BIOLOGICAL INVENTORY REPORT

North Branch Forest River Dam No. 1 (Bylin Dam), Walsh County, North Dakota

Prepared for:

Walsh County Water Resource District

600 Cooper Avenue

Grafton, ND 58237

I hereby certify that this report was prepared by me or under my direct supervision.

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HEI project no. 7135-0037

HOUSTON ENGINEERING INC.

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Author and contributors

Dr. Donna Jacob was the main author of this document in addition to performing the fieldwork and species identification. Contributors (all Houston Engineering, Inc.) included Mark D. Aanenson and Kaleb Haley (fieldwork, species identification); Michael Mooridian, Laura Kessler, Craig Odenbach, Kylie Beard Mike Opat (review) and Jacob Larson (GIS).

Executive Summary

Staff from Houston Engineering, Inc. (HEI) completed a field investigation of the subject area to identify flora and fauna species for a project on behalf of the Walsh County Water Resource District. The assessment area (AA) is in Norton, Latona, Adams, and Vesta townships, near the town of Adams, in Walsh County, North Dakota (**Exhibit D-10-1: Project Location Map**). The survey was conducted during aquatic resource delineations and via wandering transects at targeted locations. Animal and plant species were identified by visual or aural observation. Special attention was given to threatened and endangered species.

The AA contained six major habitat types following North Dakota Game and Fish Department (NDGFD) categories and some subdivided habitats: prairie, tame grassland, upland deciduous forest, wetlands (wet prairie, marsh) and lake, rivers and streams, and riparian woodlands. These habitats support plant communities with quality ranging from “fair” to “good” condition. The riparian zone, consisting of upland riparian woodlands, wetland, and riverine communities, showed a rating of “good.” Biologists observed 143 plant species and 36 animal species. There were several plant species present in the AA that are either listed as noxious weeds or are noted as troublesome. There were no invasive animal species observed during the survey. The communities have been subject to mild to extreme changes in community structure with disturbance forcing species abundance toward fewer native species and a greater proportion of tolerant taxa.

No federally listed threatened and endangered species were observed in the AA, and the US Fish and Wildlife Service’s (USFWS) Information for Planning and Consultation (IPaC) tool revealed that critical habitat is not present. Of the USFWS list of migratory birds of concern, only *Leucophaeus pipixcan* (Franklin’s gull) was observed, but preferred habitat was present for several other species. There were no Level I plant species of conservation priority identified during the field survey, but preferred habitat was present for several species. Three species of state conservation priority were observed, *Danaus plexippus* (monarch butterfly) and *Leucophaeus pipixcan* (Franklin’s gull), both Level I species, and *Pelecanus erythrorhynchos* (American white pelican), a Level II species. Within the AA the existing habitats present opportunities for several other animals of conservation concern.

In general, the communities and habitats in the AA have experienced disturbance from introduced species, human activity, and habitat loss. This means the natural habitats required by sensitive animals are small, fragmented in the region, and subject to disproportionate edge effects of disturbance, but important in the landscape. Preferred habitat does remain in the AA, so there is the potential for populations of federally and state-listed species.

1 Introduction

Staff from HEI completed a field investigation to identify flora and fauna species in proximity to a proposed Bylin Dam project. The purpose of the project is to bring North Branch Forest River Dam No. 1 (Bylin Dam) into compliance with current NRCS and North Dakota State Water Commission (SWC) dam performance, design, and safety standards while maintaining the current flood protection and recreational opportunities.

2 Location

The project is located within the Forest River Watershed in Vesta Township (T 157N, R 57W, S 31,32, 33), Norton Township (T 156N, R 57W, S 5,6), Latona Township (T156N, R58, S1), and Adams Township (T157, R58W, S 23, 25, 26, 36) near the town of Adams in Walsh County, North Dakota; general latitude: 48.370366, longitude: -98.035542; (**Exhibit D-10-1: Project Location Map**). The project extends from the dam upstream following the river and the river catchment area. Most of the catchment is pastureland and prairie with some portions extending into adjacent agricultural land. The project is two miles south of Adams, ND, and extends approximately four miles west of the Bylin Dam for a total survey area of 950 acres.

3 Survey Area Description

3.1 History of the Dam

Bylin Dam was sized for a watershed area of 22 square miles with a total storage capacity of 3,970 acre-feet, and the purposes of the dam were to provide flood control, wildlife habitat, and recreation. The dam was constructed in 1964.

3.2 Ecoregion

The AA is located entirely within the Level III ecoregion of the Northern Glaciated Plains, more specifically the Level IV sub-region of the Drift Plains (Bryce et al 1998). The Northern Glaciated Plains ecoregion consists of transitional grasslands within a continental climate zone formed on recent glaciation. The landforms include drift plains, glacial lake basins, shallow river valleys, and deposits of rocks to sands. The drainage system is immature and supports numerous wetlands ranging from seasonal to permanent. Most of the land has been converted primarily to farmland, but historical vegetation ranged from mixed-grass prairie to short grass prairie and wetland ecosystems. The Drift Plains sub-ecoregion was formed by retreating glaciers and the resulting undulating topography of thick glacial till. The watershed upstream of Bylin Dam is generally characterized by a moderate grade with steep slopes along the North Branch Forest River.

3.3 Climatic Conditions

North Dakota has a humid continental climate characteristic of fluctuating temperatures of hot summers and cold winters (Entz 2003). The lack of topographic barriers to the north and south of North Dakota allow air masses to easily travel over the state. Cold, dry air from the north and warm, humid air from the tropics result in almost continuous winds as well as daily temperature fluctuations. Temperatures in North Dakota are hottest in July and coldest in January. The average difference in temperatures between July and January is 18 °C (65 °F) in northeastern North Dakota. Rainfall across North Dakota ranges from 36 to 56 cm (14 to 22 inches), and snowfall ranges from 64 to 114 cm (25 to 45 inches). The average growing season of the northeast region is 110 days.

Climate data recorded at the nearest weather station (Edmore, ND) summarizes the average temperature, rainfall, and snowfall (US Climate Data 2020). Temperatures near Bylin Dam ranges from
-14 °C (7 °F) in January to 27 °C (80 °F) in July. An average of 51 cm (20 inches) of annual rainfall and
89 cm (35 inches) of annual snowfall occurs near Bylin Dam. The highest monthly rainfall typically occurs during the month of June.

3.4 Recreation and Fisheries

Bylin Dam is a reservoir that provides recreational opportunities in addition to flood storage. There are several sites in the AA area that provide opportunities for fishing, boating, swimming, camping, hunting, snowmobiling, birdwatching, and hiking. Within 18 miles of Bylin Dam, there are four sites for boating and fishing (Whitman Dam, Fordville Dam, Matejcek Dam, and Homme Lake) and one site with fishing only (Dougherty Dam) (North Dakota Game and Fish Department 2020). There are no wildlife management areas or waterfowl production areas in the AA. The 60-acre lake has 3.3 miles of shoreline, has an average depth of 9.6 feet (maximum depth 23 feet), and is suitable for boating, fishing, and swimming. The lake is populated by yellow perch, walleye, and northern pike (North Dakota Game and Fish Department 2020) and is currently stocked with walleye. Recently, fish stocking consisted of walleye fingerling at rates of approximately 9,500 in 2017, 10,000 in 2018, 11,000 in 2019, and 9,000 in 2020. The eastern side of Bylin Dam has a boat ramp and fishing pier.

4 Methods

The assessment area (AA) is the portion of land defined as the area at the dam and also some surrounding area both upstream and downstream. The AA is the land that may be directly affected by project activities and includes the dam site, the flood pool upstream from the dam, and a short stretch of river immediately downstream from the dam. The AA includes approximately 950 acres and is entirely within Walsh County.

Earlier aquatic resources delineation field visits provided a rapid overview of the habitats present in the AA. Subsequent biological survey observations were recorded for six habitat categories as defined by North Dakota Game and Fish Department (NDGFD, North Dakota Game and Fish Department 2019a) (**Table D-10-1**). These habitat categories correspond to plant and animal communities as shown in the table. The prairie community consists of native species with low to no management. The tame grassland habitat is defined by NDGFD as tilled land returned to grassland. This could include Conservation Reserve Program (CRP) tracts but also soils altered by construction and seeded to grassland (e.g., levee and toe-slopes). The grassland community includes these as well as managed prairie/grasslands, hayfields, and pastures. The forest habitats are divided into upland deciduous and riparian forest communities. The upland forests are located on higher elevations, and the riparian forests are those influenced by the presence of water and along rivers and streams. The habitat category "wetlands and lakes" includes the communities in different wetland types as observed during aquatic resources delineations. These include fresh (wet) meadow and marsh. For this biological inventory, the wetland types are grouped together into the habitat type for most of the results but broken out in the habitat description section. The NDGFD category for the rivers and streams habitat also includes riparian communities, but for the purpose of this report, the riparian forests are discussed separately. The rivers and stream community includes only biota observed below the ordinary high-water mark.

Table D-10-1: NDFGD habitat categories and corresponding plant community groups (North Dakota Game and Fish Department 2019a).

State Habitat Categories	Biological Inventory Community Categories
Eastern mixed grass prairie (including wetlands)	Prairie (native or unmanaged prairie)
Tame grassland (tilled land back to grassland)	Grassland (tilled land converted to grassland, heavily managed prairie, hayfields, pasture, managed grasslands, construction, and reseeding – e.g., levee and toe-slope)
Upland deciduous forest	Upland forest / shrubs
Wetlands and lakes	Subcategories: open water, marsh, wet prairie, fen
Rivers, streams	River/stream (species located below the ordinary high-water mark)
Riparian	This includes riparian vegetation that is adjacent to the river and lake communities (so the area includes wetlands and rivers but excludes the lake).

4.1 Literature Review

Once the habitats and communities were determined, a literature review was conducted prior to conducting the biological survey to compile lists of species characteristic to the various communities occurring in the AA and to identify any federally listed threatened and endangered species (TES), USFWS birds of concern, state-listed species of conservation priority, and state-

and county-listed noxious weeds. Sources for these data are cited in the appropriate results sections.

4.2 Field Inventory

The site was surveyed on foot during aquatic resources delineations (July 17, 2020, Kaleb Haley and a Registered Professional Soil Classifier {Mike Ulmer, Prairie Soil Consulting LLC}). Wandering transects were also located at a variety of locations targeted to obtain data at representative communities (September 22 and 23, 2020, Donna Jacob and Mark D. Aanenson). Within the total area of the AA (953.35 acres) only natural or semi-natural plant communities were surveyed (total 878.70 acres) wile constructed features and tilled land were not surveyed (74.65 acres). During the observations, all species that were identified by visual or aural observation or from evidence of their presence (e.g., footprints, beaver activity) were noted and recorded. This includes only select invertebrates; no fungus or microbe species are included. Plant species were recorded for the community in which they were observed, as were insects, mammals, and resting birds. Birds flying over the AA were recorded for their corresponding preferred habitat. Special attention was given to TES and their designated critical habitats. There were also some areas within the survey area that have been developed and altered from their natural states. These include the dam, toe-slopes, spillways, roads, picnic areas, and tilled fields. Of these, the toe-slopes and spillway areas were included in the inventory and fall under the tame grassland habitat category. Inventory for the lake community was restricted to resting birds only; plants and fish were not included for this report (as specified by NRCS). Data from the aquatic resources delineations originate in the ecotone gradient between wetland and upland communities.

