

UPPER TURTLE RIVER AQUATIC RESOURCES REPORT



Fall 2024 Image of Upper Turtle River Riparian Habitat

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EXECUTIVE SUMMARY

North Dakota Natural Resource Conservation Service (NRCS) staff completed a field investigation to identify and delineate wetland resources for an Upper Turtle River Watershed plan on behalf of the Grand Forks Water Resource District on October 6th – 8th, 2020. The assessment area (AA) is approximately 2,975 acres located in section 15,16,20,21,22,27,28,29,33 & 45 of T153 R 55 and Sections 3 & 4 of T152 R 55 in northwestern Grand Forks County, near the city of McCanna, ND (Appendix A, Map 1). The delineation was conducted in accordance with the 1987 corps of Engineers Wetland Delineation Manual (USACE 1987), and the Great Plains Regional Supplement (USACE 2010), and guidelines for other waters determinations (USACE 2020). Results of the field delineations indicate there are 780.2 wetland acres and 22.7 ac. Other Waters located in the survey area. The AA is the land that may be affected by watershed flood protection alternatives considered in the potential project such as a dry dam.

INTRODUCTION

The purpose of this report is to identify and describe aquatic resources within the project boundary. Based on the public scoping process, the sponsor identified a preferred alternative of a dry dam - an on-channel impoundment designed to store floodwaters from the North Branch Turtle River. The purpose of the project is flood damage reduction for roads, cropland and other infrastructure downstream.

LOCATION

The project is located in sections 15,16,20,21,22,27,28,29,33 & 45 of T153 R 55 and Sections 3 & 4 of T152 R 55 in northwestern Grand Forks County, near the city of McCanna, ND; general latitude: 48.0112, longitude: -97.6759; (Appendix A, Map1). The survey area included areas of the potential project footprint, potential construction footprint and potential temporary inundation based on the maximum storage height and inundation possibilities. Potential inundation includes portions of some smaller tributaries. Landuse includes both dry and irrigated cropland, natural riparian grass, tree and shrub cover some of which is currently grazed. Many areas of riparian habitat are ungrazed and provide wildlife habitat.

METHODS

Field Inventory

The wetland inventory was conducted on foot October 6th – 8th, 2020. NRCS personnel present included State Biologist, Curtis Bradbury, hydrologist Jon Petersen, soil scientists Lance Duey, Keith Anderson, and Brianna Wegner and watershed and local field personnel: Rita Sveen and Paul Bjorg. The delineation was conducted in accordance with the 1987 corps of Engineers Wetland Delineation Manual (USACE 1987), and the Great Plains

Regional Supplement (USACE 2010), and guidelines for other waters determinations (USACE 2020). Aquatic boundaries within the project boundary were determined by paired tests holes observing the presence of hydric soil, vegetation and hydrology, and were recorded on USACE Wetland Determination Data Forms. The wetland boundaries were marked using GPS Trimble units. Determination of drainages and delineation of streams and rivers followed guidance from USACE (2020). The delineation report was written following the minimum standards for acceptance of aquatic resources delineation reports of USACE (2019).

The following procedures were used to determine wetland habitats:

- Review of available background aquatic resource information of this site as part of the aquatic resource delineation activities. Aquatic resource maps were developed using aerial photography from 2018 in combination with the USFWS National Wetlands Inventory(NWI) layer (USFWS 2020), USGS Topography Map, NRCS Soil Survey (USDA-NRCS-2020), and historical photography.
- Field survey of vegetation to determine the proportion of the dominant plant species classified as either obligate wetland, facultative wetland, or facultative plants; or if other indicators of wetland vegetation were present.
- Field sampling of soil using a soil probe to identify soil morphology, redoximorphic features, and soil texture. Wetland soils were determined the hydric soil indicators according to Field Indicators of Hydric Soils in the US.; Guide of Identifying and Delineating Hydric Soils, Version 7.0 (USDA-NRCXS 2010).
- Hydrology by observation of on-site primary and secondary indicators (USACE 2010). We also used aerial photography to assist hydrologic assessment. To describe the climatic conditions at the time of sampling, we accessed antecedent and recent rainfall data before going to the field (NDAWN 2020).

The following procedures were used to determine other waters (OW):

- All occurrences of blue lines on the USGS Topo Maps were evaluated in the field. Some of these areas were delineated as wetlands and others more permanently flowing were classified as other waters. Strong preference was given to USFWS water bodies designated as Riverine. The majority of the NWI riverine classifications were considered Other Waters.

There were 3 parcels where landowners denied permission for survey access. Wetlands in these areas were estimated with offsite tools, including NWI, lidar and aerial photography (Appendix A, Map 2).

RESULTS

Landscape setting: The project area is located primarily in the Beach Ridges and Sand Deltas Ecological Area. A small portion of the upper project area is located in the Glacial Lake Agassiz Basin Ecological site (2015 NDDGF SWAP). The land surveyed included both irrigated and dryland cropland as well as extensive mixed riparian habitat which included woodland, scrub-shrub, grass and forb species.

The majority of the wetlands delineated were classified on the USFW NWI as PEM1C – palustrine, emergent, seasonally flooded wetlands. The delineation found considerable expansion of these areas which were not included in the USFWS mapping; however these areas met all three wetland criteria and were estimated to be either an extension of PEM1C or PEM1A (temporary flooded) wetlands.

The total survey area runs along 9.02 linear miles of the Upper Turtle River – the river itself along this corridor was delineated as Other Waters. Other linear features were mapped as wetlands as they exhibited more palustrine features.

Climate conditions: The weather conditions at the time of the delineation were good. During the field visits on October 6th – 8th, 2020, the climatic conditions (antecedent precipitation) in the area were normal (Table 1), and the site received 0.05 inches of rain in the 7 days prior to the fieldwork (NDAWN 2020). The fieldwork was completed during the growing season.

Table 1 Historical precipitation data compared to recent precipitation data from a 49-year dataset (1971-2020, recorded at Grand Forks, ND weather station (USDA-NRCS 2020).

