Appendix E

Wetland Assessment 2018

Pool 5 Dredged Material Management Plan

Upper Mississippi River

Wabasha and Winona Counties, Minnesota

Buffalo County, Wisconsin

US Army Corps of Engineers
St. Paul District

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Steps taken to estimate potential wetlands: Sheehan Property [Wabasha County, MN]

1. Offsite assessment of historical imagery using Corps and State procedures for assessing wetland hydrology on agricultural land
2. National Wetland Inventory, LIDAR elevations, and soil maps reviewed
3. Inquiry made about FEMA/DNR 100 year floodplain elevation (DNR-determined elevation is 669.12)
4. Preliminary wetland polygons were drawn
5. Site visit made May 24th, 2018 focusing on areas 4 and 5 [Refer to Right of Entry Map]; this visit was made during normal precipitation conditions
6. Field verification suggested that preliminary wetland polygons are reasonable
7. Information about the mitigation site south of area 4 was reviewed
8. Field visit October 30 revisited areas of May 24th plus all remaining areas with potential wetland signatures; this visit was made during wet precipitation conditions
9. Taken together, these data and techniques produced a reasonable estimate of potential wetlands

Observations: **Refer to Table 1: Summary of Wetland Potential, Right of Entry Map and Sheehan Collection Fall 2018**

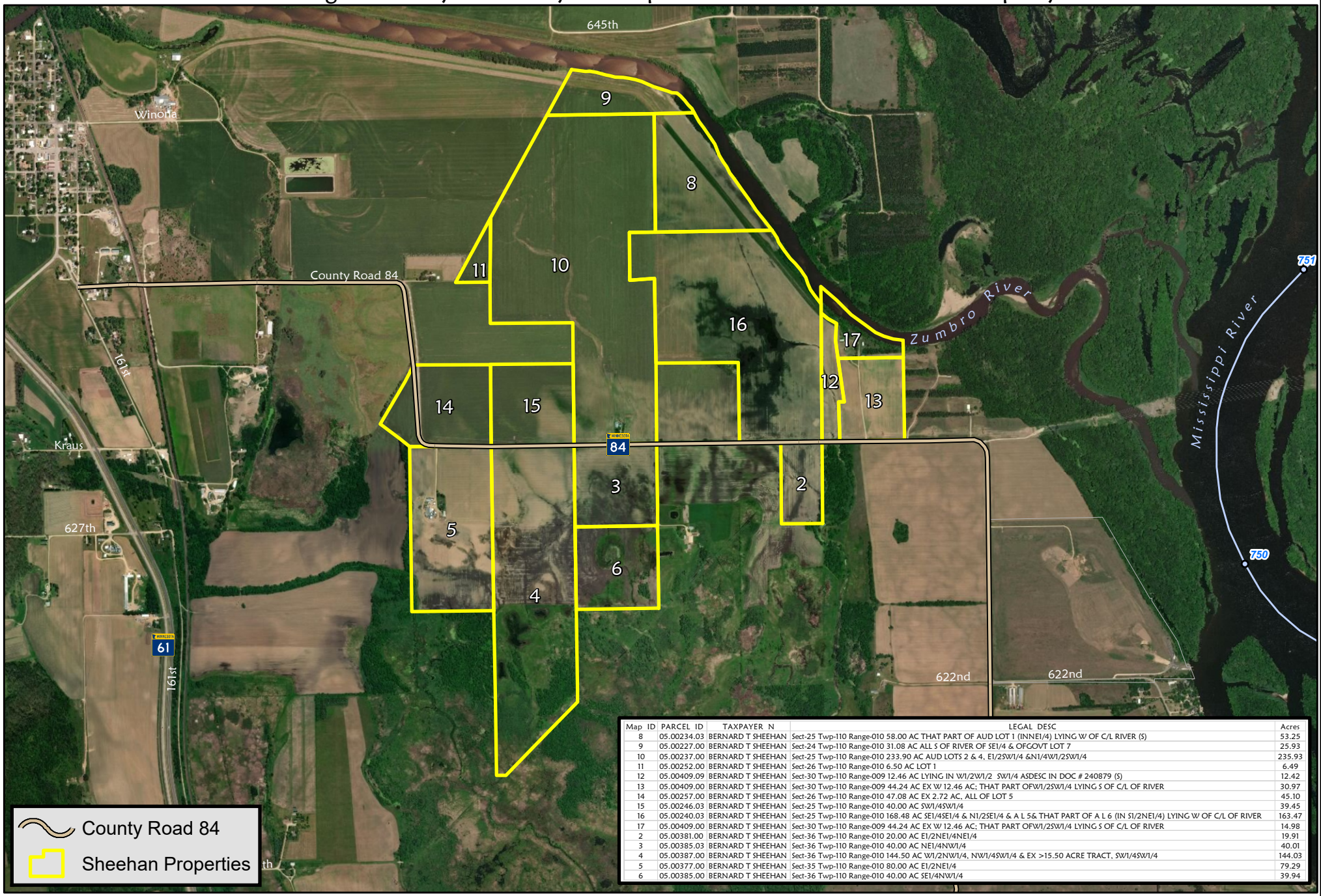
a. Strong correlation exists between recurring photo tone and wet signatures.
b. Field observations and soil borings aided a refined boundary of wetland polygons and established that wetland signatures on upper end of drainage swales, non-concave or linear (back slope) landscape positions are a "false-positive wetland signature" and represent soil with higher organic matter content (showing as darker signatures). Darker-colored soils contrast with lighter colored loamy-textured surface soil on upland, non-wetland areas. Confirmation was provided that potential wetlands strongly correlate with concave and flat landscape positions and elevations 670 and lower.[1]
c. Field observations also indicate that wet signatures extend beyond what can reasonably be considered wetland. Wet ("dark") signatures creep-up the back slope into areas of non-hydric soil. **Wet signatures – alone over-estimate actual wetland extent.**[2]
d. The landscape and soils in the mitigation area, south part of area 4, extends to the north.
e. Area 16 has been drained. A pump station is evident. Corn was harvested, without rutting.
f. The potential for wetland impacts are much greater below elevation 670 and the 100 year floodplain.

