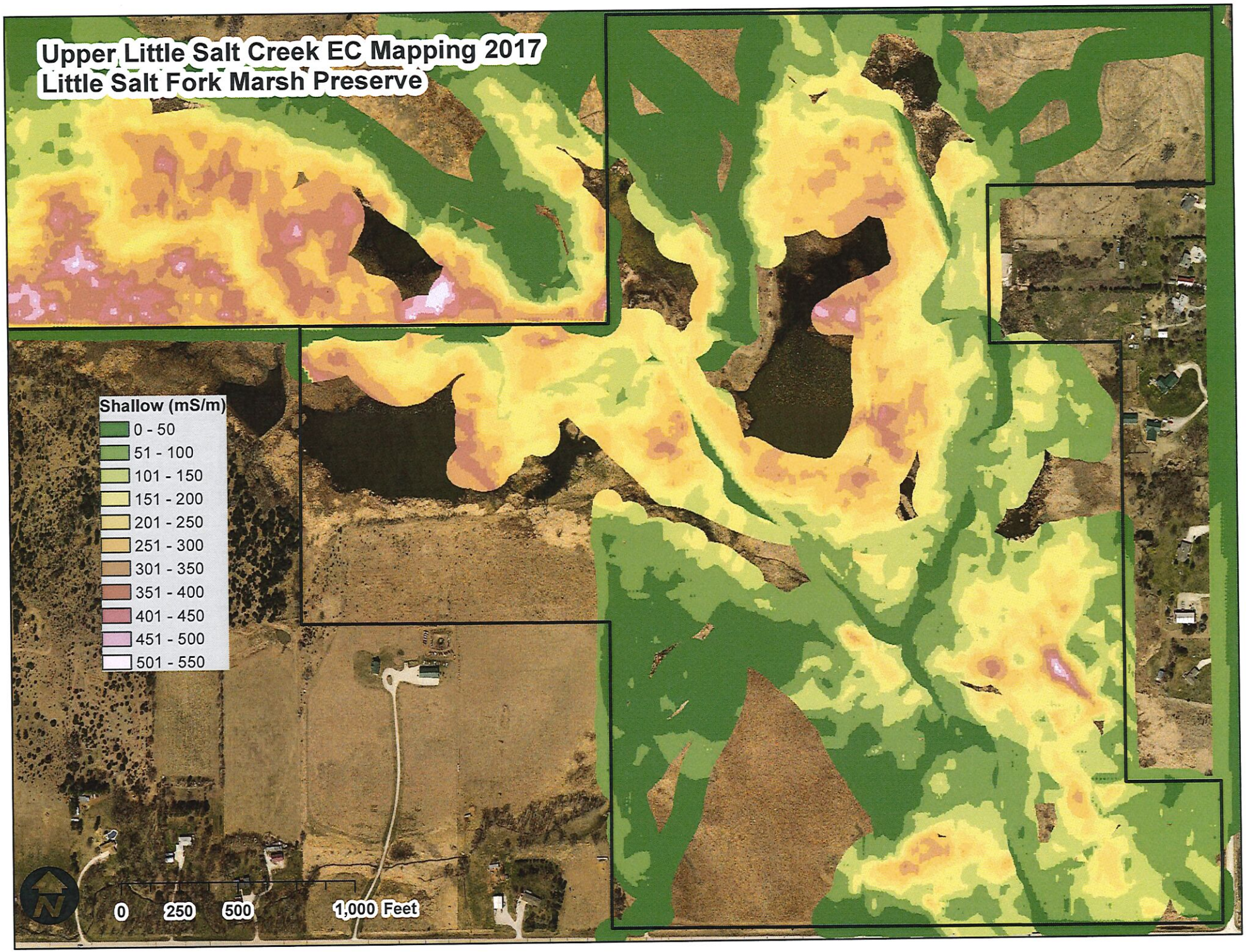
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Little Salt Fork Marsh Preserve
Shallow (mS/m)
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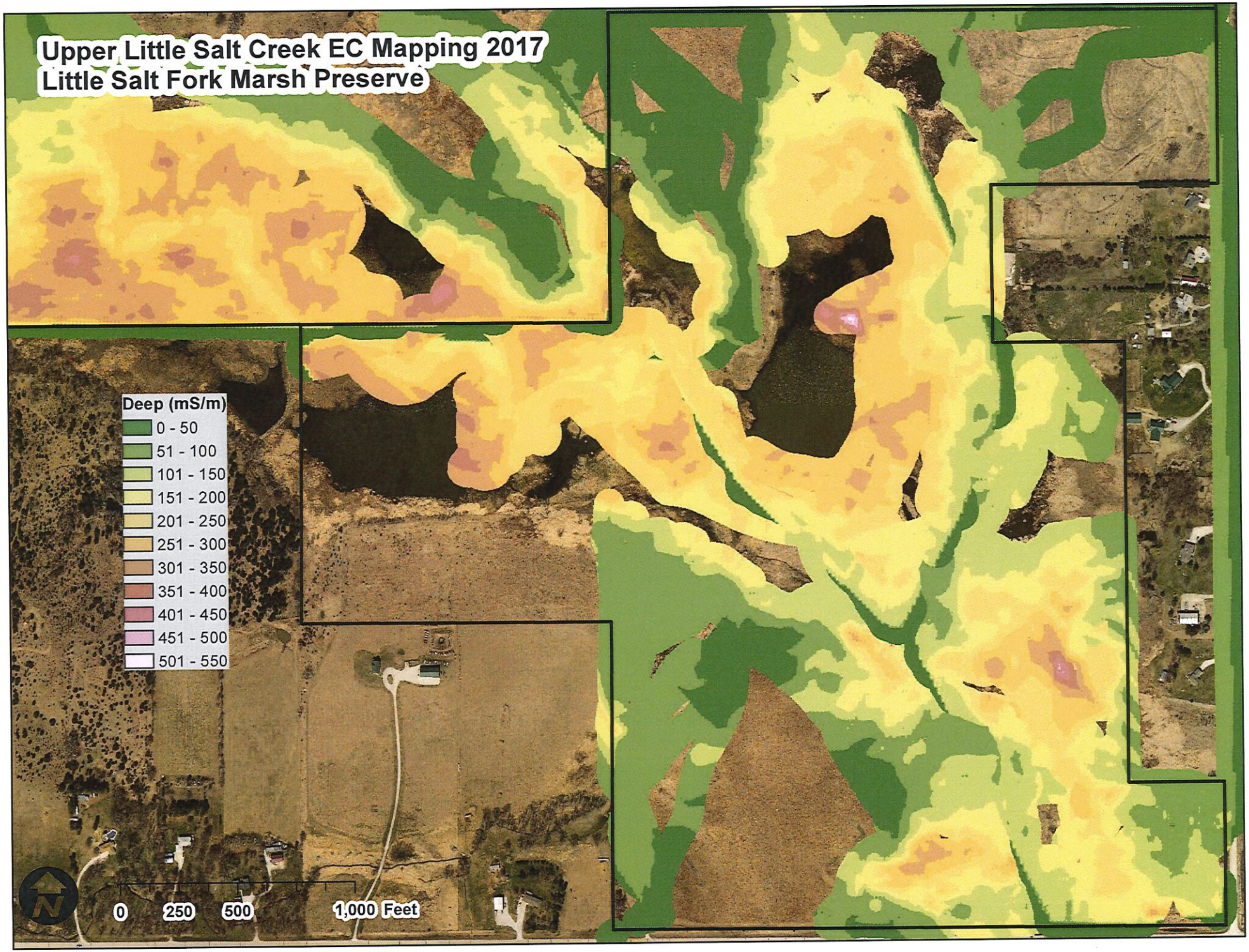