4.3 Community/Habitat Quality Evaluations

4.3.1 Community Quality

Results of the vegetation surveys were combined for a composite list for each community. These lists were then used to determine a quantitative evaluation based on the presence of native, non-invasive species. Plant species names are referenced from US Department of Agriculture (USDA) Plants Database (US Department of Agriculture – Natural Resources Conservation Service 2020). Results of the vegetation surveys were combined for Floristic Quality Analysis. For each community, a Floristic Quality Index value using native species (Total FQI) was generated using the Coefficients of Conservatism from the Universal Floristic Quality Calculator (Freyman et al. 2016) with the database “Dakotas (excluding the Black Hills) 2017.” A qualitative assessment was done by comparing the community characteristics with a gradient of community condition (Bourdaghs 2014, **Table D-10-2**).

Table D-10-2: Qualitative Biological Condition gradient for plant community quality ratings (from Bourdaghs 2014).

Condition Category	Description
Exceptional	Community composition and structure as they exist (or likely existed) in the absence of measurable effects of anthropogenic stressors representing pre-European settlement conditions. Non-native taxa may be present at very low abundance and not causing displacement of native taxa.
Good	Community structure similar to natural community. Some additional taxa are present and there are minor changes in the abundance distribution from the expected natural range. The extent of expected native composition for the community type remains largely intact.
Fair	Moderate changes in community structure. Sensitive taxa are replaced as the abundance distribution shifts towards more tolerant taxa. The extent of expected native composition for the community type is diminished.
Poor	Large to extreme changes in community structure resulting from large abundance distribution shift towards more tolerant taxa. The extent of expected native composition for the community type reduced to isolated pockets and/or wholesale changes in composition.
Absent	Plant life is only marginally supported, or the soil/substrate is largely devoid of vegetation due to ongoing severe anthropogenic impacts.

4.3.2 Non-Native / Invasive Species

Invasive species and pathogens can pose a threat to communities in the AA. For plant species, there are 14 noxious weeds identified for North Dakota (**Table D-10-3**, North Dakota Department of Agriculture 2017a, Ikley 2020). Walsh County lists one within its jurisdiction (North Dakota Department of Agriculture 2020), but there are many other troublesome species of non-native plants in North Dakota (Ikley 2020). According to the NDGFD, *Dreissena polymorpha* (zebra mussels) are present within the entire length of the Red River and tributaries (North Dakota Game and Fish Department 2019b). *D. polymorpha* may be present in the lower reaches of the Forest River but is not likely to be present within the study area. *Ophiostoma ulmi* and *Ophiostoma novo-ulmi* (Dutch elm diseases) have been confirmed within every county and are likely present within the AA (LeBoldus et al. 2016).

Table D-10-3: Troublesome plant species in North Dakota (plant names follow USDA Plant Database nomenclature (US Department of Agriculture 2020), species in bold are listed noxious weeds).

Species name	Species name
Acroptilon repens (syn. *Centaurea repens*) (Russian knapweed) [1, 2]	*Halogeton glomeratus* (halogeton) [1]
Amaranthus palmeri **(**Palmer amaranth) [1, 2]	*Hieracium aurantiacum* (orange hawkweed) [1]
Amaranthus tuberculatus (Waterhemp) [1]	*Hyoscyamus niger* (black henbane) [1]
Arctium minus (common burdock) [1]	***Linaria dalmatica*** (Dalmatian toadflax) [1, 2]
Artemisia absinthium (absinth wormwood) [1, 2]	***Linaria vulgaris*** (yellow toadflax) [1, 2]
Asclepias syriaca (common milkweed) [1]	*Lotus corniculatus* (bird's foot trefoil) *
Bassia scoparia [1,3,4], ***Bassia prostrata*** (kochia) [1]	***Lythrum salicaria, Lythrum virgatum***, and all cultivars (purple loosestrife) [1, 2]

Species name	Species name
Bromus tectorum (downy brome) [1]	***Matricaria recutita*** (false chamomile) [1, 3]
Cardaria draba (hoary cress) [1]	*Onopordum acannthium* (Scotch thistle) [1]
Carduus acanthoides (plumeless thistle) [1]	*Melilotus officinalis* (white/yellow sweetclover) *
Carduus nutans (musk thistle) [1, 2]	*Phalaris arundinacea* (reed canary grass) *
Centaurea diffusa (diffuse knapweed) [1, 2]	*Poa pratensis* (Kentucky blue grass) *
Centaurea solstitialis (yellow star thistle) [1]	*Rhamnus cathartica* (European buckthorn) *
Centaurea stoebe ssp. micranthos (syn. *C. maculosa*) (spotted knapweed) [1, 2]	*Sonchus arvensis* (perennial sow thistle) [1]
Cirsium arvense (Canada thistle) [1, 2]	*Sonchus arvensis* ssp. u*liginosus* (marsh sow thistle) [1]
Cirsium vulgare (bull thistle) [1]	*Sonchus asper* (spiny sow thistle) [1]
Convolvulus arvensis (field bindweed) [1]	*Sonchus oleraceus* (annual sow thistle) [1]
Crepis tectorum (narrowleaf hawksbeard) [1]	***Tamarix spp***. (saltcedar) [1, 2]
Cynoglossum officinale (houndstongue) [1, 2]	***Tanacetum vulgare*** (common tansy) [1]
Euphorbia esula (leafy spurge) [1, 2]	*Typha x glauca* (hybrid cattail) *
Gypsophila paniculata (baby's breath) [1]	*Verbascum thapsus* (common mullein) [1]

[1] *Troublesome non-native species (Ikley 2020)*

[2] *State-listed noxious weeds (North Dakota Department of Agriculture 2017a)*

[3] *Walsh County-listed noxious weeds (North Dakota Department of Agriculture 2020)*

* *Other species*

4.4 Species of Conservation Concern Evaluation

Federal (TES), USFWS, and state species of conservation concern that were observed on site (or are documented by other sources to be in proximity) are listed in this biological inventory. Also, the potential for the species to be present was evaluated based on the habitat needs of the species (i.e., its preferred habitat) and the quality of such habitat in the AA.

5 Literature Review Results

5.1 Community characteristics

The survey resulted in observations at six possible major habitat categories (following North Dakota Game and Fish Department 2019a): eastern mixed grass prairie, tame grassland, upland deciduous forest, riparian forest, wetlands and lakes, and rivers and streams.

Historical vegetation in the AA included prairie with many wetlands and shrubland and forests (US Environmental Protection Agency 2020). The continental climate and the predominance of rich loamy soils supported prairie until agriculture began to dominate in the mid-19th century. The AA is located in the Level III ecoregion known as the Lake Agassiz Glacial Plain. This

region is characterized by an extremely flat lake plain and gently rolling hills (i.e., the beach ridge) on the west and east sides of the lakebed. Historical vegetation included tallgrass prairie with many wetlands and shrubland and forests. The continental climate and the predominance of rich loamy soils supported tallgrass prairie until agriculture began to dominate from the mid-19th century. The valley rises 500 feet over a bedrock escarpment to mark the natural boundary of the Red River Valley. Within the Lake Agassiz Glacial Plain, the AA is located in two sub-ecoregions: the Level IV Glacial Lake Agassiz Basin (43.1 %, 440 acres) and the Sand Deltas and Beach Ridges (56.9 %, 580 acres) areas. The Glacial Lake Agassiz Basin is characterized by the poorly defined floodplain of the Red River of the North. This ecoregion is extremely productive for agriculture, and thus most of the wetlands and natural areas have been cultivated. The Sand Deltas and Beach Ridges ecoregion has parallel ridges of sand gravel formed by Lake Agassiz.

A large variety of plants and animals potentially occupy the AA, and these include the taxonomic groups of birds, mammals, fish, reptiles, amphibians, and various invertebrates. **Table D-10-4** through **Table D-10-9** and **Table D-10-11** show the species characteristic to the habitat categories.

5.1.1 Prairie

The eastern mixed grass prairie is the transitional area between the tallgrass prairie (wetter) and the shortgrass prairie (drier). The mixed grass prairie includes many grasses and other graminoids in addition to a variety of trees and shrubs (**Table D-10-4**) and contains many wetland basins. This community has been reduced significantly by agriculture and ranching practices.

5.1.2 Tame Grassland

The tame grassland habitat is defined as returning previously converted tilled land back into grassland (**Table D-10-5**). This includes land that has been enrolled in the CRP, which entails seeding cropland taken out of production and seeded with grass species. It is unknown if there are tracts within the AA that are enrolled in CRP, but there are large aeras of grazed pastures and hayfields that are managed and altered. These are included in the “grassland” community. Other areas within the AA, such as the levee, toe-slopes, and spillway, have been seeded with grass species after the construction was completed. These grasslands are mowed frequently and thus also managed.

Table D-10-4: Species characteristic of historical eastern (Drift Plains) mixed grass habitat (underlined species are those listed as state species of conservation concern, Dyke et al. 2015, North Dakota Natural Heritage Program 2013).

Taxon	Species
Plants	prairie junegrass, green needlegrass, needle-and-thread, blue grama, little bluestem, yellow sedge, Western wheatgrass, Canada wild rye, spike oats, big sandgrass, porcupine grass, mat muhly, side-oats grama, Leiberg's panicum, needleaf sedge, threadleaf sedge, pasque flower, Western wall-flower, torch flower, prairie rose, Missouri milkvetch, purple loco, lead plant, Indian breadroot, purple prairie-clover, gaura, hairy puccoon, harebell, stiff goldenrod, smooth fleabane, purple coneflower, upland wormwood, fringed sage
Animals	American wigeon, green-winged teal, mallard, blue-winged teal, Northern shoveler, gadwall, lesser scaup, red-tailed hawk, American kestrel, gray partridge, ring-necked pheasant, spotted sandpiper, killdeer, mourning dove, common nighthawk, western kingbird, eastern kingbird, horned lark, American crow, eastern bluebird, common yellowthroat, clay-colored sparrow, vesper sparrow, savannah sparrow, western meadowlark, brown-headed cowbird, horned grebe, American bittern, northern pintail, lesser scaup, northern harrier, American kestrel, Swainson's hawk, ferruginous hawk, sharp-tailed grouse, yellow rail, willet, upland sandpiper, marbled godwit, Wilson's phalarope, Franklin's gull, black tern, short-eared owl, loggerhead shrike, sedge wren, Sprague's pipit, lark bunting, grasshopper sparrow, Baird's sparrow, Le Conte's sparrow, Nelson's sparrow, chestnut-collared longspur, dickcissel, bobolink, western meadowlark, northern short-tailed shrew, white-tailed jackrabbit, snowshoe hare, Franklin's ground squirrel, thirteen-lined ground squirrel, northern pocket gopher, olive-backed pocket mouse, western harvest mouse, deer mouse, northern grasshopper mouse, prairie vole, meadow vole, meadow jumping mouse, western jumping mouse, coyote, red fox, raccoon, badger, striped skunk, white-tailed deer, moose, pygmy shrew, arctic shrew, plains pocket mouse, Richardson's ground squirrel, gray fox, American toad, Great Plains toad, Woodhouse's toad, northern leopard frog, chorus frog, tiger salamander, plains garter snake, common garter snake, plains spadefoot, Canadian toad, smooth green snake, plains hog-nosed snake, Dakota skipper, monarch butterfly, regal fritillary

Table D-10-5: Species characteristic of tame grassland habitat (underlined species are those listed as species of conservation concern, ND Dyke et al. 2015, North Dakota Natural Heritage Program 2013).