Recommendations:

1. Although useful for project planning and preparing for a wetland delineation, a wetland assessment such as this one does not necessarily negate the need for a wetland delineation. If needed, a wetland delineation identifies the boundary of a specific wetland.
2. Determinations about whether a wetland delineation is needed, and regulatory permits, are best made when a project and its location are identified.
3. Areas south of the 100 year floodplain identified as potential wetlands could likely be restored in a manner similar to the mitigation site located on the south part of area 4.

[1] Sample point 3, Sheehan Collection, was a non-hydric soil on a back slope, yet the signature was "dark".
[2] See footnote 1

Right of Entry for Survey and Exploration - Bernard Sheehan Property



Map ID	PARCEL ID	TAXPAYER N	LEGAL DESC	Acres
8	05.00234.03	BERNARD T SHEEHAN	Sect-25 Twp-110 Range-010 58.00 AC THAT PART OF AUD LOT 1 (INNE1/4) LYING W OF C/L RIVER (S)	53.25
9	05.00227.00	BERNARD T SHEEHAN	Sect-24 Twp-110 Range-010 31.08 AC ALL S OF RIVER OF SE1/4 & OFGOVT LOT 7	25.93
10	05.00237.00	BERNARD T SHEEHAN	Sect-25 Twp-110 Range-010 233.90 AC AUD LOTS 2 & 4, E1/2SW1/4 &N1/4W1/2SW1/4	235.93
11	05.00252.00	BERNARD T SHEEHAN	Sect-26 Twp-110 Range-010 6.50 AC LOT 1	6.49