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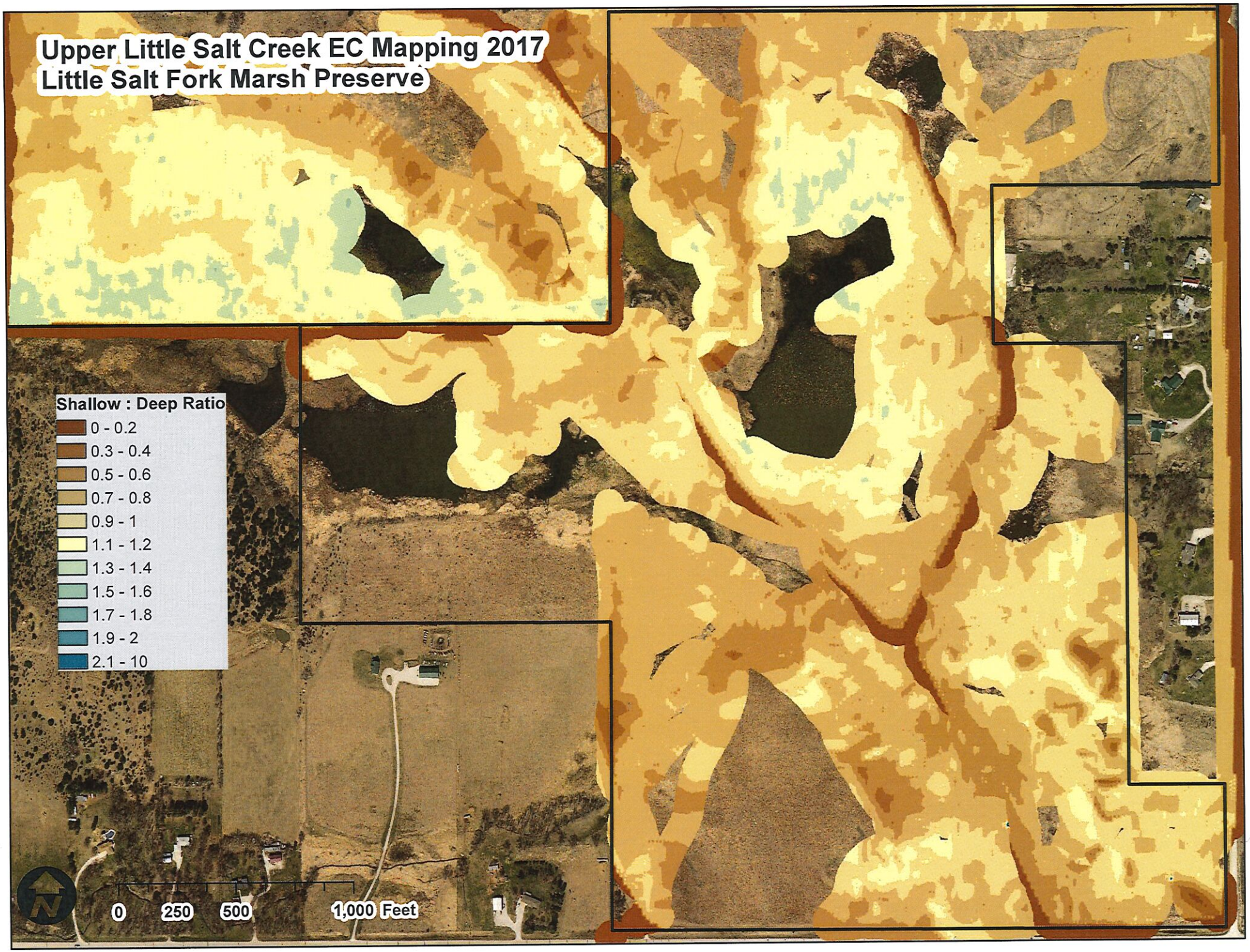
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Little Salt Fork Marsh Preserve