Taxon	Species
Plants – Planted	Alfalfa, sweet clover, smooth brome, crested wheatgrass, intermediate wheatgrass, tall wheatgrass, big bluestem
Plants – Remnant	In managed grasslands such as pastures or hayfields, the plant species may be similar to those of the less sensitive species of the mixed prairie habitat (e.g., prairie junegrass, green needlegrass, needle-and-thread, blue grama, little bluestem, western wheatgrass, Canada wild rye, spike oats, big sandgrass, porcupine grass, mat muhly, side-oats grama, Leiberg's panicum, yellow sedge, needleaf sedge, threadleaf sedge, western wallflower, torch flower, prairie rose, Missouri milkvetch, purple loco, purple prairie-clover, gaura, harebell, stiff goldenrod, smooth fleabane, purple coneflower, upland wormwood, fringed sage)
Animals	In managed grasslands such as pastures or hayfields, the animal species may be similar to those of the less sensitive species of mixed prairie habitat (e.g., American wigeon, green-winged teal, mallard, blue-winged teal, Northern shoveler, gadwall, lesser scaup, red-tailed hawk, American kestrel, ring-necked pheasant, killdeer, mourning dove, common nighthawk, western kingbird, western kingbird, horned lark, American crow, common yellowthroat, clay-colored sparrow, vesper sparrow, savannah sparrow, western meadowlark, brown-headed cowbird, northern short-tailed shrew, white-tailed jackrabbit, snowshoe hare, Franklin's ground squirrel, thirteen-lined ground squirrel, northern pocket gopher, olive-backed pocket mouse, western harvest mouse, deer mouse, northern grasshopper mouse, prairie vole, meadow vole, meadow jumping mouse, western jumping mouse, coyote, red fox, raccoon, badger, striped skunk, white-tailed deer, moose, American toad, Northern leopard frog, chorus frog, tiger salamander, plains garter snake, common garter snake)

5.1.3 Upland Decidious forest

This community is scattered throughout the state and is relatively rare (4% of total land for all forest). Of the forests in North Dakota, most are deciduous (98%,**Table D-10-6)**. The larger and more intact tracts are found in the Pembina Gorge, Turtle Mountains, Devils Lake Hills, and the Killdeer Mountains.

Table D-10-6: Species characteristic of upland deciduous forest habitat, (underlined species are those listed as species of conservation concern, ND Dyke et al. 2015, North Dakota Natural Heritage Program 2013).

Taxon	Species
Plants	bur oak, green ash, quaking aspen, balsam poplar, paper birch, American hazelnut, black currant, Missouri gooseberry, red raspberry, Saskatoon serviceberry, hawthorn, prickly rose, pin cherry, choke cherry, false lily-of-the valley, early meadowrue, yellow avens, pink wood violet, wild sarsaparilla, dwarf cornel, pink wintergreen, arrowleaf aster, meadow onion, moonwort, leathery grapefern, slender lip fern, slender-lobed clematis, round-leaved sundew, nodding buckwheat, stiff sandwort, swamp willow, pod grass, round-leaved sphagnum, flat-leaved bladderwort, small yellow lady's-slipper
Animals	turkey vulture, sharp-shinned hawk, Cooper's hawk, broad-winged hawk (Turtle Mountains), red-tailed hawk, American kestrel, merlin, ruffed grouse, wild turkey, mourning dove, great horned owl, eastern screech owl, long-eared owl, common nighthawk, ruby-throated hummingbird, yellow-bellied sapsucker, downy woodpecker, hairy woodpecker, yellow-shafted flicker, western wood pewee, eastern wood-pewee, yellow-bellied flycatcher, willow flycatcher, least flycatcher, great crested flycatcher, purple martin, tree swallow, blue jay, black-billed magpie, common crow, black-capped chickadee, white-breasted nuthatch, brown creeper, house wren, golden-crowned kinglet, ruby-crowned kinglet, eastern bluebird, veery, wood thrush, American robin, gray catbird, brown thrasher, cedar waxwing, yellow-throated vireo, warbling vireo, Philadelphia vireo, red-eyed vireo, yellow warbler, chestnut-sided warbler, yellow-rumped warbler, American redstart, black-and-white warbler, ovenbird, northern waterthrush, mourning warbler, common yellowthroat, migratory warblers, scarlet tanager, rose-breasted grosbeak, black-headed grosbeak, lazuli bunting, indigo bunting, spotted towhee, eastern towhee, chipping sparrow, lark sparrow, clay-colored sparrow, song sparrow, common grackle, brown-headed cowbird, orchard oriole, Bullock's oriole, Baltimore oriole, pine siskin, American goldfinch, evening grosbeak, golden eagle, bald eagle, Swainson's hawk, black-billed cuckoo, red-headed woodpecker, little brown bat, silver-haired bat, big brown bat, eastern red bat, hoary bat, eastern cottontail, woodchuck, eastern chipmunk, gray squirrel, fox squirrel, northern flying squirrel, beaver, white-footed mouse, southern red-backed vole, meadow vole, meadow jumping mouse, western jumping mouse, porcupine, coyote, red fox, gray fox, raccoon, American marten, ermine, long-tailed weasel, least weasel, bobcat, elk, mule deer, white-tailed deer, arctic shrew, pygmy shrew, western small-footed myotis, long-eared myotis, long-legged myotis, American toad, gray tree frog, wood frog, common garter snake, plains garter snake, northern redbelly snake

5.1.4 Wetlands and lakes

Prior to development, North Dakota had an estimated 4.9 million acres of wetlands (Dahl 2014). Today, that number has been reduced by nearly 42 %. North Dakota is dominated by temporary emergent and seasonally emergent wetland types. Because wetlands are dynamic and, in many cases, dependent upon precipitation, they can be susceptible to tilling during drier years and are threatened by drainage in wetter years. Lakes are susceptible to non-point source pollution, predominantly from agriculture. In spite of this, wetlands are critical for filtering and storing water and for supporting habitat for animal populations and plant communities (**Table D-10-7**). The North Dakota Rapid Assessment Method (NDRAM) was used to assess wetland condition in North Dakota (DeKeyser et al. 2014 in North Dakota Department of Health 2019). Of the wetlands present in North Dakota, 14 % (302,000 acres) were determined to be in good condition, 62 % (1.3 million acres) in fair condition, and 24 % (514,000 acres) in poor condition. Hardening, damming, filling, and ditching are four stressors associated with impacts to wetland hydrology.

Even though there are many lakes in North Dakota, there have been no thorough statewide fish population assessments done by fisheries biologists as of 2018 (North Dakota Game and Fish Department 2020). The Bylin Dam reservoir is populated with walleye, yellow perch, northern pike, black crappie, bluegill, and smallmouth bass. The NDGFD oversees fisheries information for the state. The Fisheries Supervisor in Devils Lake, Randy Hiltner, provided information regarding Bylin Dam and vicinity. reservoir was originally stocked with northern pike, bluegills, walleye, yellow perch, and rainbow trout. Fishing pressure is present for both ice fishing and open-water seasons. No winter fish kills have been reported at the reservoir. There are no critical fisheries in the vicinity of the dam and there are no management plans for the dam or for the Forest River.

Following the construction of Bylin Dam, the primary fish species present within the reservoir was northern pike (R. Hiltner, pers. comm.). The fish population within the reservoir was eradicated in 1968 and 1992 in order to reduce the population of white suckers and meet the desired fish species composition for fishing. Following the 1968 eradication, northern pike and bluegills were the most common species present throughout the 1970s, and walleye and yellow perch were the most common species present throughout the 1980s. Rainbow trout were stocked in the reservoir following the 1992 eradication. Over the last decade, the predominant fish species stocked in the reservoir is walleye. A fish survey in 2020 by the NDGFD showed the presence of walleye, northern pike, and yellow perch within the Bylin reservoir (**Table D-10-8**, North Dakota Game and Fish 2019d). Fishing pressure from year to year is dependent upon walleye size and abundance. There are no critical fisheries in the vicinity of the dam, and there are no management plans for the dam or for Forest River.

Table D-10-7: Species characteristic of the wetland and lake habitat.

Taxon	Species
Plants	northern reedgrass, prairie cordgrass, phragmites, tall mannagrass, whitetop, sloughgrass, narrow-leaf cattail, hybrid cattail, slender sedge, slough sedge, common spikerush, hardstem bulrush, river bulrush, slender bulrush, Baltic rush, softstem bulrush, water sedge, marsh smartweed, narrow leaf dock, western dock, marsh cress, silverweed, rough cinquefoil, lance leaf loostrife, clasping leaf dogbane, germander, marsh hedge nettle, western water horehound, wild mint, giant bur reed, narrowleaf water plantain, western water plantain, water parsnip, sandbar willow, sago pondweed, horned pondweed, grass-leaf pondweed, coontail, common watermilfoil, common bladderwort, musk grass, white water crowfoot, western wigeon grass
Animals	common loon, pied-billed grebe, red-necked grebe, eared grebe, western grebe, double-crested cormorant, great blue heron, great egret, black-crowned night heron, white-faced ibis, Canada goose, wood duck, green-winged teal, mallard, blue-winged teal, northern shoveler, gadwall, American wigeon, ring-necked duck, lesser scaup, common goldeneye, hooded merganser, ruddy duck, Virginia rail, sora, American coot, killdeer, spotted sandpiper, Wilson's snipe, ring-billed gull, California gull, common tern, Forster's tern, belted kingfisher, willow flycatcher, tree swallow, northern rough-winged swallow, bank swallow, cliff swallow, marsh wren, yellow warbler, common yellowthroat, yellow-breasted chat, savannah sparrow, song sparrow, swamp sparrow, red-winged blackbird, yellow-headed blackbird, brown-headed cowbird, beaver, muskrat, otter, American toad, Great Plains toad, Woodhouse's toad, gray treefrog, chorus frog, wood frog, northern leopard frog, tiger salamander, common mudpuppy, painted turtle, common garter snake, plains garter snake
Fish (stocked)	Walleye, yellow perch, northern pike, black crappie, largemouth bass, bullhead catfish

Table D-10-8: Fish characteristic of Bylin Dam (deepwater habitat, lake), stocked and wild species.