		Long-Term rainfall records (1971 - 2020)								
WETS Station Grand Forks, ND Lat 47.83634, Long -97.06685	Month	<30%	Mean	>30%	Actual	Condition	Condition Value	Weighted Avg	Month Wt. Value	CV x WA
3rd Month Prior	July	1.93	3.12	3.77	4.15	Wet	3	3	w	3
2nd Month Prior	August	2.03	2.77	3.25	3.07	Normal	2	2	2	4
1st Month Prior	Sept	1.14	2.18	2.67	0.36	Dry	1	1	3	3
								Sum		10
							Conditions Onsite:			Normal
If Sum is										
6 to 9	Then prior period has been drier than normal					Condition Values				
10 to 14	Then prior period has been normal					(1) Dry				
15 to 18	Then prior period has been wetter than normal					(2) Normal				
						(3) Wet				

Overall Aquatic Resource Description

Results of the field wetland delineation indicate there are 5 wetland areas (totaling 780.22 acres) and 7 Other Waters (totaling 9.02 miles & 22.72. ac.) located in the 2,975 acre survey area (Table 2 and Appendix A, Maps 3-10 – Aquatic Delineations Maps)

Most of the aquatic resources within the survey area are within the riparian corridor of the Upper Turtle River and it's smaller tributaries. The majority of the wetlands delineated were classified on the USFW NWI as PEM1C – palustrine, emergent, seasonally flooded wetlands. The other waters on the site are classified as on the NWI as R2UBF – riverine, lower perennial, semi-permanently flooded streams with unconsolidated bottoms. This designation is limited to the stream itself – widths averaging 8-15 feet in width.

Overall Vegetation Description

The plant communities in the survey area are a mixture of native and tame grass, forb, shrub and tree species. The dominant herbaceous species in the wetland areas included *Phalaris arundinacea* (reed canary grass). *Spartina pectinate* (prairie cordgrass), *Typha* spp. (Cattail), *Carex* spp (sedge) and *Calamagrostis canadensis* (Canadian bluejoint grass). Dominant shrub species included *Salix exigua* (sandbar willow), *Symphoricarpos albus* (snowberry) and *Cornus sericea* (red osier dogwood). Dominant tree species included *Salix* spp (willow), *Populus deltoides* (cottonwood) and *Populus tremuloides* (quaking aspen).

Overall Soils Description

The NRCS Web Soil Survey identified soils within the wetland areas were formed from silty alluvium, are poorly, or very poorly drained and are dominated by hydric soil components. The most common map units included I370A Rauville silty clay loam, 0-1% slope, frequently flooded and I146B Lamoure-Fluvaquents, channeled complex, 0-6% slopes, frequently flooded. These soils formed within swales, oxbows and depressions on the floodplain.

Overall Hydrology Description

The project area is located within the Upper Turtle River Watershed. A small tributary to the NW contributes to the watershed and a tributary known as Whiskey Creek enters from the west in section 35-153-55. The river flows to the southeast before angling back to the northeast. Many other tributaries combine before the confluence with the Red River of the North just south of the City of Oslo, MN. The meandering of the river has resulted in the creation of many oxbow-like stream features. These features receive hydrology from the surrounding landscape through precipitation, snow melt and flood events. A review of historical aerial photography shows evidence of saturation and wet signatures and the lack of agricultural production within the floodplain as a strong indicator of prolonged saturated conditions.

Individual Descriptions

Vegetation, soils and hydrology data were recorded for wetlands on USACE Great Plains Region Wetland Determination Data Forms.

Wetlands:

Wetlands 1,2,7,8,16 & 20 are shallow natural herbaceous wetlands ranging in size from 0.02 -0 2.20 acres. These wetlands were identified in the field by NRCS as PEM1A – palustrine, emergent and temporary flooded; however they were not designated as wetlands on the USFWS NWI. These wetlands were found in depressions on the perimeter of the survey area, sometimes disconnected from the larger floodplain. The predominant soil was I370A Rauville silty clay loam and the vegetation was dominated by reed canary grass.

Wetlands 3,4,10,12,13,15,19,22,24,25,26,32 and 34 are shallow natural herbaceous wetlands ranging in size from 0.34 to 11.35 acres and are classified as PEM1C – palustrine, emergent and seasonally flooded on the USFWS NWI. NRCS generally found the size of these wetlands to exceed the NWI boundaries. These wetlands were formed in depressions and oxbows on the margins of the flood plain. The predominant soil was I370A Rauville silty clay loam and the vegetation was dominated by cattails, sedge and reed canary grass.

Wetlands 5 & 6 are shallow natural herbaceous wetlands both less than 1 acre in size. These wetlands were identified in the field by NRCS and classified by the USFWS NWI as PEM1A – palustrine, emergent and temporary flooded. These wetlands were found in depressions on the perimeter of the survey area, sometimes disconnected from the larger floodplain. The predominant soil was I365B Arvilla sandy loam, and the vegetation was dominated by reed canary grass.

Wetlands 9,11,17,21,23,27, and 28 make up the largest percentage of the wetlands inventoried in the project area ranging in size from 31 to 260 acres. These wetlands are adjacent to the Upper Turtle River and its tributaries; they formed in the floodplain and are classified as PEM1C – palustrine, emergent and seasonally flooded on the USFWS NWI. NRCS generally found the size of these wetlands to exceed the NWI boundaries. Other small NWI wetlands were identified within these large wetlands and include palustrine excavated ponds and forested and scrub-shrub wetlands. The predominant soil was I370A Rauville silty clay loam. Multiple vegetation types are present including herbaceous species dominated by cattails, sedge and reed canary grass. Shrub vegetation includes willow, dogwood and snowberry.

Wetland 14 is 5.66 acres and is classified as PFO1/SS1A – palustrine, forested or scrub-shrub temporary flooded on the USFWS NWI. The predominant soil is I293B Cashel silty clay, 0-6% slopes, occasionally flooded. Tree and

shrub vegetation includes willow and quaking aspen. This wetland has been disconnected from the floodplain by a county road.

Wetland 18 is 2.01 acres. This wetland was classified by NRCS as PSS1A – palustrine, scrub-shrub temporary flooded, but was not designated as a wetland on the USFWS NWI. The predominant soil is I146B Lamoure-Fluvaquents, channeled complex, 0-6% slopes, frequently flooded. Shrub vegetation includes willow, dogwood and snowberry. This wetland has been disconnected from the floodplain by a county road.

Wetlands 29, 30 & 31 are clustered in a depressional area disconnected from the floodplain and range in size from 9.08 – 13.69 acres. Wetland 29 is the shallowest of the three wetlands and is classified as PEM1A; wetlands 30 & 31 are deeper and classified as PEM1C. Wetland 29 is dominated by soil I146B Lamoure-Fluvaquents, channeled complex, 0-6% slopes, frequently flooded. Wetlands 30 and 31 are dominated by soil was I370A Rauville silty clay loam. This determination was made with offsite tools, as access was not granted for a field inventory.

Wetland 33 is a livestock pond classified as PABFx Palustrine, aquatic bed, semi-permanently flooded, excavated. This wetland was excavated within or adjacent to Wetland #34.

Wetland 35 is a small riverine wetland classified as R4SBC on the NWI, however NRCS classified this as PEM1A – see wetland #'s 1 & 2 for wetland description.