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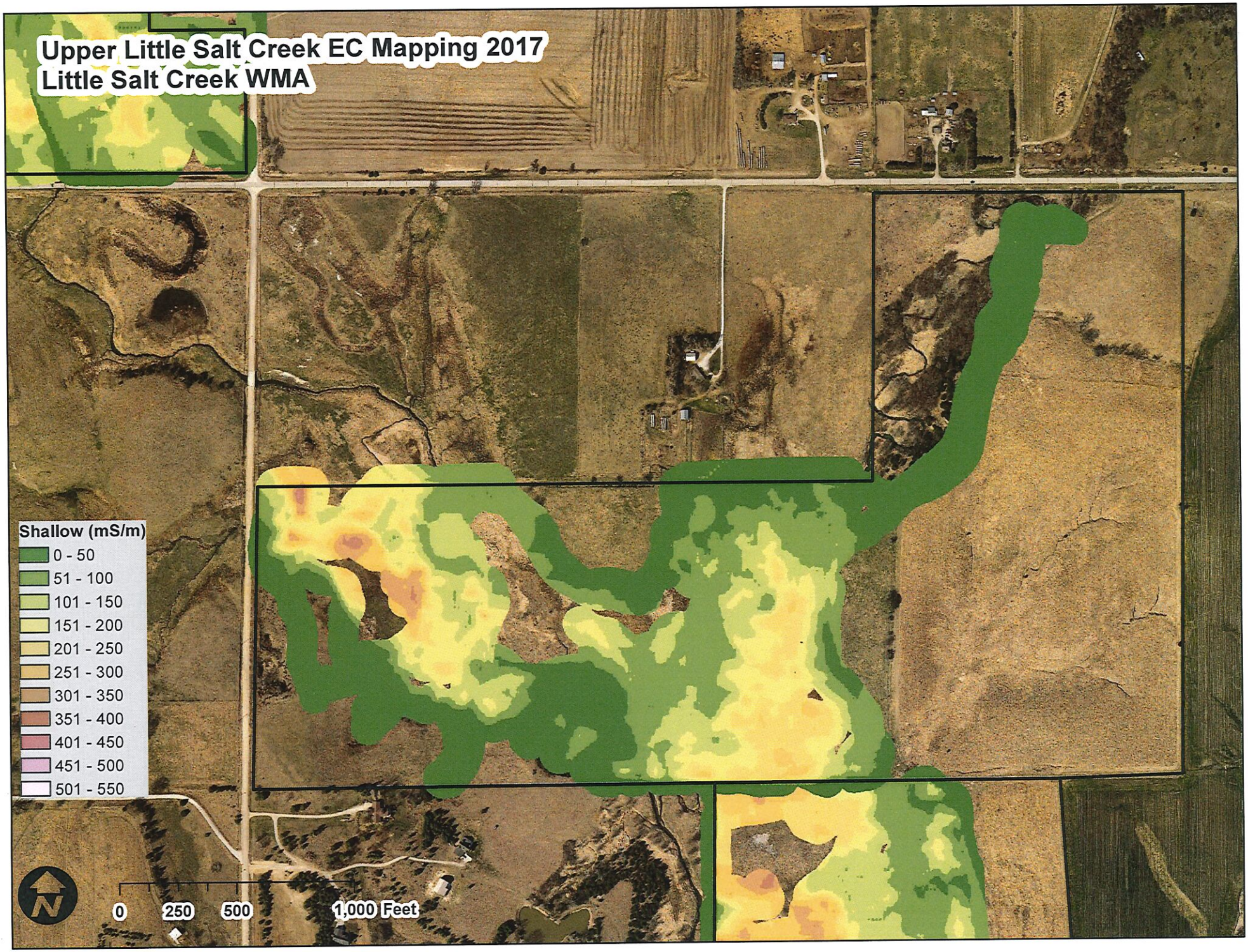
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Little Salt Creek WMA