Group	Species
Fish Observed	Walleye, yellow perch, northern pike, black crappie, bluegill, smallmouth
Current Species (2020 NDGFD reservoir survey)	Walleye, northern pike, yellow perch

For the purposes of this biological inventory, the wetlands and lakes habitat has been subdivided into several categories: the lake, marshes, wet prairie, and fen. These categories reflect the communities observed during the delineation of aquatic resources on the site (Houston Engineering, Inc. 2021). The riparian zone (**Section 5.1.6**) overlaps with wetland areas but does not include the river and lake communities. Aquatic plant species in the lake are not included in this inventory.

One type of wetland that receives special protections is the fen community. Fens are a relatively uncommon wetland type and are vulnerable to disturbance through small changes in their hydrology. Fens are predominantly groundwater-fed systems, so the soil is continually saturated. This condition supports the formation of peat soils by slowing the process of organic matter decomposition. Fens are indicated as having soils described as histosol (40 cm organic soil) or histic epipedon (20 cm or mor of organic soil) (US Army Corps of Engineers 2010). Sloping fens form at the base of hills where groundwater discharges to the surface or on hillslopes where groundwater discharges from glacial moraines and bedrock aquifers. In North Dakota, fens would typically be classified by the HGM (hydrogeomorphic) classification as the “SLOPE” type (US Department of Agriculture - Natural Resources Conservation Service 2008). Slopes can be steep or gentle. If the groundwater discharge is sufficient, these slope wetlands can be found on landscapes that are nearly flat. Typically, water flows slowly over the fen surface during most or all of the summer, maintaining a constant soil saturation. Basin fens form from gradual filling of lakes or ponds with partially decomposed plant remains. These fens are flat and located near the margin of open water. The dominant species growing in fens are sedges, and there are other species depending upon the pH of the water and the availability of nutrients (cations) (Minnesota Department of Natural Resources 2021, US Forest Service 2021). Poor fens, with slightly acidic waters (pH of 4.5 to 5.5), include also evergreen shrubs and mosses (including Sphagnum). Rich fens, being circumneutral (pH, 5.5-6.9), also support other wetland plants and mosses (including Sphagnum). Calcareous fens, with alkaline waters (pH above 6.9) and a thicker peat layer, are known to foster mosses other than Sphagnum and a suite of distinctive and rare (declining) wetland plants (e.g., Minnesota Department of Natural Resources 2016).

5.1.5 Rivers and Streams

Portions of the Forest River have been designated for “fish and other aquatic biota” uses (North Dakota Department of Health 2019). Some of these stretches are currently impaired. Fish

species found in the Forest River Watershed include typical communities of warm water streams and many species occurring in the connected waters of the Red River of the North drainage area. There are 27 fish species that have been identified as characteristic to the Forest River (**Table D-10-9**) (Goldstein 1995).

Fish surveys were done in 2018 and 2019 in the Forest River near Fordville Dam (Valley City State University contracted by NDGFD, Dr. C. Williams pers. comm.). **Table D-10-10** shows the species and counts. Observations showed 16 species, the most abundant being *Catostomus commersonii* (white sucker), *Luxilus cornutus* (common shiner), and *Rhinichthys cataractae* (longnose dace) and there were a few individuals of *Nocomis biguttatus* (hornyhead chub), a Level III species of concern. This species was once common but now only found in North Dakota in the Forest and Park rivers (North Dakota Game and Fish Department 2019d). This declining distribution is attributed to land use practices, water control structures, and degraded riparian and stream habitat.

For the purposes of this biological inventory, rivers and stream are defined differently from those defined in the aquatic resources delineation report (Houston Engineering, Inc. 2021). The USACE requires observation and listing of all potential other waters. This includes streams and rivers with intermittent and perennial flow and usually showing some form of bed and bank features. Also included in the USACE evaluation is watercourses where there may be water flow providing hydrologic connectivity to water bodies. These watercourses may or may not show bed and bank or even wetland indicators. These watercourses are not included in this biological inventory as wetlands or streams. They are described within the community that populates these watercourses (typically grassland, prairie, or upland deciduous forest).

Table D-10-9: Species characteristic of the Forest River.

Taxon	Species
Plants	Those that grow below the ordinary high-water mark – wetland plants listed in the wetlands and lakes community
Animals (other than fish)	Those that are found in the riparian zone
Fish (Goldstein 1995)	*Ambloplites rupestris* (rock bass), *Ameiurus melas* (black bullhead), *A. nebulosus* (brown bullhead), *Aplodinotus grunniens* (freshwater drum), *Carpiodes cyprinus* (quillback), *Catostomus commersonii* (white sucker) *Culaea inconstans* (brook stickleback), *Cyprinus carpio* (carp), *Esox lucius* (northern pike), *Etheostoma nigrum* (Johnny darter), *Ictalurus punctatus* (channel catfish), *Ictiobus cyprinellus* (bigmouth buffalo), *Luxilus cornutus* (common shiner), *Notropis blennius* (river shiner), *Notropis stramineus* (sand shiner), *Noturus gyrinus* (tadpole madtom), *Perca flavescens* (yellow perch), *Percina maculata* (blackside darter), *Percopsis omiscomaycus* (trout-perch), *Pimephales notatus* (bluntnose minnow), *Pimephales promelas* (fathead minnow), *Pomoxis nigromaculatus* (black crappie), *Rhinichthys atratulus* (blacknose dace), *R. cataractae* (longnose dace), *Sander canadensis* (sauger), *S. vitreus* (walleye), and *Semolitus atromaculatus* (creek chub)

Table D-10-10: Fish survey results; species, and abundance in the Forest River.

Latin Name	Common Name	Site 1 2018	Site 1 2019	Site 2 2018	Site 3 2018
		number of individuals observed			
Campostoma anomalum	central stoneroller	0	3	0	0
Catostomus commersonii	white sucker	38	39	138	2
Culaea inconstans	brook stickleback	14	0	1	0
Etheostoma nigrum	Johnny darter	41	86	10	3
Lepomis macrochirus	bluegill	3	0	17	14
Luxilus cornutus	common shiner	72	293	6	26
Nocomis biguttatus	hornyhead chub	3	2	0	4
Notropis dorsalis	bigmouth shiner	19	34	0	21
Noturus gyrinus	tadpole madtom	3	3	2	0
Percina maculata	blackside darter	2	19	2	7
Pimephales notatus	bluntnose minnow	3	32	0	1
Pimephales promelas	fathead minnow	15	11	97	6
Pomoxis nigromaculatus	black crappie	0	0	1	0
Rhinichthys atratulus	blacknose dace	10	39	2	6
Rhinichthys cataractae	longnose dace	0	406	0	0
Semotilus spp.	creek chub	0	94	0	0

5.1.6 Riparian Zone

Although federal law does not specifically regulate riparian areas, it is the policy of NRCS to integrate management of riparian areas into all plans and alternatives (190-GM, Part 411). The riparian zone, a habitat and community of special focus by the NRCS, is defined as land that occurs along waterbodies and watercourses. The vegetation here receives more water than adjacent upland areas, and the soils are subject to intermittent flooding or fluctuating water tables (US Department of Agriculture – Natural Resources Conservation Service 1996, Machtinger et al. 2007). The relationship between the riparian area to its watershed area is critical to the condition of the habitat. The amount of water that enters the drainage area, as surface or subsurface flow, and the timing, duration, and extent of flooding determine the plant composition, habitat structure, and productivity. Although the NDGFD (2019b) uses trees in its list of plant species characteristic to riparian habitat (**Table D-10-11**), the riparian zone technically could include prairie, grassland, cropland, and wetland areas in addition to adjacent low-lying woodlands. For the purposes of this report, the riparian zone includes all the land area within the natural floodplain elevation based on the contours of the unaltered valley, and also includes the lacustrine fringe around the reservoir. Because the composition of tree species that populate the riparian woodland areas is different than the upland deciduous community, the riparian woodlands are described here as a separate community. The riparian zone thus

includes the communities along waterbodies and watercourses within the floodplain (riparian woodlands, grasslands, cropland, wetlands, rivers) but excludes the lake.

As observed through aerial photography, sparse tracts of riparian areas exist within the North Branch Forest River upstream of Bylin Dam. Within the AA, there are three acres of land use classifications for the equivalent of riparian wetlands or wooded wetlands, and there do not appear to be any visible from recent aerial photography (2019). **Figures D-10-1a** and **1b** show a comparison of the area before the construction of Bylin Dam in 1962 (North Dakota Department of Agriculture 2017b) and the present day (2019). Following the construction of the Bylin Dam in 1964, habitat losses include natural river habitat, mix-grass prairie, and riparian shrubs/forest.

For the purposes of this biological inventory, the riparian zone includes the area of land within the normal floodplain where vegetation is influenced by the presence of water, consisting of forested areas, grasslands, cropland areas, rivers, wetlands, and floodplain mosaic communities. This riparian zone includes areas that do not meet the strict definition of wetlands according to the USACE (US Army Corps of Engineers 1987).

Table D-10-11: Species characteristic of riparian habitat, (underlined species are those listed as species of state conservation concern, Dyke et al. 2015, North Dakota Natural Heritage Program 2013).

Taxon	Species
Plants	cottonwood, American elm, green ash, box elder, bur oak, basswood, hackberry, peachleaf willow, hophornbeam, prickly ash, Missouri gooseberry, black currant, buckthorn, nannyberry, Virginia wild rye, nodding muhly, charming sedge, Sprengel's sedge, Jack-in-the-pulpit, wood leek, large bellwort, false Solomon's seal, Solomon's seal, nodding trillium, carrion flower, tall nettle, wood nettle, wild four-o-clock, baneberry, wild ginger, columbine, kidneyleaf buttercup, tall meadowrue, bloodroot, yellow wood violet, pink wood violet, white avens, sweet cicely, wild sarsaparilla, honeywort, waterleaf, yellow wood parsnip, fringed loostrife, tall coneflower, meadow onion, prairie grapefern, moonwort, leathery grapefern, spiny sedge, dutchman's breeches, slender cottongrass, stickseed, small-flowered lipocarpha, dwarf mentzelia, small-flowered penstemon, downy phlox, limber pine, rose pogonia, thin-fruited knotweed, heart-leaved buttercup, nodding ladies'-tresses, hooded ladies'-tresses, bog violet
Animals	wood duck, mallard, hooded merganser, common merganser, turkey vulture, osprey, sharp-shinned hawk, Cooper's hawk, red-tailed hawk, American kestrel, ring-necked pheasant, wild turkey, American woodcock, mourning dove, yellow-billed cuckoo, great horned owl, eastern screech owl, barred owl, long-eared owl, common nighthawk, chimney swift, ruby-throated hummingbird, yellow-bellied sapsucker, downy woodpecker, hairy woodpecker, yellow-shafted flicker, pileated woodpecker, Western wood pewee, eastern wood-pewee, yellow-bellied flycatcher, willow flycatcher, least flycatcher, eastern flycatcher, great crested flycatcher, purple martin, tree swallow, northern rough-winged swallow, bank swallow, cliff swallow, blue jay, black- billed magpie, common crow, black-capped chickadee, white-breasted nuthatch, brown creeper, house wren, eastern bluebird, veery, wood thrush, American robin, gray catbird, brown thrasher, cedar waxwing, Bell's vireo, yellow-throated vireo, warbling vireo, Philadelphia vireo, red-eyed vireo, yellow warbler, yellow-rumped warbler, American redstart, ovenbird, northern waterthrush, common yellowthroat, migratory warblers, scarlet tanager, rose-breasted grosbeak, black-headed grosbeak, lazuli bunting, indigo bunting, spotted towhee, eastern towhee, chipping sparrow, lark sparrow, clay-colored sparrow, song sparrow, common grackle, brown-headed cowbird, orchard oriole, Bullock's oriole, Baltimore oriole, American goldfinch, golden eagle, bald eagle, red-headed woodpecker, blackbilled cuckoo, piping plover, little