12	05.00409.09	BERNARD T SHEEHAN	Sect-30 Twp-110 Range-009 12.46 AC LYING IN W1/2W1/2 SW1/4 ASDESC IN DOC # 240879 (S)	12.42
13	05.00409.00	BERNARD T SHEEHAN	Sect-30 Twp-110 Range-009 44.24 AC EX W 12.46 AC; THAT PART OFW1/2SW1/4 LYING S OF C/L OF RIVER	30.97
14	05.00257.00	BERNARD T SHEEHAN	Sect-26 Twp-110 Range-010 47.08 AC EX 2.72 AC, ALL OF LOT 5	45.10
15	05.00246.03	BERNARD T SHEEHAN	Sect-25 Twp-110 Range-010 40.00 AC SW1/4SW1/4	39.45
16	05.00240.03	BERNARD T SHEEHAN	Sect-25 Twp-110 Range-010 168.48 AC SE1/4SE1/4 & N1/2SE1/4 & A L 5& THAT PART OF A L 6 (IN S1/2NE1/4) LYING W OF C/L OF RIVER	163.47
17	05.00409.00	BERNARD T SHEEHAN	Sect-30 Twp-110 Range-009 44.24 AC EX W 12.46 AC; THAT PART OFW1/2SW1/4 LYING S OF C/L OF RIVER	14.98
2	05.00381.00	BERNARD T SHEEHAN	Sect-36 Twp-110 Range-010 20.00 AC E1/2NE1/4NE1/4	19.91
3	05.00385.03	BERNARD T SHEEHAN	Sect-36 Twp-110 Range-010 40.00 AC NE1/4NW1/4	40.01
4	05.00387.00	BERNARD T SHEEHAN	Sect-36 Twp-110 Range-010 144.50 AC W1/2NW1/4, NW1/4SW1/4 & EX >15.50 ACRE TRACT, SW1/4SW1/4	144.03
5	05.00377.00	BERNARD T SHEEHAN	Sect-35 Twp-110 Range-010 80.00 AC E1/2NE1/4	79.29
6	05.00385.00	BERNARD T SHEEHAN	Sect-36 Twp-110 Range-010 40.00 AC SE1/4NW1/4	39.94

St. Paul District
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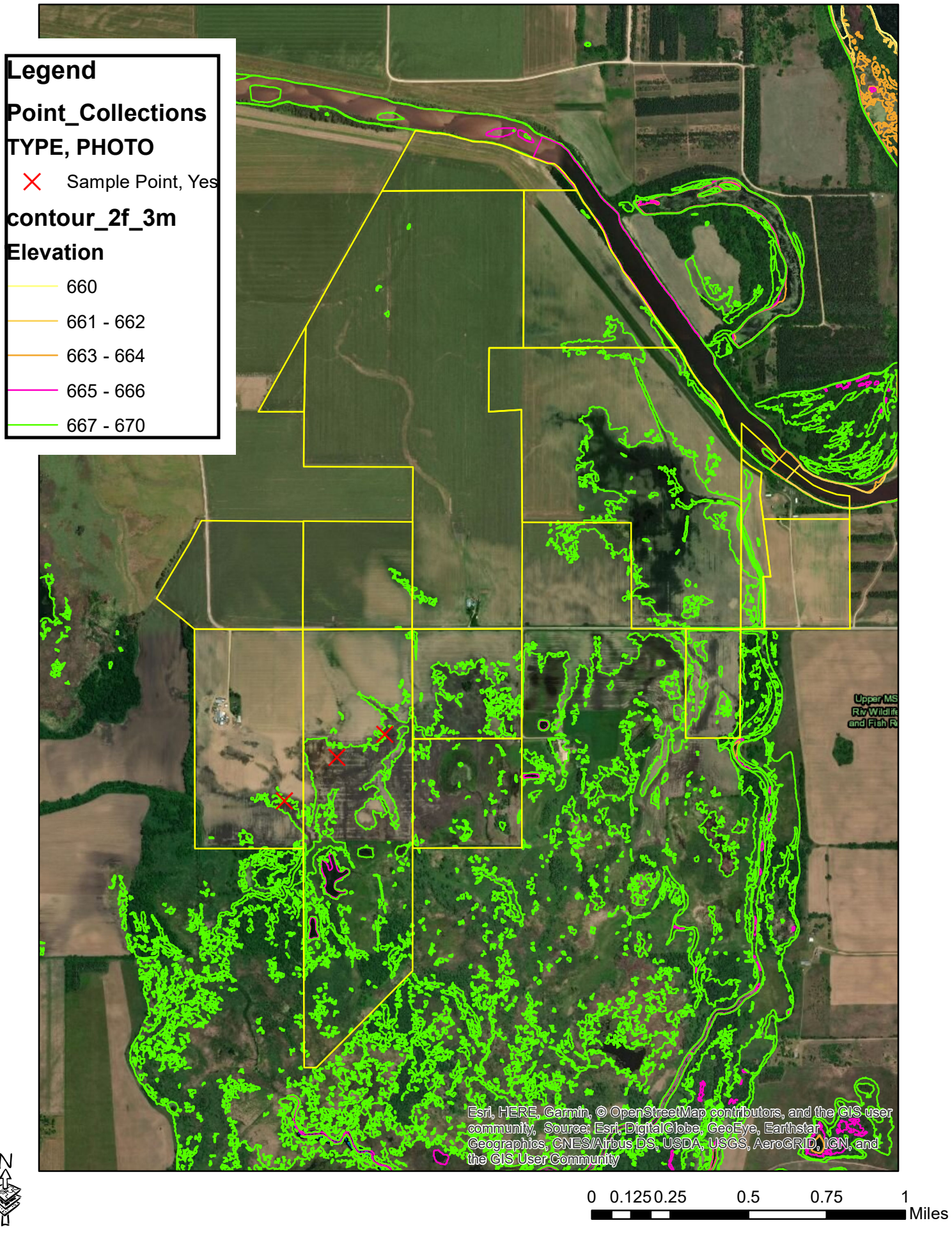
Exhibit "A"