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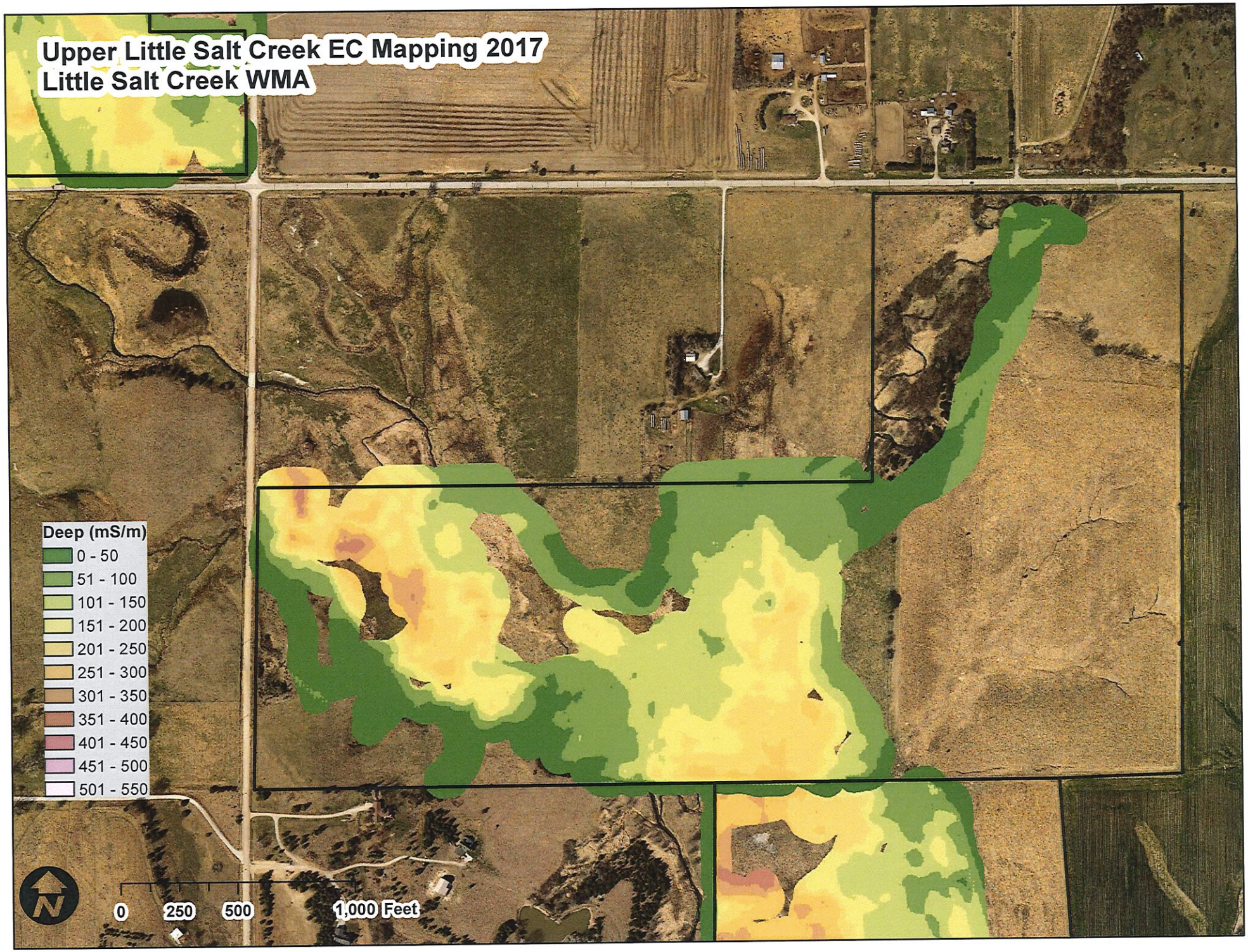
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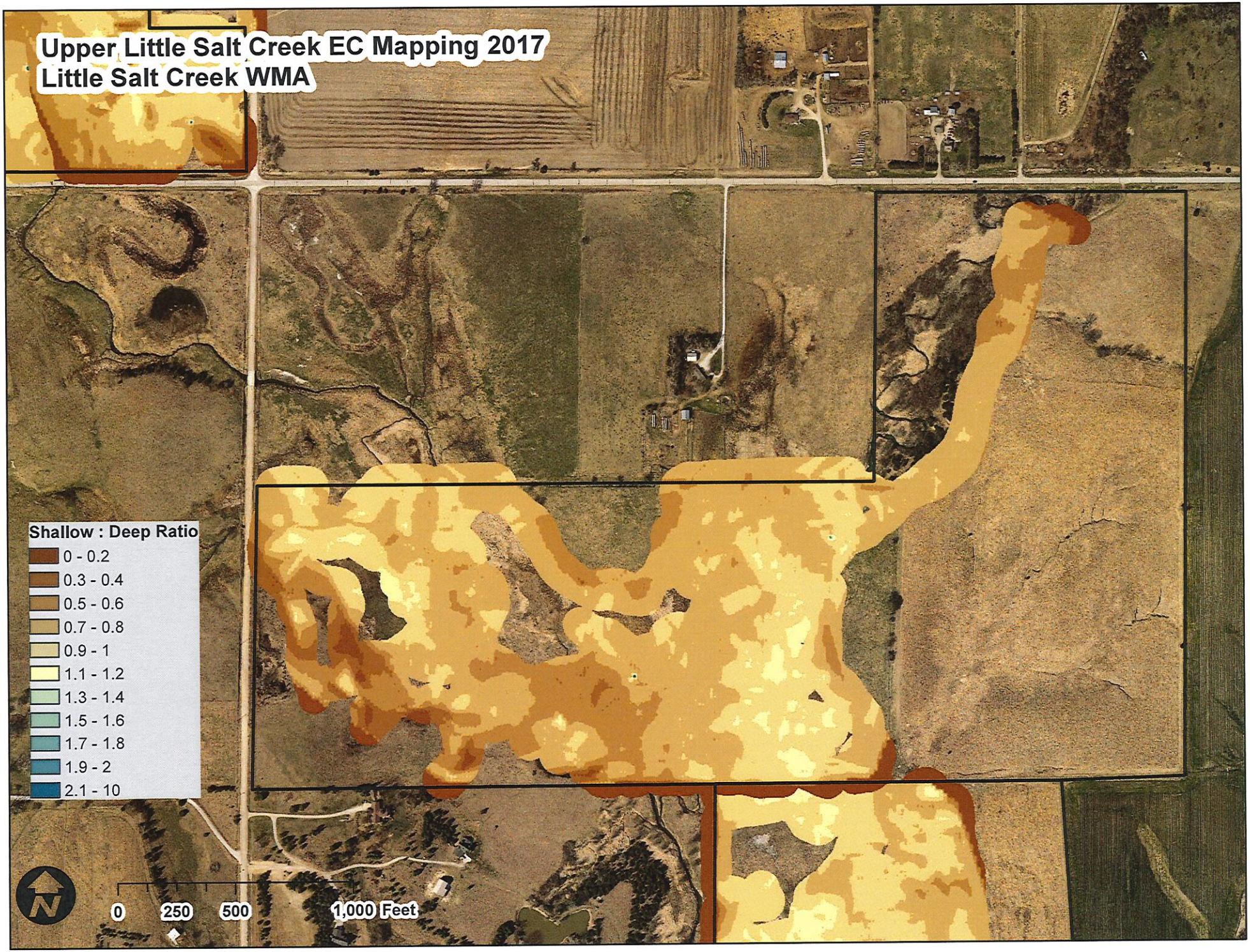
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