Table 2 Wetlands Identified in the Affected Area

Wetland #	Acres	Cowardin	NRCS Determined
1	0.15	none	PEM1A
2	0.57	none	PEM1A
3	5.09	PEM1C	PEM1C
4	5.3	PEM1C	PEM1C
5	0.84	PEM1A	PEM1A
6	0.78	PEM1A	PEM1A
7	0.02	none	PEM1A
8	0.08	none	PEM1A
9	131.36	PEM1C	PEM1A
10	0.34	PEM1C	PEM1C
11	64.75	PEM1C	PEM1C
12	2.02	PEM1C	PEM1A
13	0.58	PEM1C	PEM1C
14	5.66	PFO1/SS1A	PEM1A
15	3.59	PEM1C	PEM1C
16	0.86	none	PEM1A
17	64.28	PEM1C	PEM1A
18	2.01	none	PSS1A
19	4.51	PEM1C	PSS1A
20	2.2	none	PEM1A
21	68.02	PEM1C	PEM1A
22	3.75	PEM1C	PEM1A
23	260.55	PEM1C	PEM1A

24	6.72	PEM1C	PEM1A
25	5.37	PEM1C	PEM1C
26	1.93	PEM1C	PSS1C
27	52.41	PEM1C	PEM1A
28	31.16	PEM1C	PEM1A
29	10.31	PEM1A	PEM1A
30	13.69	PEM1C	PEM1A
31	9.08	PEM1C	PEM1A
32	11.35	PEM1C	PEM1C
33	0.27	PABFx	PABFx
34	9.4	PEM1C	PEM1A
35	1.22	R4SBC	PEM1A
Total	780.22		

Other Waters:

Approximately 9 miles of river are included in the determination. These are contiguously mapped as OW 1 – OW7. All are classified on the USFWS NWI as R2UB1F – riverine, lower perennial, semi-permanently flooded streams with unconsolidated bottoms. OW-6 and OW-7 have a small portion of excavated channel included within the delineation. With the exception of periods of drought, these waters have continuous flow and are typically covered by ice in the winter, rarely freezing solid. The dominant vegetation along the riverbank is reed canary grass, sedge and sandbar willow.

Table 3 Other Waters Identified in the Affected Area

Wetland	Acres	Cowardin NWI	Feet, miles
OW-1	1.95	R2UBF	3602 , 0.68mi
OW-2	1.12	R2UBF	1852, 0.35 mi
OW-3	3.53	R2UBF	8484, 1.6 mi
OW-4	2.26	R2UBF	6850, 1.3 mi
OW-5	1.36	R2UBF	2338, 0.4 mi
OW-6	6.11	R2UBF (a little x)	12949, 2.45mi
OW-7	6.39	R2UBF (a little x)	11833, 2.24mi
Total	22.72		

REFERENCES

Cowardin LM, Carter V. Golet FC, LaRoe ET (1979) Classification of wetlands and deepwater habitats of the United States. U. S. Department of the Interior, Fish and Wildlife Service, Washington, D.C.

<https://www/fws/gov/wetlands/Documents/Classification-of-Wetlands-and-Deepwater-Habitats-of-the-United-States.pdf>