Taxon	Species
	brown bat, silver-haired bat, big brown bat, eastern red bat, hoary bat, eastern cottontail, woodchuck, eastern chipmunk, gray squirrel, fox squirrel, northern flying squirrel, beaver, white-footed mouse, southern red-backed vole, meadow vole, meadow jumping mouse, western jumping mouse, porcupine, coyote, red fox, gray fox, raccoon, American marten, ermine, long-tailed weasel, least weasel, bobcat, elk, mule deer, white-tailed deer, western small-footed myotis, long-legged myotis, long-eared myotis, pygmy shrew, river otter, Woodhouse's toad, Great Plains toad, gray tree frog, northern leopard frog, tiger salamander, common mudpuppy, common garter snake, plains garter snake, painted turtle, false map turtle, smooth softshell, common snapping turtle, northern redbelly snake, chestnut lamprey, silver lamprey, pallid sturgeon, paddlefish, sturgeon chub, sicklefin chub, silver chub, pearl dace, hornyhead chub, pugnose shiner, blacknose shiner, rosyface shiner, northern redbelly dace, finescale dace, threeridge, Wabash, pigtoe, mapleleaf, black sandshell, creek heelsplitter, pink heelsplitter, pink papershell

Figure D-10-1a and b: The Bylin Dam in (a) 1962 (North Dakota Department of Agriculture 2017b), approximately two years before construction was completed, (b) present-day (2019).

a

5.2 Species and Habitats of Conservation concern

5.2.1 Federal Threatened and Endangered Species

The Endangered Species Act (ESA) directs federal agencies to conserve endangered and threatened species. There are 12 species listed as threatened (likely to become an endangered species in the near future) or endangered (in danger of extinction now) that may occur in North Dakota. Because North Dakota does not have a state TES list, those species listed by the ESA of 1973, as amended, are considered listed, and the USFWS has primary oversight of these species. However, the NDGFD has listed species of concern for the state's wildlife conservation strategy (Dyke et al. 2015).

The USFWS online Information Planning and Conservation System (IPaC) program (US Fish and Wildlife Service 2020a) shows no designated critical habitat in the AA, but the following federally listed species may be present (**Table D-10-12**). TES that have the potential to occur within the survey area are *Grus Americana* (whooping crane) and *Myotis septentrionalis* (northern long-eared bat). The gray wolf also has the potential to be found in eastern North Dakota. However, according to the NDGFD there are no known breeding populations in North Dakota, therefore any occurrence would be most likely individuals passing through (North Dakota Game and Fish Department 2019e). According to the USFWS, *Bombus affinis* (rusty patch bumble bee) (US Fish and Wildlife Service 2020b) and *Oarisma poweshiek* (Poweshiek skipperling) (US Fish and Wildlife Service 2019a) have been classified as extirpated from North Dakota. According to the USFWS County Occurrence list, the piping plover, interior least tern, pallid sturgeon, Dakota skipper, red knot rufa, and western fringed orchid do not occur in Walsh County (US Fish and Wildlife Service 2019b), and they are not discussed further in this report.

Table D-10-12: North Dakota threatened and endangered species with potential to occur in Walsh County.

Latin Name	Common Name	Status	Potential to Occur
Grus americana	whooping crane	endangered	Potential territory, but not within core migration route. There is final designated critical habitat for this species. These birds may migrate through North Dakota but avoid human populations.
Myotis septentrionalis	northern long-eared bat	threatened	Potential territory, key breeding habitat in summer. No critical habitat has been designated for this species in North Dakota. Bats use trees, particularly if they are part of a forest corridor, for roosting and breeding.
Canis lupus	gray wolf	endangered	No known breeding populations. There is final designated critical habitat for this species, location is not publicly available. Wolves tend to avoid human population and can roam widely.
Bombus affinis	rusty patched bumble bee	endangered	No designated critical habitat, extirpated, historic range, grassland and prairie that provides nectar and pollen from flowers, nesting sites (underground and abandoned rodent cavities or clumps of grasses), and overwintering sites for hibernating queens (undisturbed soil).

Latin Name	Common Name	Status	Potential to Occur
Oarisma poweshiek	Powesheik skipperling	endangered	No designated critical habitat, extirpated, preferred habitat is intact and undisturbed mixed-grass prairie.
Platanthera praeclara	western fringed prairie orchid	threatened	No designated critical habitat, preferred habitat is intact and undisturbed mesic to wet prairie.

5.2.1.1 Whooping Crane

Historically, whooping cranes nested in North Dakota during the 1800s. As habitat has declined, the populations have decreased; it is estimated, as of July 2010, 383 whooping cranes occur in the wild (US Fish and Wildlife Service 2020c). Currently they migrate through North Dakota during the spring migration (April to mid-June) and the fall migration (September to early November). Most sightings are in the lower two-thirds of the state. Their preferred habitat is shallow wetlands with cattails, bulrushes, and sedges, but they may rest in upland areas during migrations. Whooping cranes have been known to occur in Walsh and all other counties in North Dakota. Recent observations have been recorded near Valley City and Jamestown and west of Bismarck and Minot between 2015-2020 (CornellLab of Ornithology 2020a).

5.2.1.2 Northern Long-eared Bat

Northern long-eared bats typically roost underneath bark, in cavities, or in crevices of both live and dead trees during the summer. Trees which retain bark or provide cavities or crevices are their preferred habitat. Other potential roosting sites include caves or structures (barns, bridges) (North Dakota Game and Fish Department 2019f, US Fish and Wildlife Service 2020d). The bats have been observed in forested habitat in the Turtle Mountains and the riparian corridors of the Little Missouri and Missouri rivers.

5.2.2 USFWS Birds of Conservation Concern (BCC)

The Migratory Bird Treaty Act (MBTA) makes it unlawful to “take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts,” nests, or eggs of such a bird except under the terms of a valid federal permit.” Provisions are in place for the protection of migratory bird, part, nest, egg, or product. Under the MBTA, “migratory birds” essentially include all birds native to the U.S.; and the law pertains to any time of the year, not just during migration.

North Dakota is located within the Central Flyway, one of the major migration paths in North America. Migratory birds may occur in the AA during spring and fall migration as well as use the area as breeding and nesting grounds through the summer. Three-hundred seventy-five bird species can be seen in the state (North Dakota Game and Fish Department 2019g). Because the AA is located within the Prairie Pothole Region, the area has additional importance to waterfowl species.

Migratory bird species of concern (USFWS Birds of Conservation Concern list) according to IPaC (US Fish and Wildlife Service 2020a) that may be in the project vicinity and may be

affected by activities in the AA are listed in **Table D-10-13**. Because the AA is located within the Prairie Pothole Region, the area has additional importance to waterfowl species. Waterfowl that have been observed in Walsh County, and may also be present in the planning area, include snow goose, Ross's goose, greater white-fronted goose, cackling goose, Canada goose, trumpeter swan, tundra swan, wood duck, blue-winged teal, northern shoveler, gadwall, American wigeon, mallard, American black duck, northern pintail, canvasback, redhead, ring-necked duck, greater scaup, lesser scaup, surf scoter, white-winged scoter, bufflehead, common goldeneye, hooded merganser, common merganser, red-breasted merganser, ruddy duck, pied-billed grebe, horned grebe, red-necked grebe, eared grebe, and western grebe (Cornell Lab of Ornithology 2020b).

Table D-10-13: Migratory bird USFWS species of conservation concern (not full list of all birds that may occur).

Species Name		Breeding Season	Species Name Preferred Habitat in Project Area
Ammodramus nelson	Nelson's sparrow	May 15 to Sept 5	Fens, shallow-marsh, and wet meadow zones of wetlands. Cordgrass and phragmites usually associated plants, tallgrass prairie [a]
Aquila chrysaetos	golden eagle	Jan 1 to Aug 31	grasslands, intermittent forested habitat and woodland-brushlands [b]
Arenaria interpres morinella	ruddy turnstone	Breeds elsewhere	lakes, permanent wetlands, temporary wetlands, or simply shallow water pooled in farm fields [b]
Botaurus lentiginosus	American bittern	Apr 1 to Aug 31	Variety of wetlands, typically larger wetlands with tall emergent vegetation. Also will nest in tall, dense grasslands, tallgrass prairie [a]
Calidris pusilla	semipalmated sandpiper	Breeds elsewhere	lakes, permanent wetlands, temporary wetlands, or simply shallow water pooled in farm fields [b]
Chlidonias niger	black tern	May 15 to Aug 20	Shallow wetlands surrounded by grassland [a]
Coccyzus erythropthalmus	black-billed cuckoo	May 15 to Oct 10	Brushy margins or woodland openings, thickets of small trees and prairie shrubs [a]
Coturnicops noveboracensis	yellow rail	May 15 to Sept 10	Fens or wet meadows with emergent vegetation, shallow water, and moist soil, tallgrass prairie [a]
Dolichonyx oryzivorus	bobolink	May 20 to Jul 31	Native and tame grasslands, hayland, light to moderately grazed pasture, no-till cropland, small-grain fields, old fields, wet meadows [a]
Haliaeetus leucocephalus	bald eagle	Dec 1 to Aug 31	Large lakes, reservoirs, river, farmland and urban and suburban habitat. In winter near open water in tall trees [b]
Leucophaeus pipixcan	Franklin's gull	May 1 to Jul 31	Large wetlands with semi-open emergent cover, often feeds in cultivated agricultural fields [a]
Limnodromus griseus	short-billed dowitcher	Breeds elsewhere	lakes, permanent wetlands, temporary wetlands, or simply shallow water pooled in farm fields 3
Limosa fedoa	marbled godwit	May 1 to Jul 31	Forage in a variety of wetlands, nest frequently on grazed native prairie, Tallgrass prairie [a]
Melanerpes erythrocephalus	red-headed woodpecker	May 10 to Sept 10	Natural stands of mature deciduous trees along river bottoms, shelterbelts, wooded areas of towns [a]
Pluvialis dominica	American golden-plover	Breeds elsewhere	prairies, fields and pastures, mudflats, shorelines, and beaches [b]
Tringa flavipes	lesser yellowlegs	Breeds elsewhere	lakes, permanent wetlands, temporary wetlands, or simply shallow water pooled in farm fields [b]
Tringa semipalmata	willet	Apr 20 to Aug 5	lakes, permanent wetlands, temporary wetlands, or simply shallow water pooled in farm fields [b]

a North Dakota Game and Fish Department (2019a)
b US Fish and Wildlife Service (2023)

The Bald and Golden Eagle Protection Act (16 USC § 668-668c) provides for the protection of bald and golden eagles by prohibiting the taking, possession, and commerce of such birds, except under certain specified conditions. USFWS issues permits to take, possess, and transport bald and golden eagles. There is the potential for nests in the project vicinity. This information will be determined by the North Dakota Game and Fish Department.