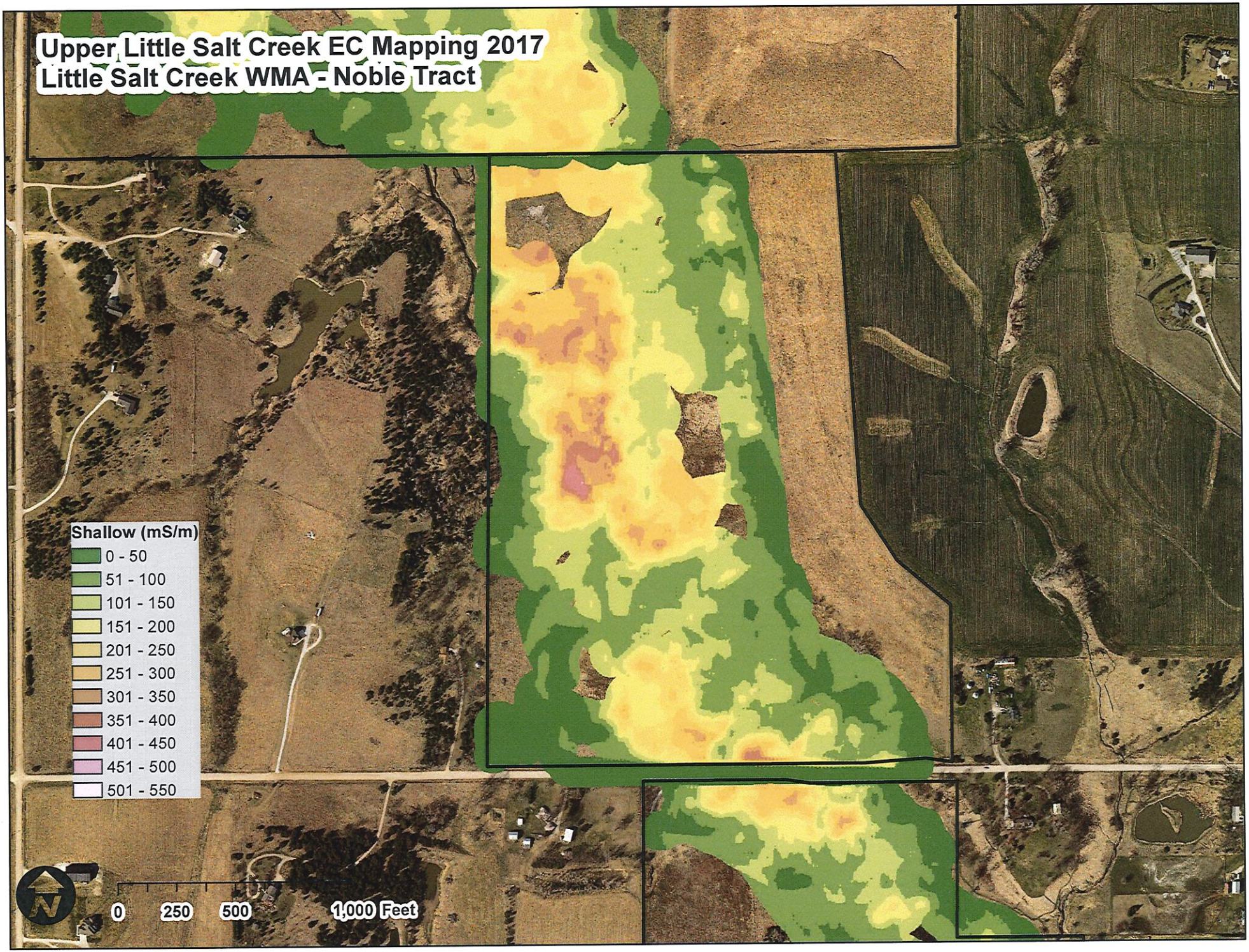
Upper Little Salt Creek EC Mapping 2017
Little Salt Creek WMA - Noble Tract
Shallow (mS/m)
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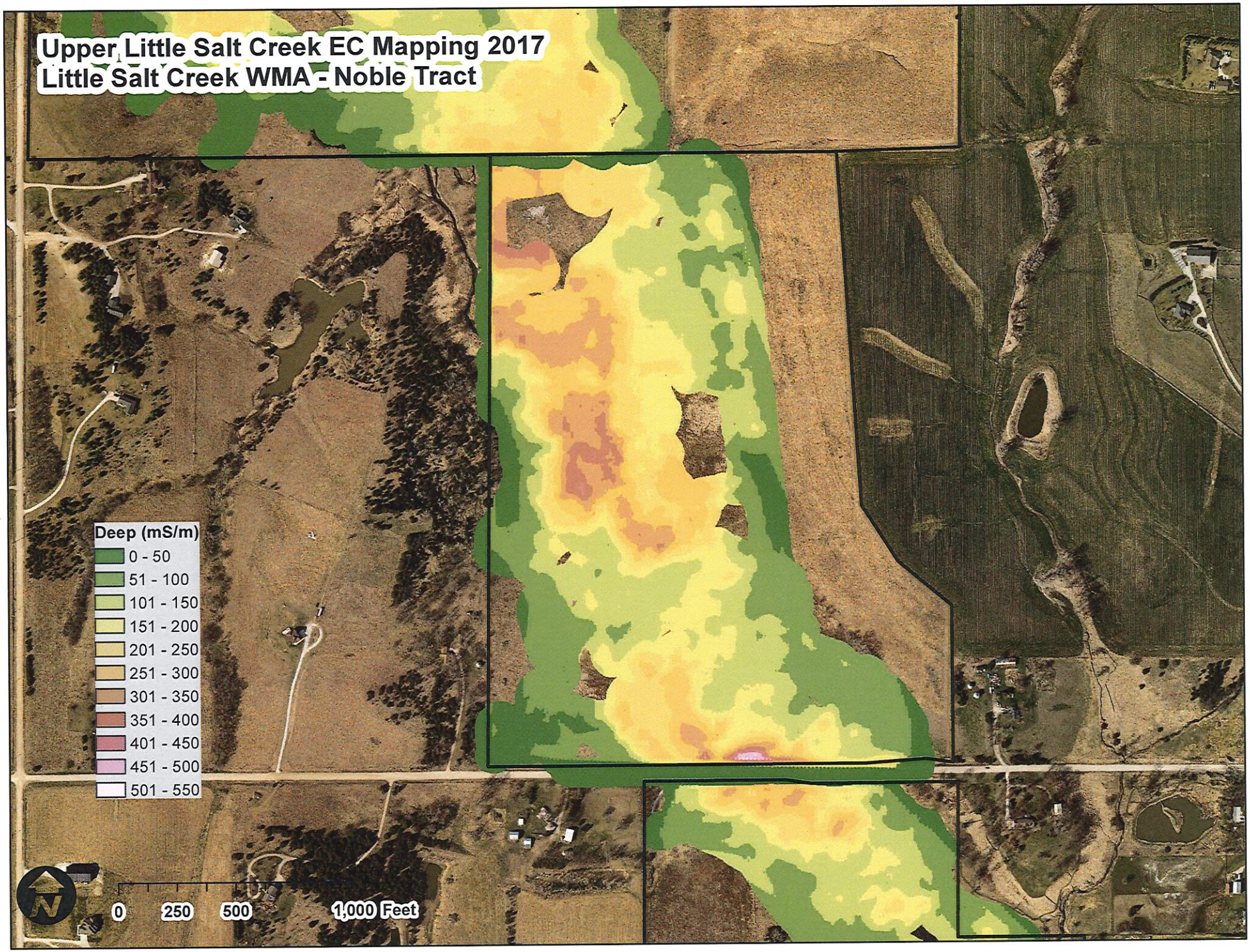