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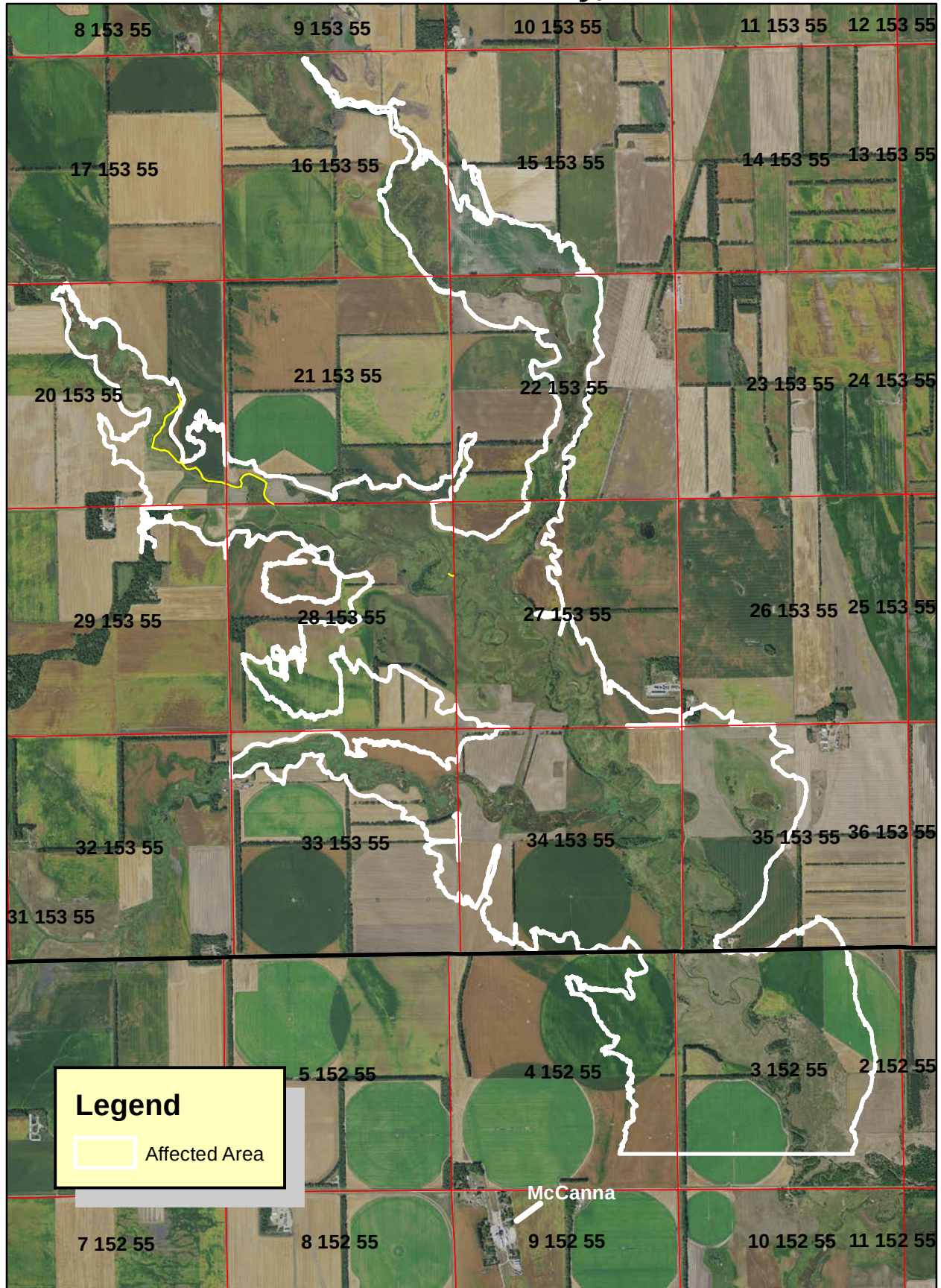
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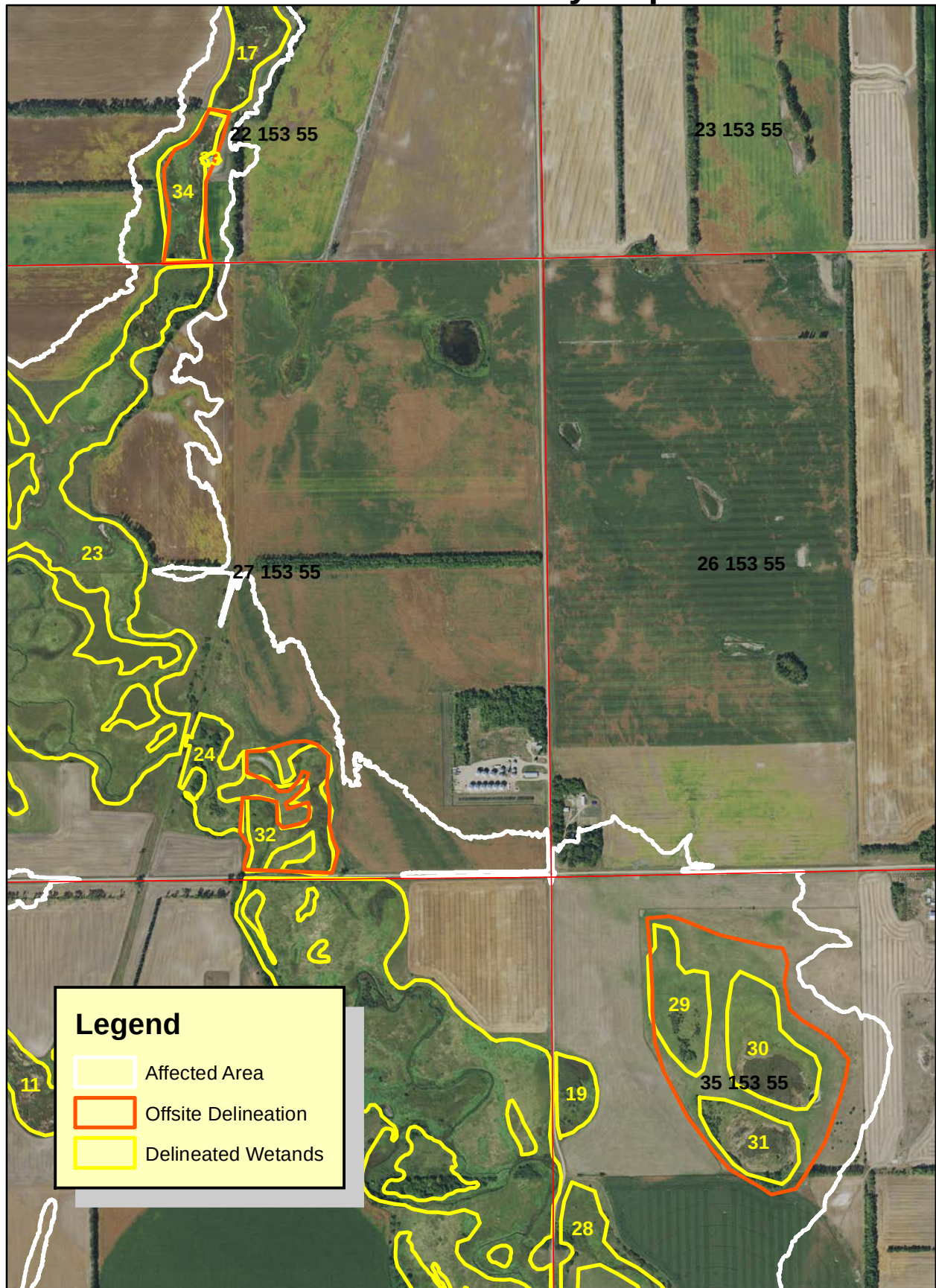
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Upper Turtle River Watershed Affected Area Grand Forks County, ND



Map 1

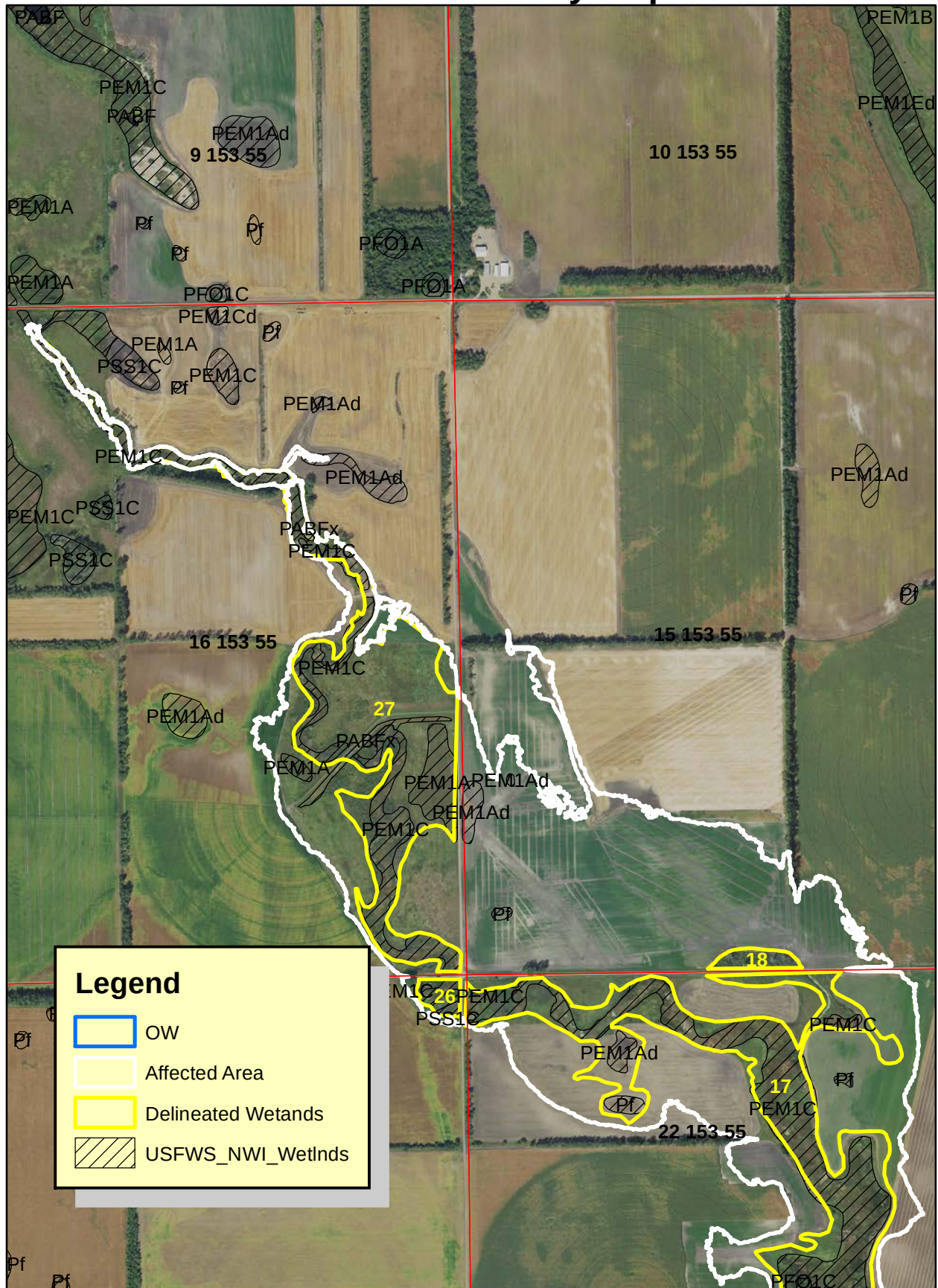
Upper Turtle River Watershed Wetland Inventory Map