5.2.3 Plants of State Conservation Priority

The North Dakota Natural Heritage Program has compiled a list of plants of concern (North Dakota Natural Heritage Program 2013). Of the 189 species listed, 100 are rated as of greatest concern. This subset is divided into three levels, I, II, and III where level I includes species that are the most vulnerable species. Level I includes 13 species (**Table D-10-14**). These species are defined as those with low or declining populations and are thus the most vulnerable to extinction, and these are given greater focus in this report. In Level II there are 64 species, and in Level III there are 33 species (**Table D-10-15** and **Table D-10-16**). **Figure D-10-2** shows the estimated distribution of priority plant species in North Dakota. There are three sites in Walsh County, but none are identified within an approximately 10-mile radius of the dam. Of the 13 species listed as North Dakota Level I conservation priority, all have been recorded in Walsh County (**Table D-10-14,** Kartesz, The Biota of North America Program (BONAP) 2015; Shipunov 2019), and their conservation status ranges from rare to critically imperiled (Kartesz, The Biota of North America Program (BONAP) 2015; NatureServe 2020).

Table D-10-14: North Dakota plants of Level I conservation priority and potential presence at Bylin Dam.

Latin Name	Common Name	Preferred Habitat	Presence in Walsh County Documented	Conservation Status, in addition to North Dakota Level I Status
Allium canadense	meadow onion	Fresh (wet) meadow [2]	Yes [4]	Critically imperiled [6]
Asclepias lanuginosa	wooly milkweed	Prairie, open woods [2]	Yes [4]	Critically imperiled [6]
Astragalus neglectus	Cooper's milkvetch	Prairie, riverbanks [2]	Yes [4]	Critically imperiled [6]
Botrychium campestre	prairie grapefern	Prairies, dunes, grassy railroad sidings, and fields over limestone [1]	Yes [4]	Critically imperiled [6]
Carex formosa	handsome sedge	Mesic to dry deciduous forests and ravines, moist meadows, usually assoc. with calcareous soils [1]	Yes [4]	Critically imperiled [6]
Chenopodium subglabrum	smooth goosefoot	Sandy areas, particularly sand bars in rivers and in sandy blowouts near riverbanks [1]	Yes [4]	Critically imperiled [6]
Cypripedium candidum	white lady's slipper	Mesic to wet prairies and fen meadows, very rarely open wooded slopes [1]	Yes [4, 5]	Rare 4, Imperiled [6]
Eriogonum visheri	Dakota buckwheat	Loamy to clayey flats and outcrops, mixed grassland and saltbush communities [1]	Yes [4]	Imperiled [6]
Helianthemum bicknellii, syn. Crocanthemum bicknellii	Bicknell's sunrose	Sandy or rocky barrens, glades, sandhills, prairies, fields, pine-oak woodlands, oak-hickory woodlands, montane outcrops and balds [1]	Yes [4]	Critically imperiled [6]
Mentzelia pumila	dwarf mentzelia	Hillside slopes, sandy and clayey soils [1]	Yes [4]	Critically imperiled [6]
Platanthera praeclara	western prairie fringed orchid	Mesic to wet prairies [1]	Yes [4]	Federally listed as endangered, Imperiled [6]
Polygonum leptocarpum (syn. Polygonum ramosissimum ssp. Ramosissimum)	thin-fruited knotweed	Disturbed places, saline marshes [3]	Yes [4]	Rare in Walsh County [4], critically imperiled [6]
Triantha glutinosa	sticky false-asphodel	Marshes, wet meadows, calcareous soil [1]	Yes [4]	Critically imperiled [6]

[1] Flora of North America Association (2020)
[2] Minnesota Wildflowers (2020)
[3] Regents of the University of California (2020)
[4] Kartesz, the Biota of the North America Program (BONAP) (2015)
[5] Shipunov (2019)
[6] NatureServe (2020)

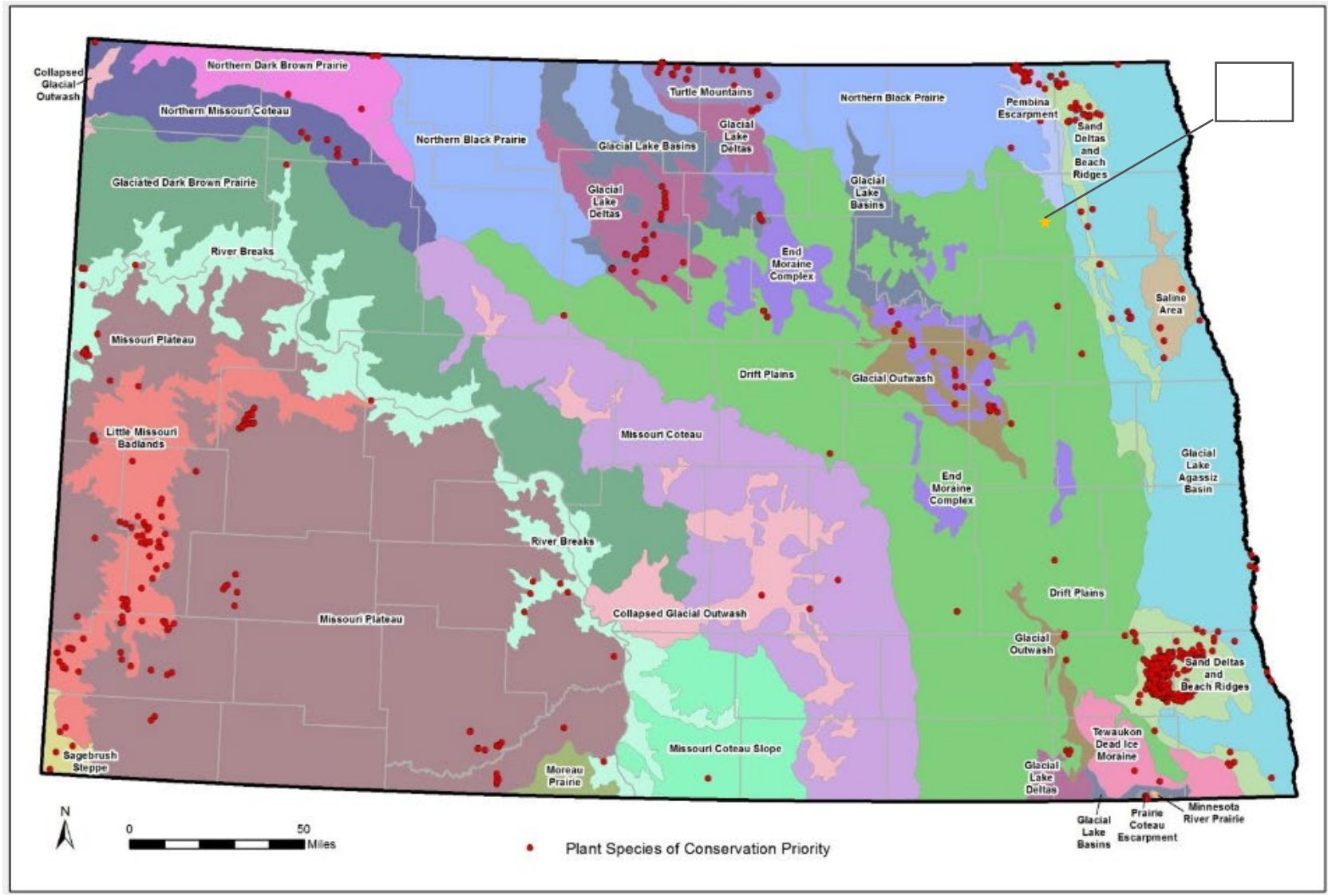

Figure D-10-2: Sites of North Dakota ecoregions and state plant species of conservation priority (orange star indicates Bylin Dam in Walsh County) (North Dakota Natural Heritage Program 2013).

Table D-10-15: North Dakota plants of Level II conservation priority.

Latin Name	Common Name	Latin Name	Common Name
Botrychium minganense	moonwort	*Lappula cenchrusoides*	stickseed
Botrychium multifidum	leathery grapefern	*Lechea stricta*	upright pinweed
Botrychium simplex	least grapeferen	*Leucocrinum montanum*	sand lily
Campanula aparinoides	marsh bellflower	*Liparis loeselii*	Loesel's twayblade
Carex alopecoidea	foxtail sedge	*Lipocarpha micrantha*	small-flowered lipocarpha
Carex echinata ssp. echinata	spiny sedge	*Menyanthes trifoliata*	buckbean
Carex leptalea	delicate sedge	*Minuartia dawsonensis*	stiff sandwort
Carex sterilis	sterile sedge	*Onoclea sensibilis*	sensitive fern
Caulophyllum thalictroides	blue cohosh	*Ophioglossum pusillum*	adder's-tongue fern
Cheilanthes feei	slender lip fern	*Phlox alyssifolia*	alyssum-leaved phlox
Clematis columbiana var. tenuiloba	slender-lobed clematis	*Pinus flexilis*	limber pine
Collinsia parviflora	blue lips	*Pogonia ophioglossoides*	rose pogonia
Cryptantha torreyana	Torrey's cryptantha	*Polygonum hydropiperoides*	swamp smartweed
Cyperus bipartitus	brook flatsedge	*Populus x acuminata*	lanceleaf cottonwood
Cypripedium parviflorum	small yellow lady's-slipper orchid	*Primula incana*	American primrose
Cypripedium reginae	showy lady's-slipper	*Ribes cynosbati*	prickly gooseberry
Dirca palustris	leatherwood	*Rorippa calycina*	Hayden's yellowcress
Drosera rotundifolia	round-leaved sundew	*Salix maccalliana*	swamp willow
Equisetum palustre	marsh horsetail	*Salix pedicellaris*	bog willow
Equisetum pratense	meadow horsetail	*Scheuchzeria palustris*	pod grass
Erigeron radicatus	cushion fleabane	*Selaginella rupestris*	ledge spike-moss
Eriogonum cernuum	nodding buckwheat	*Solidago flexicaulis*	zigzag goldenrod
Eriophorum gracile	slender cottongrass	*Sphagnum teres*	round-leaved sphagnum
Euonymus atropurpureus	wahoo	*Sporobolus airoides*	alkali sacaton
Galium labradoricum	bog bedstraw	*Talinum parviflorum*	prairie fameflower
Gymnocarpium dryopteris	oakfern	*Townsendia hookeri*	Hooker's townsendia
Hudsonia tomentosa	wooly beach-heather	*Triplasis purpurea*	purple sandgrass

Table D-10-16: North Dakota plants of Level III conservation priority.