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Little Salt Creek WMA - Noble Tract
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Little Salt Creek WMA - Noble Tract
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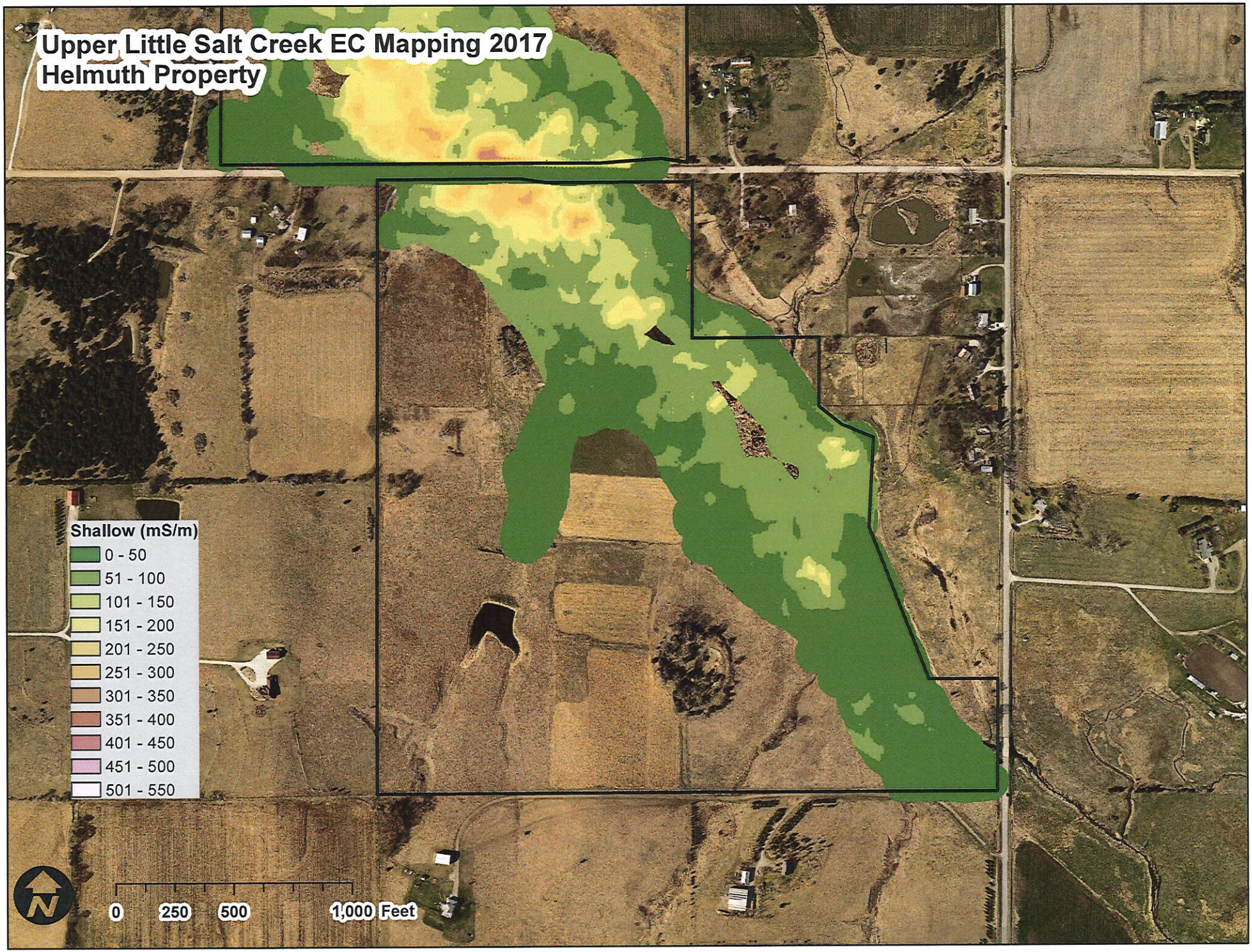
Upper Little Salt Creek EC Mapping 2017
Helmuth Property
Shallow (mS/m)
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