0 0.1 0.2 0.3 0.4
Miles

Map 2

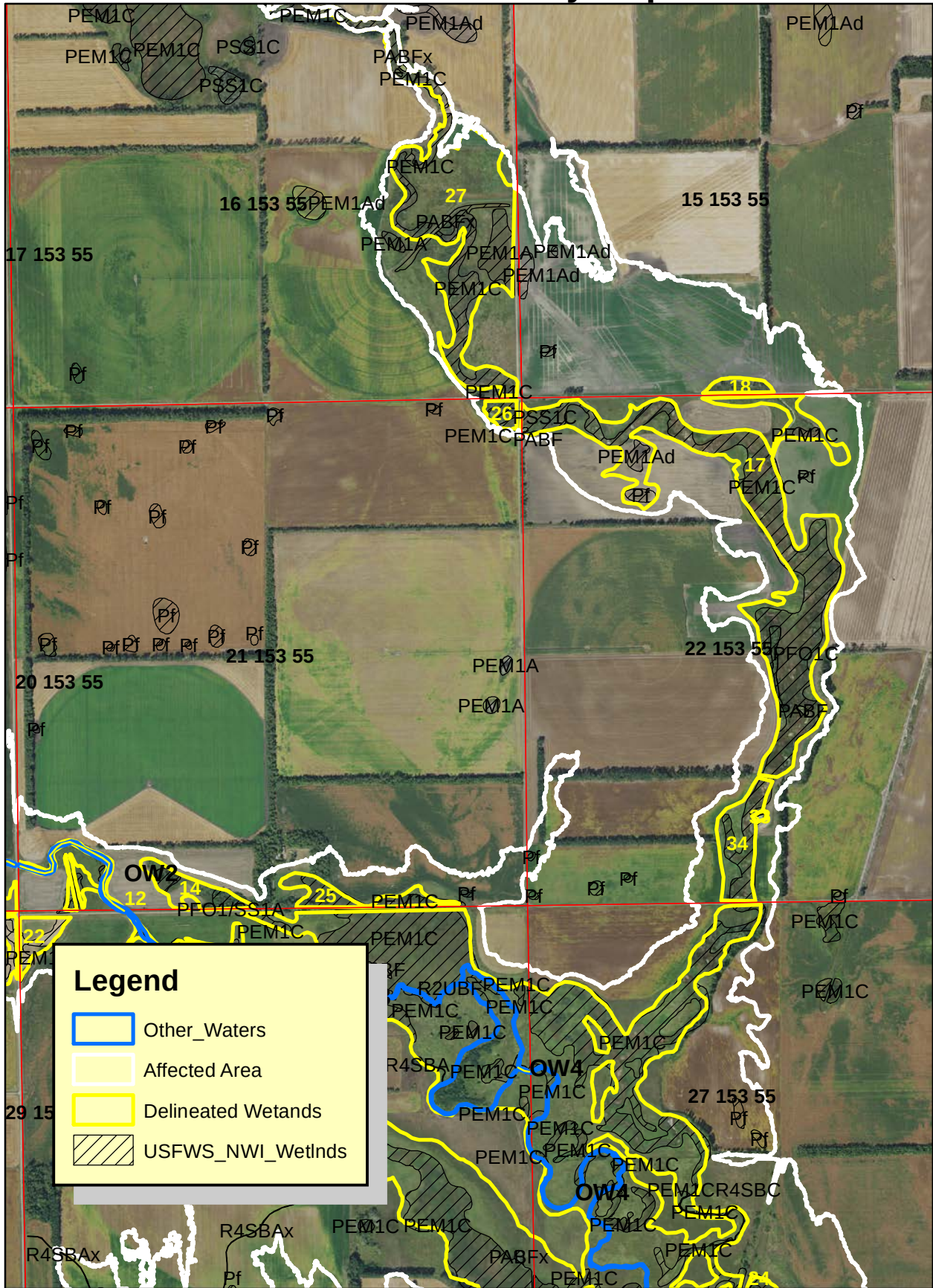
Upper Turtle River Watershed Wetland Inventory Map