2,000 1,000 0 2,000 4,000 Feet

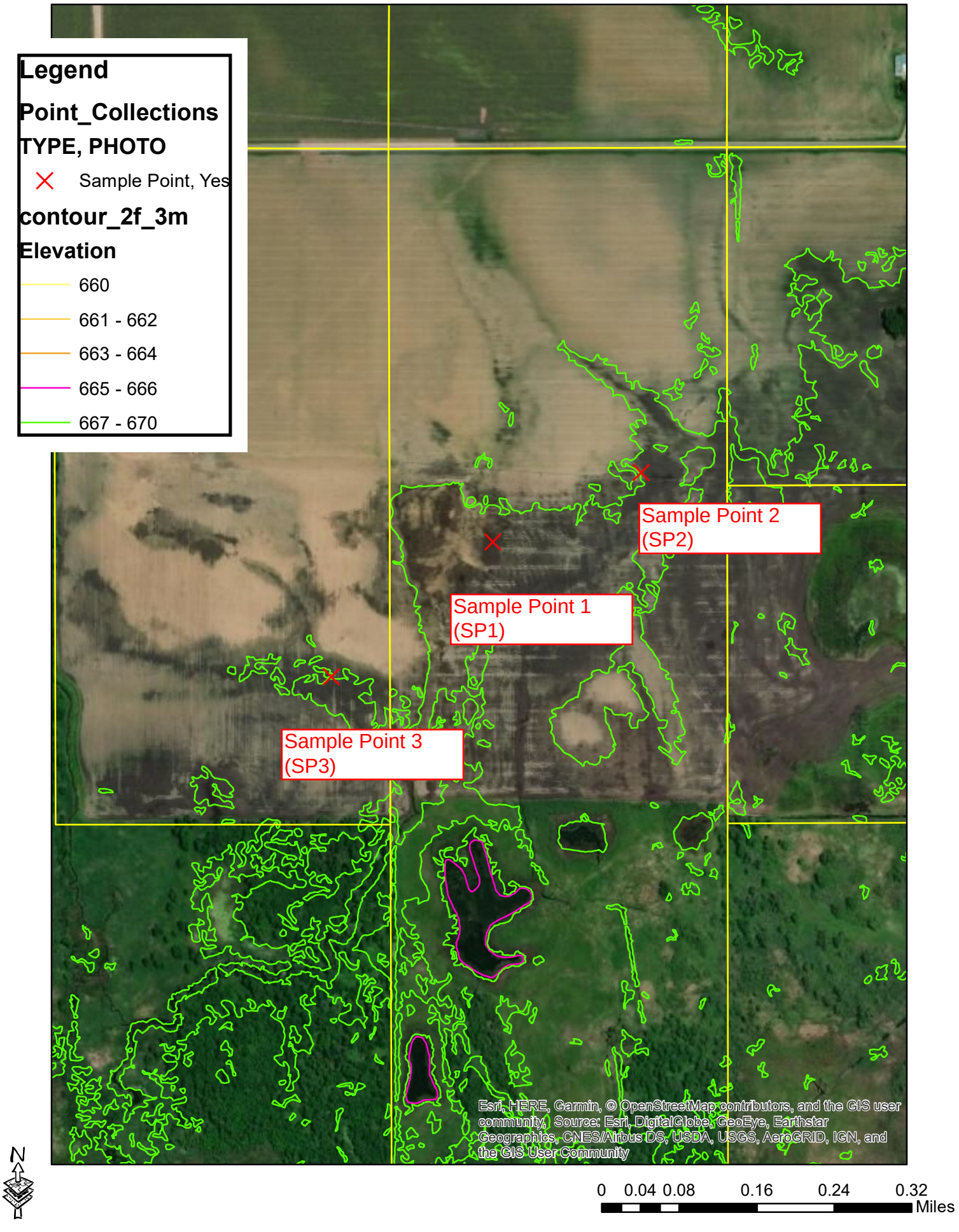
Image Data: ESRI WMS World Imagery

N

Sheehan Collection Fall 2018



Sheehan Collection Fall 2018



SP1 (1 of 2)
10/30/18
Sheehan,
Wabasha Co. MN

SP1 (2 of 2)
10/30/18
Sheehan,
Wabasha Co. MN

SP2 (1 of 2)
10/30/18
Sheehan,
Wabasha Co. MN

SP 2 (2 of 2)
10/30/18
Sheehan,
Wabasha Co. MN

SP3 (1 of 1)
10/30/18
Sheehan,
Wabasha Co. MN

TABLE 1: SUMMARY OF WETLAND POTENTIAL: SHEEHAN PROPERTY

Parcel	Imagery Evidence: Wetland Hydrology[1]	Elevation of wet signature[2]	Percent of Parcel with Potential Wetlands	General Location of Potential Wetlands ("Signatures" are visible on imagery)
2	Yes	~668	33	Swales: Trending N/S and NW/SE
3	Yes	~670	50	Below 100 year flood elevation[3]
4	Yes	~670	75	Below 100 year flood elevation and swale trending NW/SE above 100 year flood plain
5	Yes	~670	25	Below 100 year flood elevation
6	Yes	~670	>90	Entire parcel except for isolated small knolls
8	No		None	N/A
9	No		None	N/A
10	Yes	~670	<10	South part, north of Hwy 84; west of buildings
11	No		None	N/A
12	No		None	N/A
13	No		None	N/A
14	No		None	N/A
15	Yes	~670	<10	East central and SE swales
16	Yes (historically)	~670	40 (prior to drainage) None, now[4]	Central and south central—formerly
17	No		None	N/A

--Refer to the map "Right of Entry for Survey and Exploration" and Sheehan Collection Fall 2018--

GL/EW 122118

[1] Wet-appearing signatures from historic imagery were assessed with the "Offsite Hydrology and Wetland Determination Procedure (CORPS and BWSR, 2016)". These findings were further refined with field observations and elevations from LIDAR (Light Detection and Ranging), MN TOPO desktop application.

[2] Elevations from LIDAR (MN TOPO desktop application, point elevation tool) were found to be within one foot +/- of surveyed elevations.

[3] The DNR-established 100 year flood elevation is 669.12

[4] As observed during an October 30, 2018 visit, the site has been drained with pattern tile, including a pumping station. This infrastructure was apparently installed 2016 and 2017. Although wet antecedent precipitation conditions preceded October 30, 2018, corn had been harvested prior to the site visit, no standing crop remained and no rutting was observed in the field. Wetland hydrology has been likely removed.