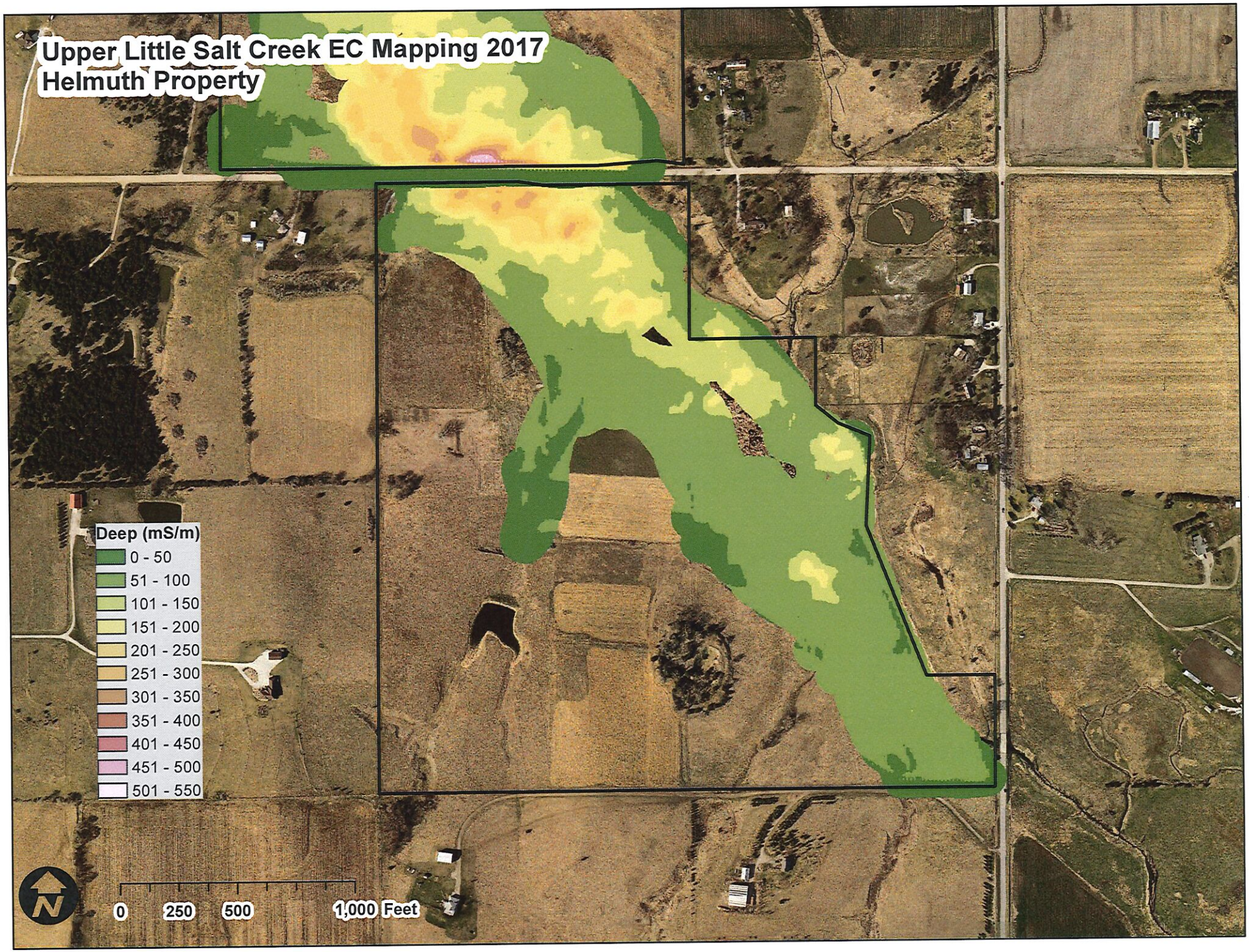
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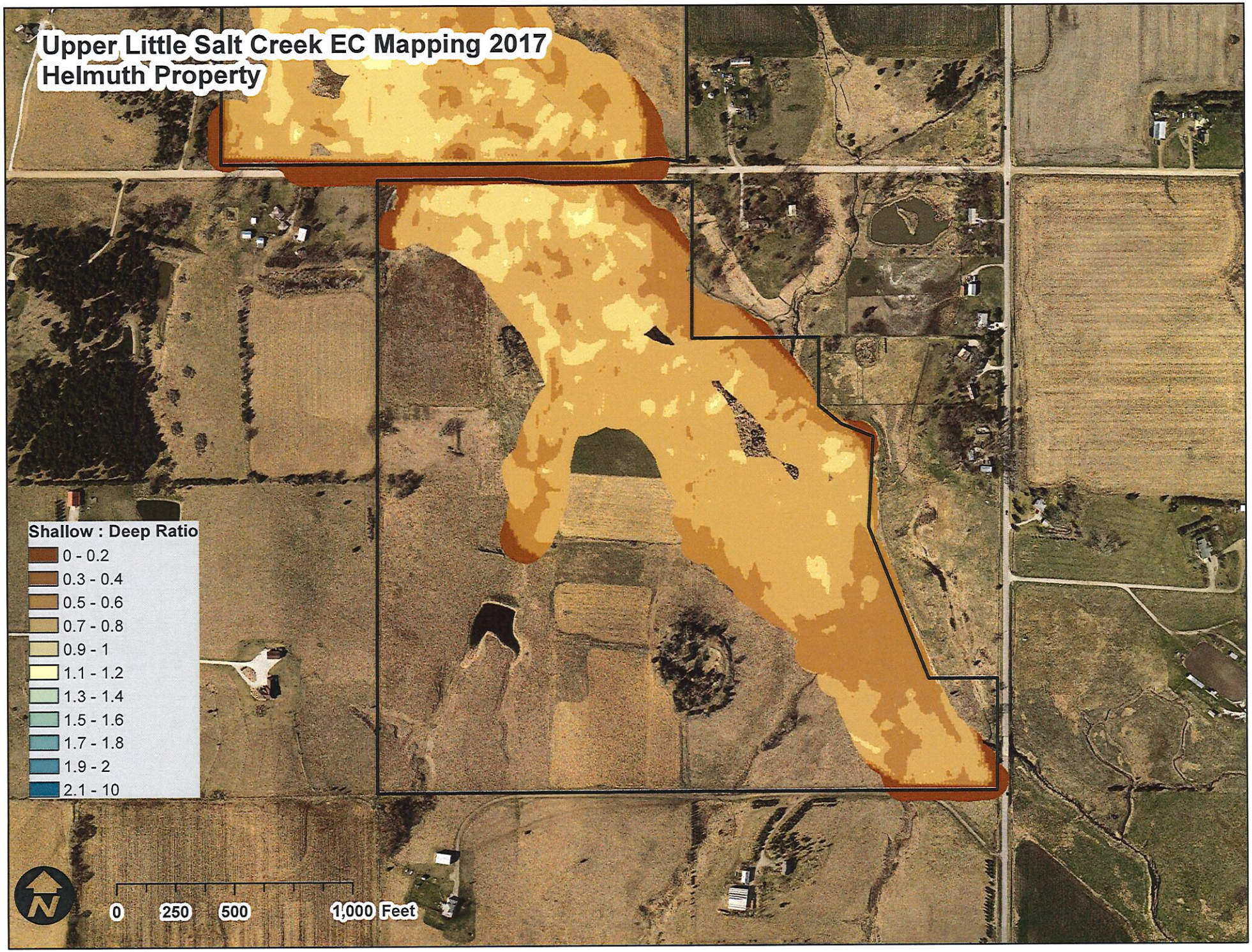
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