0 0.05 0.1 0.2 0.3 0.4
Miles

Map 3

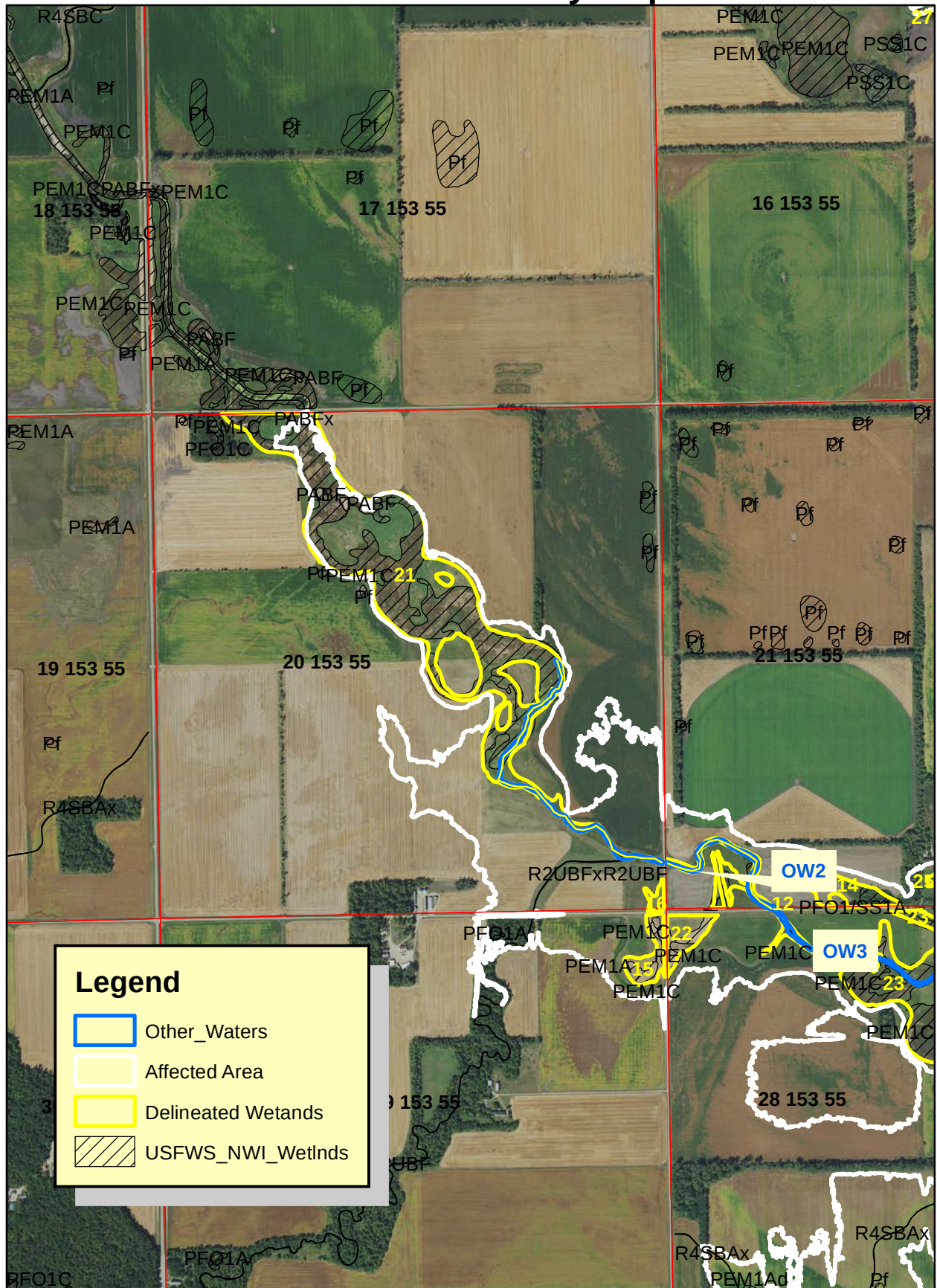
Upper Turtle River Watershed Wetland Inventory Map