Latin Name	Common Name
Astragalus drummondii	Drummond's Milkvetch
Astragalus vexilliflexus	bent-flowered milkvetch
Botrychium matricariifolium	chamomile grapefern
Carex backii	Back's sedge
Carex capillaris	hair-like sedge
Cypripedium parviflorum var. pubescens	large yellow lady's-slipper
Dalea enneandra	nine-anthered dalea
Desmanthus illinoensis	prairie mimosa
Dicentra cucullaria	Dutchman's breeches
Eleocharis parvula	dwarf spikerush
Eleocharis wolfii	Wolf's spikerush
Equisetum sylvaticum	wood horsetail
Eriophorum chamissonis	Chamisson's cottongrass
Eriophorum viridicarinatum	green keeled cottongrass
Geranium maculatum	wild geranium
Mahonia repens	creeping barberry
Mimulus guttatus	yellow monkeyflower
Mitella nuda	naked mitrewort
Oenothera rhombipetala	rhombic evening-primrose
Orobanche uniflora	one-flowered broomrape
Parnassia palustris var. parviflora	small-flowered grass-of-Parnassus
Penstemon procerus	small-flowered penstemon
Petasites frigidus	sweet coltsfoot
Phlox pilosa	downy phlox
Platanthera clavellata	green woodland orchid
Potentilla diversifolia	mountain meadow cinquefoil
Ranunculus cardiophyllus	heart-leaved buttercup
Rhynchospora capillacea	hair beakrush
Spiranthes cernua	nodding ladies'-tresses
Spiranthes romanzoffiana	hooded ladies'-tresses
Utricularia intermedia	flat-leaved bladderwort
Veronicastrum virginicum	Culver's-root
Viola conspersa	bog violet

The Climate Change Vulnerability Index (CCVI) analysis for North Dakota by NatureServe (North Dakota Natural Heritage Program 2013) scores species in each ecoregion, focal area, and habitat type using a metric that estimates susceptibility and adaptability to climate change (altered patterns of temperature, precipitation, and species distribution). The CCVI reports that the Drift Plains ecoregion is a hot spot for imperiled species in the state. Vulnerable communities and listed plant species are shown for tallgrass prairie, eastern mixed grass prairie, upland deciduous forest, streams, and riparian zones (**Table D-10-17**).

Table D-10-17: Key plant species of conservation priority in selected areas according to the Climate Change Vulnerability Index (North Dakota Natural Heritage Program 2013).

Ecoregion / Habitat / Plant Community	Key Plant Species of Conservation Concern
Drift Plains ecoregion	Wooly milkweed, blue cohosh, white lady's slipper, dwarf spikerush, Loesel's twayblade, small-flowered lipocarpha, buckbean, rhombic evening primrose, one-flowered broomrape, green woodland orchid, western prairie fringed orchid, rose pogonia, hair beakrush, nodding ladies'-tresses, sticky false-asphodel, bog willow, prickly gooseberry, foxtail sedge
Eastern mixed grass prairie	Sweet flag, hair-like sedge, sterile sedge, hooded ladies'-tresses, chamomile, grapefern, Chamisson's cottongrass, prairie grapefern, hair beakrush, delicate sedge, lady's-slippers, wood horsetail, buckbean, flowered penstemon, nodding ladies'-tresses, sticky false-asphodel
Upland deciduous forest	Meadow onion, moonwort, leathery grapefern, slender lip fern, slender-lobed clematis, round-leaved sundew, nodding buckwheat, stiff sandwort, swamp willow, pod grass, round-leaved sphagnum, flat-leaved bladderwort, small yellow lady's-slipper
Rivers, streams, riparian zones	Meadow onion, prairie grapefern, moonwort, leathery grapefern, spiny sedge, Dutchman's breeches, slender cottongrass, stickseed, small-flowered lipocarpha, dwarf mentzelia, small-flowered penstemon, downy phlox, limber pine, rose pogonia, thin-fruited knotweed, heart-leaved buttercup, nodding ladies'-tresses, hooded ladies'-tresses, bog violet

5.2.4 Animals of State Conservation Priority

In the State Wildlife Action Plan (Dyke et al. 2015), the NDGFD describes the strategies for fish and wildlife conservation. The plan lists 115 animal species targeted for conservation priority, which are defined as those with low or declining populations and thus vulnerable, and these include 47 birds, 2 amphibians, 9 reptiles, 21 mammals, 22 fish, 10 mussels, and 4 insects. Of these species, 36 are listed as Level I species, which are the most vulnerable of the listed species. **Table D-10-18**. shows the Level I species that have known distribution in Walsh, Nelson, or Grand Forks counties. Level II includes 44 species (**Table D-10-19**) and Level III includes 35 species (**Table D-10-20**).

Table D-10-18: North Dakota animals of Level I conservation priority in Walsh County (reference 2 unless otherwise indicated).

Latin Name	Common Name	Preferred Habitat	Known Distribution in Walsh, Nelson, or Grand Forks Counties
Ammodramus bairdii	Baird's sparrow	Eastern Mixed Grass Prairie	Migratory
Ammodramus nelson	Nelson's sparrow	Fens, shallow-marsh, and wet meadow zones of wetlands. Cordgrass and phragmites usually associated plants, tallgrass prairie	Migratory, restricted breeding range limited to North Dakota, parts of Minnesota, South Dakota, and central Canada [2]
Ammodramus savannarum	grasshopper sparrow	Idle or lightly grazed tall or mixed-grass prairie, shrub prairie meadows, and hayfields, tallgrass prairie	Migratory, statewide [2]
Anaxyrus hemiophrys	Canadian toad	Tallgrass prairie, margins of lakes, ponds, and a variety of wetlands. [4]	Yes [3]
Anthus spragueii	Sprague's pipit	Eastern Mixed Grass Prairie	Migratory
Botaurus lentiginosus	American bittern	Variety of wetlands, typically larger wetlands with tall emergent vegetation. Also will nest in tall, dense grasslands, tallgrass prairie	Migratory [1]
Buteo regalis	ferruginous hawk	Large tracts of native prairie, tallgrass prairie	Migratory
Buteo swainsoni	Swainson's hawk	Mix of grassland and cropland with thickets of trees, tallgrass prairie	Migratory
Calamospiza melanocorys	lark bunting	Sagebrush communities or mixed-grass prairie interspersed with shrubs, roadsides, and retired cropland.	Migratory, once common throughout state except Red River Valley, abundant south and west of the Missouri River, [2]
Calcarius ornatus	chestnut-collared longspur	Grazed or hayed mixed-grass prairie, shortgrass prairie.	Migratory, once common throughout state except Red River Valley [2]
Centrocercus urophasianus	greater sage-grouse	No known distribution in Walsh, Nelson, or Grand Forks counties	none
Chlidonias niger	black tern	Shallow wetlands surrounded by grassland.	Migratory [1]
Coccyzus erythropthalmus	black-billed cuckoo	Brushy margins or woodland openings, thickets of small trees and prairie shrubs.	Migratory, Pembina Hills, Turtle Mountains, wooded hills in the Devils Lake area, wooded stream valleys [2]
Corynorhinus townsendii	Townsend's big-eared bat	No known distribution in Walsh, Nelson, or Grand Forks counties	none
Coturnicops noveboracensis	yellow rail	Fens or wet meadows with emergent vegetation, shallow water, and moist soil, tallgrass prairie	Migratory [1]
Cycleptus elongatus	blue sucker	No known distribution in Walsh, Nelson, or Grand Forks counties	none

Latin Name	Common Name	Preferred Habitat	Known Distribution in Walsh, Nelson, or Grand Forks Counties
Cynomys ludovicianus	black-tailed prairie dog	No known distribution in Walsh, Nelson, or Grand Forks counties	none
Danaus plexippus	monarch butterfly	Tallgrass prairie, variety of habitats, needs milkweed (*Asclepias* spp.) for breeding [6]	Migratory, statewide
Eptesicus fuscus	big brown bat	Both urban and rural habitats. Insect availability is limiting factor versus a type of habitat. Commonly associated with trees. [4]	Statewide [4]
Heterodon nasicus	plains hog-nosed snake	No known distribution in Walsh, Nelson, or Grand Forks counties	none
Lasmigona compressa	creek heelsplitter	Forest River [5]	Forest River [5]
Leucophaeus pipixcan	Franklin's gull	Large wetlands with semi-open emergent cover, often feeds in cultivated agricultural fields.	Migratory, Prairie Pothole Region [2] (Nelson County)
Limosa fedoa	marbled godwit	Forage in a variety of wetlands, nest frequently on grazed native prairie, Tallgrass prairie	Migratory, Prairie Pothole Region [1]
Marcrhybopsis gelida	sturgeon chub	No known distribution in Walsh, Nelson, or Grand Forks counties	none
Marcrhybopsis meeki	sicklefin chub	No known distribution in Walsh, Nelson, or Grand Forks counties	none
Margariscus nachtriebi	northern pearl dace	Could occur in Forest River (Dr. Casey Williams, VCSU: “In my professional opinion, yes, I would not be surprised if Pearl Dace were present in the Forest River. Pearl Dace is one of those species that seem to never be high in abundance, even in areas where they are consistently found.”)	Grand Forks, Nelson counties [8], C. Williams pers. comm.
Melanerpes erythrocephalus	red-headed woodpecker	Natural stands of mature deciduous trees along river bottoms, shelterbelts, wooded areas of towns.	Migratory
Myotis lucifugus	little brown bat	Roosts are established in structures in the summer months but also can be found in dead trees. [4]	Statewide [4]
Myotis septentrionalis	northern long-eared bat	Forests, roosts in trees with loose bark or holes	Possible occurrence [9]
Numenius americanus	long-billed curlew	No known distribution in Walsh, Nelson, or Grand Forks counties	none

Latin Name	Common Name	Preferred Habitat	Known Distribution in Walsh, Nelson, or Grand Forks Counties
Opheodrys vernalis	smooth green snake	Many observations occur near wetlands surrounded by grassy uplands.[3]	Low occurrence (Nelson Co. only) [3]
Phalaropus tricolor	Wilson's phalarope	Shallow wetlands and mudflats, nest in the margins of wetlands.	Migratory, Prairie Pothole Region, [1]
Podiceps auritus	horned grebe	Ponds and wetlands with beds of emergent vegetation and substantial areas of open water.	Migratory, Prairie Pothole Region, [1]
Potamilus ohiensis	pink papershell	No known distribution in Walsh, Nelson, or Grand Forks counties	none
Spea bombifrons	plains spadefoot	No known distribution in Walsh, Nelson, or Grand Forks counties	none
Speyeria idalia	regal fritillary	Habitats are generally described as tallgrass prairie, wet meadows, and marshy areas; virgin prairie in North Dakota [7]	Yes (Grand Forks only) [7]

[1] Sherfy and Anteau (2008)
[2] North Dakota Game and Fish Department (2019a)
[3] Hoberg et al. (2018)
[4] North Dakota Game and Fish Department (201hi)
[5] DeLorme (2011)
[6] US Fish and Wildlife Service (2019c)
[7] Selby (2007)
[8] North Dakota Game and Fish Department (2019i)
[9] North Dakota Game and Fish Department (2019f)

Table D-10-19: North Dakota animals of Level II conservation priority.