0 0.075 0.15 0.3 0.45 0.6 Miles

Map 4

Upper Turtle River Watershed Wetland Inventory Map



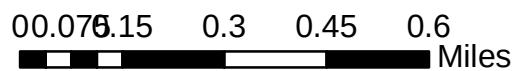
Legend

Other_Waters

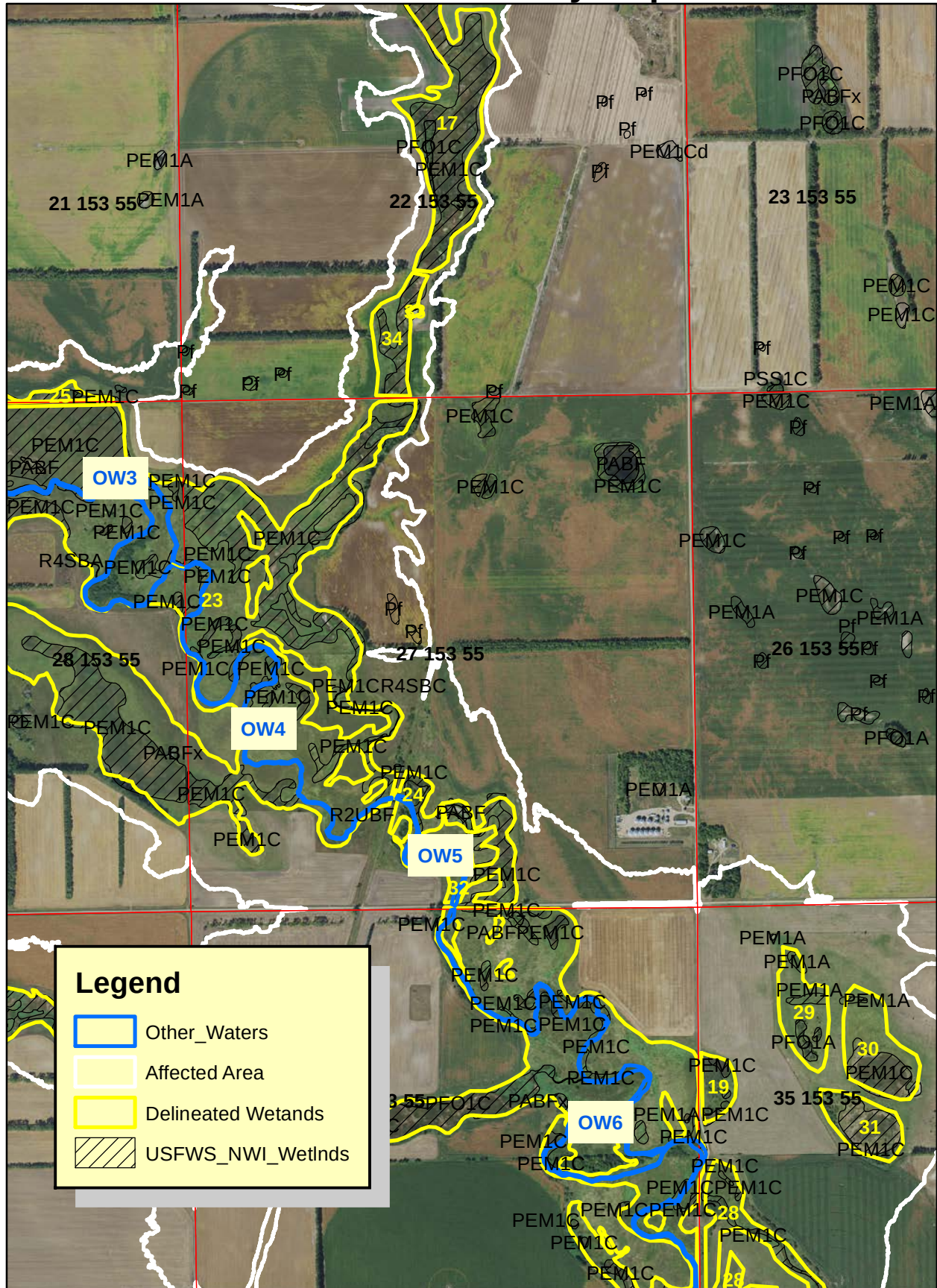
Affected Area

Delineated Wetlands

USFWS_NWI_Wetlands



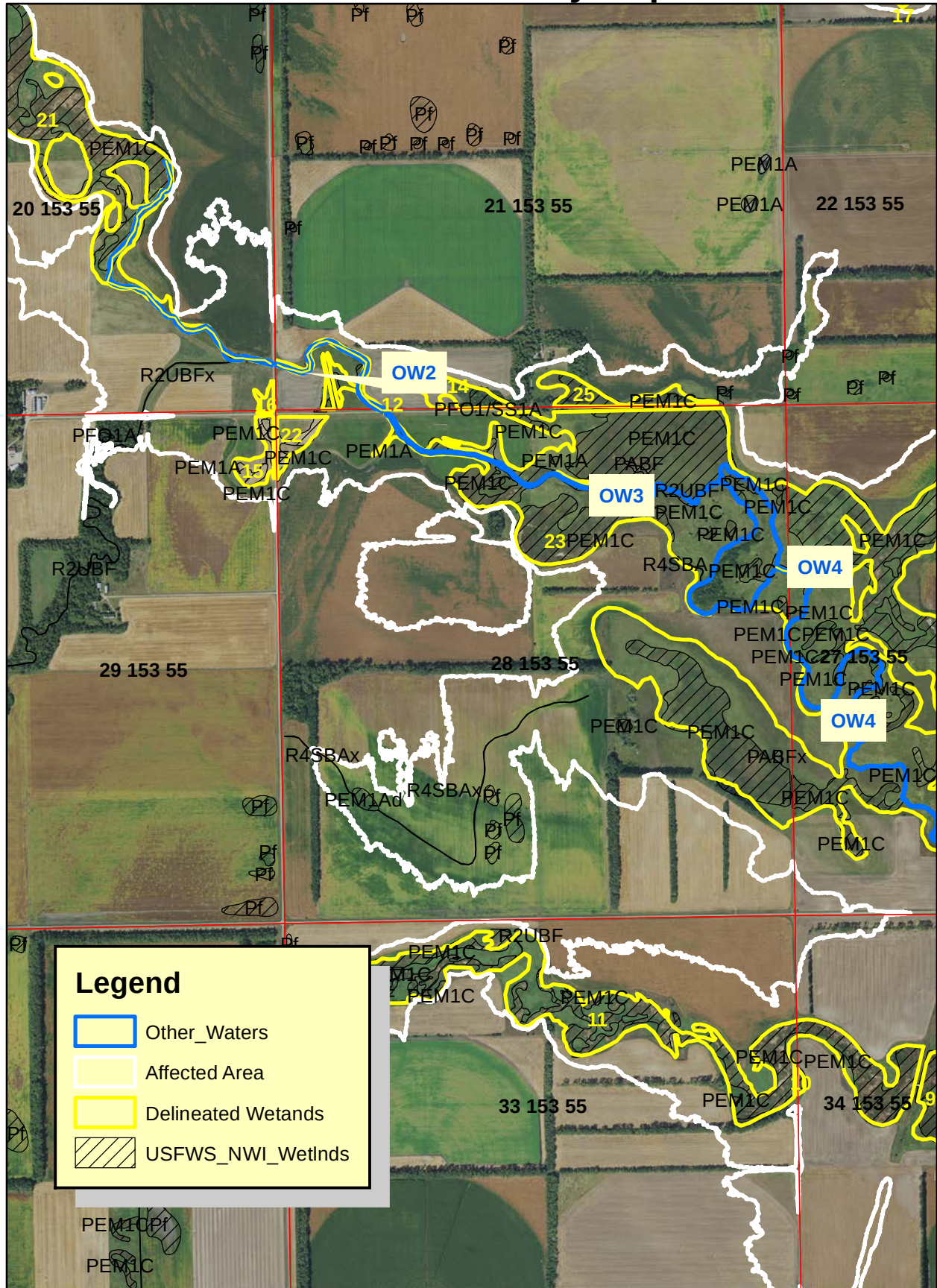
Upper Turtle River Watershed Wetland Inventory Map



0 0.075 0.15 0.3 0.45 0.6 Miles

Map 6

Upper Turtle River Watershed Wetland Inventory Map



0 0.075 0.15 0.3 0.45 0.6 Miles

Legend

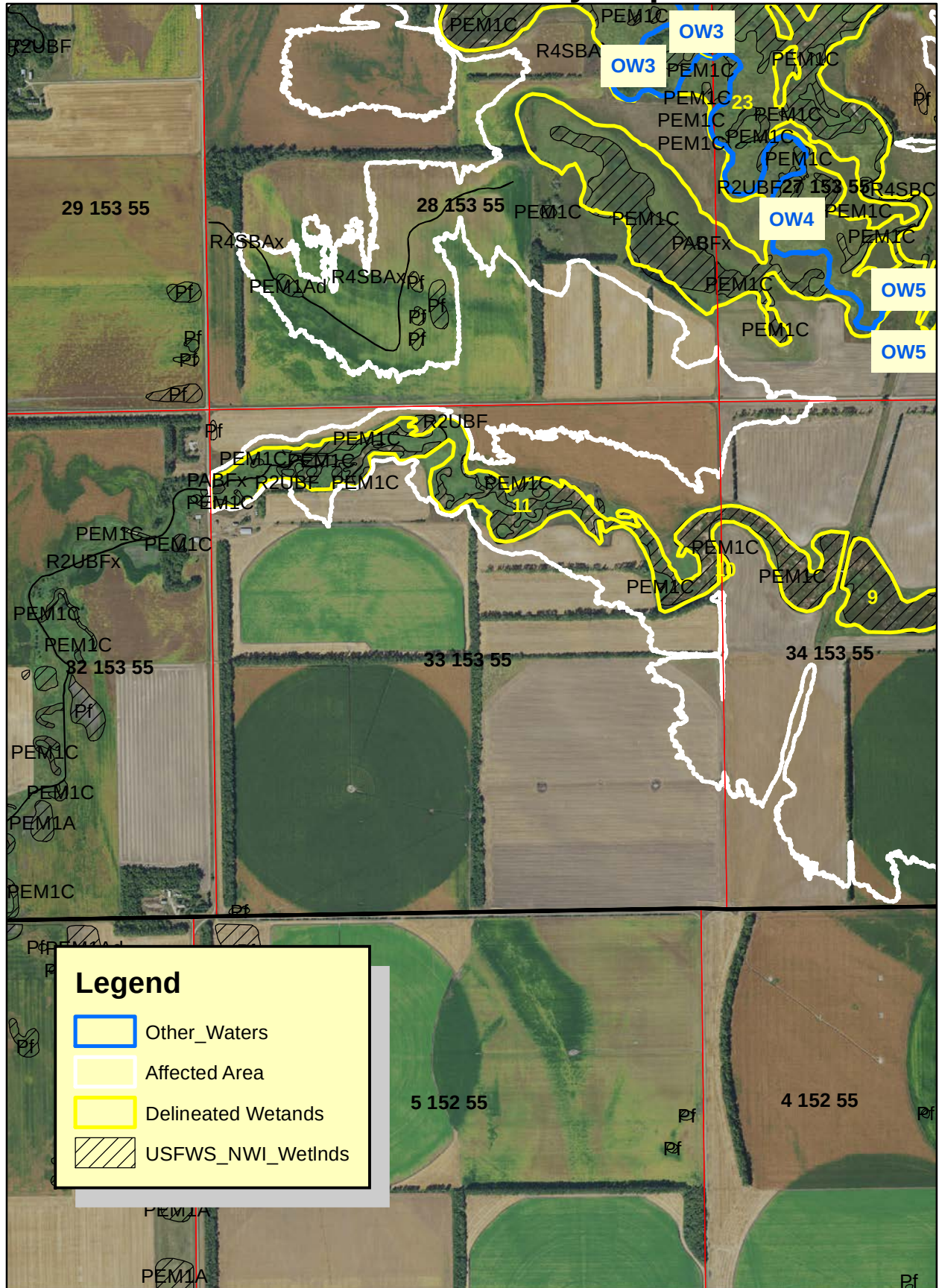
- Other_Waters
- Affected Area
- Delineated Wetlands
- USFWS_NWI_Wetlands



0 0.075 0.15 0.3 0.45 0.6 Miles

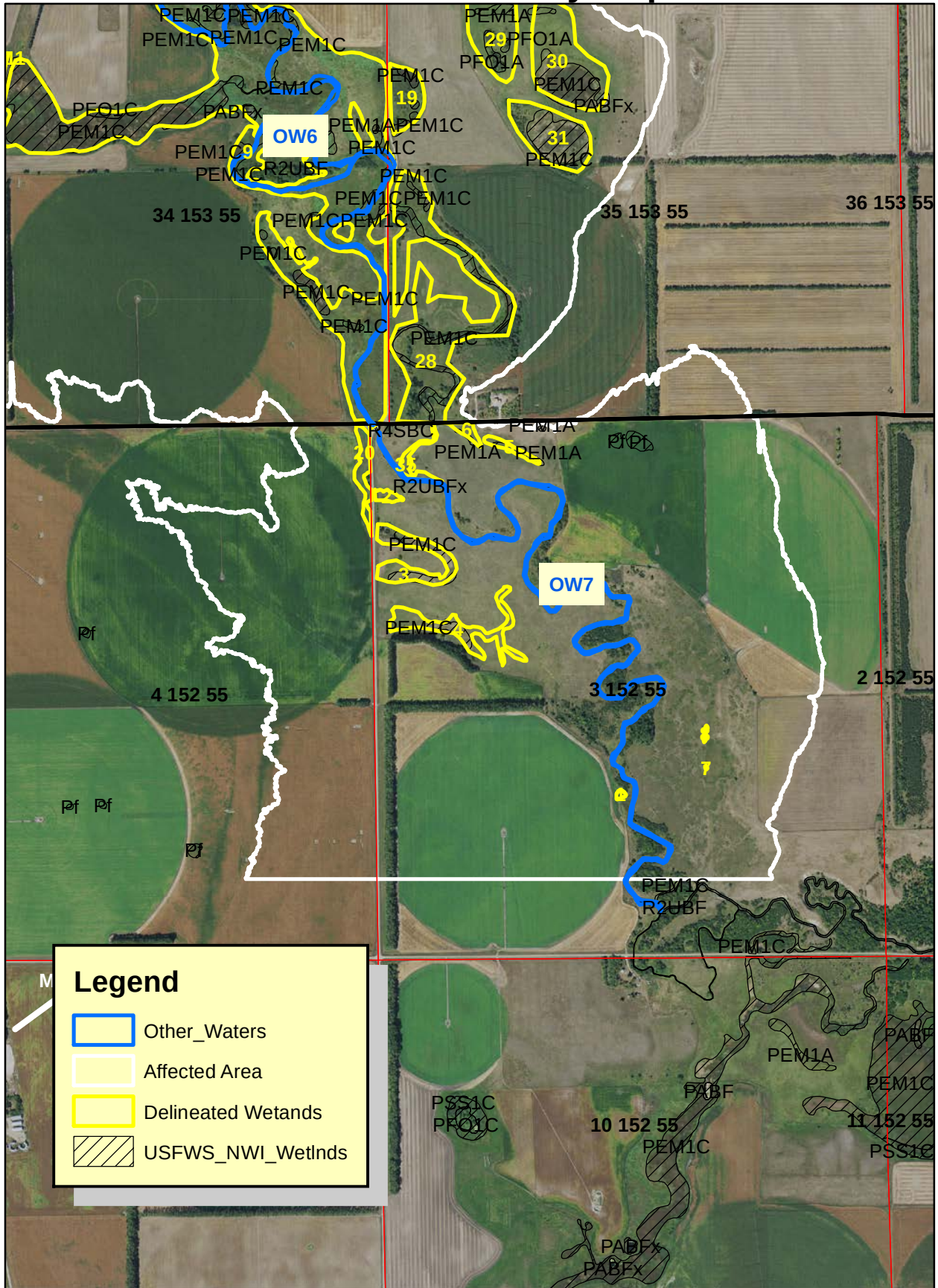
Map 8

Upper Turtle River Watershed Wetland Inventory Map



0.0 0.075 0.15 0.3 0.45 0.6 Miles

Upper Turtle River Watershed Wetland Inventory Map



0 0.075 0.15 0.3 0.45 0.6 Miles

Map 10