Latin Name	Common Name	Latin Name	Common Name
Amblema plicata	threeridge	*Lota lota*	burbot
Ammodramus leconteii	Le Conte's sparrow	*Marcrhybopsis storeriana*	silver chub
Anas acuta	northern pintail	*Martes americana*	American marten
Aquila chrysaetos	golden eagle	*Mustella nigripes*	black-footed ferret
Asio flammeus	short-eared owl	*Oarisma poweshiek*	Poweshiek skipperling
Athene cunicularia	burrowing owl	*Pelecanus erythrorhynchos*	American white pelican
Aythya affinis	lesser scaup	*Percopsis omiscomaycus*	trout-perch
Aythya valisineria	canvasback	*Phrynosoma hernandesi*	short-horned lizard
Bartramia longicauda	upland sandpiper	*Platygobio gracilis*	flathead chub
Charadrius melodus	piping plover	*Polyodon spathula*	paddlefish
Chelydra serpentina	snapping turtle	*Potamilus alatus*	pink heelsplitter
Chrosomus eos	northern redbelly dace	*Recurvirostra americana*	American avocet
Circus cyaneus	northern harrier	*Scaphirhynchus albus*	pallid sturgeon
Dolichonyx oryzivorus	bobolink	*Sorex hoyi*	pygmy sshrew
Falco mexicanus	prairie falcon	*Spiza americana*	dickcissel
Falco sparverius	American kestrel	*Sterna antillarum athalassos*	least tern (interior)
Fusconaia flava	Wabash pigtoe	*Sturnella neglecta*	western meadowlark
Haliaeetus leucocephalus	bald eagle	*Tringa semipalmatus*	willet
Hesperia dacotae	Dakota skipper	*Tympanuchus cupido*	greater prairie-chicken
Lanius ludovicianus	loggerhead shrike	*Tympanuchus phasianellus*	sharp-tailed grouse
Ligumia recta	black sandshell	*Urocitellus richardsonii*	Richardson’s ground squirrel
Lontra canadensis	river otter	*Vulpes velox*	swift fox

Table D-10-20: North Dakota animals of Level III conservation priority.

Latin Name	Common Name	Latin Name	Common Name
Ameiurus natalis	yellow bullhead	*Nocomis biguttatus*	horneyhead chub
Apalone mutica	smooth softshell	*Notropis anogenus*	pugnose shiner
Apalone spinifera	spiny softshell	*Notropis heterolepis*	blacknose shiner
Calcarius mccownii	McCown's longspur	*Notropis percobromis*	carmine shiner
Calidris canutus rufa	red knot (rufa)	*Percina caprodes*	logperch
Campostoma oligolepis	largescale stoneroller	*Percina shumardi*	river darter
Chaetodipus hispidus	hispid pocket mouse	*Perognathus flavescens*	plains pocket mouse
Falco peregrinus	peregrine falcon	*Phoxinus neogaeus*	finescale dace
Graptemys pseudogeographica	false map turtle	*Plestiodon septentrionalis*	northern prairie skink
Grus americana	whooping crane	*Quadrula quadrula*	mapleleaf
Ichthyomyzon castaneus	chestnut lamprey	*Sceloporus graciosus*	sagebrush lizard
Ichthyomyzon unicuspis	silver lamprey	*Sorex arcticus*	arctic shrew
Lemmiscus curtatus	sagebrush vole	*Sorex merriami*	Merriam's shrew
Leptodea fragilis	fragile papershell	*Spilogale putorius*	eastern spotted skunk
Myotis ciliolabrum	western small-footed bat	*Spizella breweri*	Brewer's sparrow
Myotis evotis	long-eared bat	*Strophitus undulatus*	creeper
Myotis volans	long-legged bat	*Truncilla truncata*	deertoe
		Urocyon cinereoargenteus	gray fox

The CCVI analysis for North Dakota by NatureServe (North Dakota Natural Heritage Program 2013) scores species in each ecoregion, focal area, and habitat type using a metric that estimates susceptibility and adaptability to climate change (altered patterns of temperature, precipitation, and species distribution). The analysis indicates the Drift Plains ecoregion is a hot spot for imperiled species in the state. The animal species in this ecoregion that are particularly vulnerable to the predicted effects of climate change are shown in (**Table D-10-21**).

Table D-10-21: Key animal species of conservation priority in selected areas according to the Climate Change Vulnerability Index (North Dakota Natural Heritage Program 2013).

Ecoregion / Habitat / Plant Community	Key Animal Species of Conservation Concern
Drift Plains ecoregion	Bald eagle, red-headed woodpecker, black-billed cuckoo, river otter, northern long-eared bat, little brown bat, big brown bat, gray fox, northern pearl dace, silver chub, northern redbelly dace, trout-perch, chesnut lamprey, silver lamprey, largescale stoneroller, hornyhead chub, pugnose shiner, blacknose shiner, carmine shiner, finescale dace, yellow bullhead, logperch, river darter, burbot, threeridge, wabash pigtoe, mapleleaf, black sandshell, creek heelsplitter, pink heelsplitter, creeper
Eastern mixed grass prairie	American bittern, northern pintail, northern harrier, Swainson's hawk, ferruginous hawk, sharp-tailed grouse, willet, upland sandpiper, marbled godwit, Wilson's phalarope, short-eared owl, loggerhead shrike, sedge wren, Sprague's pipit, lark bunting, grasshopper sparrow, Baird's sparrow, Le Conte's sparrow, Nelson's sharp-tailed sparrow, chestnut-collared longspur, dickcissel, bobolink, arctic shrew, pygmy shrew, Richardson's ground squirrel, plains spadefoot, Canadian toad, smooth green snake, western hognose snake
Upland deciduous forest	Golden eagle, bald eagle, Swainson's hawk, black-billed cuckoo, red-headed woodpecker, arctic shrew, pygmy shrew, western small-footed bat, long-eared bat, long-legged bat, northern redbelly snake
Rivers, streams, riparian zones	Golden eagle, bald eagle, red-headed woodpecker, black- billed cuckoo, piping plover, western small-footed bat, long-legged bat, long- eared bat, pygmy shrew, river otter, false map turtle, smooth softshell, common snapping turtle, northern redbelly snake, chestnut lamprey, silver lamprey, pallid sturgeon, paddlefish, sturgeon chub, sicklefin chub, silver chub, pearl dace, hornyhead chub, pugnose shiner, blacknose shiner, rosyface shiner, northern redbelly dace, finescale dace, threeridge, Wabash, pigtoe, mapleleaf, black sandshell, creek heelsplitter, pink heelsplitter, pink papershell

6 Field Inventory Results

6.1 General Observations

Most of the land cover surrounding the AA is annually tilled cropland or grazing land. Within the AA (total 953.35 acres) there are constructed features include a boat landing and dock, several miles of gravel roads, one residential site, a few farming operation-related structures, and tilled land. There are many barbed-wire and electric fences crossing the land.

The landscape consists of hills downstream of the dam and a shallow river-valley upstream of the reservoir. Downstream from the dam is a large area of managed grassland (seeded with non-native species for rapid soil stabilization after dam construction and regularly mowed) with a riparian zone along parts of the river and some upland deciduous forest. The reservoir is somewhat turbid with algae in the water column coating the aquatic plants. Adjacent to the reservoir are narrow strips of wet prairie, marsh, and riparian woodlands, with largely grassland

communities. The land is managed with mowed grasslands, structures and roads, cattle grazing, and cultivated fields. At the upstream end of the reservoir, the low valley consists of marshes and grasslands. The main channel of the river flows from the northwest upstream through marsh wetlands, then via a channel with bed characteristics, and then again through marsh wetlands to reach the reservoir.

The field survey, limited to the natural and semi-natural plant communities (878.70 acres) resulted in 40 delineation quadrats, 9 other waters points, and 13 inventory transects. **Table D-10-22** shows the six major and two wetland subcategories of habitats observed in the AA (following North Dakota Game and Fish Department 2019a) (**Exhibit D-10-2: Habitat and Plant Community Map**). No fen communities were observed. For plants, the survey found 142 plant species across the habitat types (**Appendix D-10-A – Plant Species List**). There were 78 forb, 21 grass, 18 other graminoid, 13 tree/shrub, 8 shrub, 1 vine, and 3 aquatic species observed over the total AA. In the AA, 36 animal species were identified during the field survey (**Appendix D-10-B – Animal Species List).** There were 4 mammal, 17 bird, 8 insect, 1 fish, and 5 amphibian, and 1 arthropod species observed over the entire AA.

Table D-10-22: Habitats and communities observed in the assessment area.

State Habitat Categories (major categories)	Biological Inventory Community Categories	Number of Observation Points	Community Acres in Assessment Area*
Eastern mixed grass prairie	Prairie (unmanaged or native prairie)	1	3.60
Tame grassland	Grassland (heavily managed prairie, hayfields, pasture, managed grasslands)	25	722.42
Upland deciduous forest	Upland forest / shrubs	2	10.59
Wetland and Lake	Fen	0	0.00
	Wet prairie: Mesic prairie, wet meadow	19	18.46
	Marsh: Emergent vegetation in permanent or seasonal inundation areas	6	16.90
	Open water	3	80.08
Rivers, streams	River/stream (species located below the ordinary high-water mark)	4	11.30
Riparian woodland	Not wetlands but supports communities dependent upon water	1	15.35
	Total for survey	65	878.70*
Riparian zone	Communities within natural floodplain (some overlap with communities listed in table above)	30	138.23

**74.65 acres of tilled land, parking lots, roads, residential areas were not included in survey, total AA is 953.35 acres)*

6.2 Community Descriptions

6.2.1 Prairie Community

The prairie habitat at Bylin Dam was observed at two locations and represented 0.4 % of the total natural and semi-natural plant community area within the survey area (3.60 acres) (**Figure D-10-3**, **Exhibit D-10-2: Habitat and Plant Community Map**). The prairie communities are located in small patches downstream of the dam amidst riparian woodlands next to a river and a road.

6.2.1.1 Plants

This community consists of forbs, grasses, and graminoids (**Appendix D-10-A – Plant Species List**). There were eight total species observed, five of which are native species (63%). *Cirsium arvense* (Canada thistle), which is a state-listed noxious weeds, was identified in this habitat area.

6.2.1.2 Animals

There were no animal species noted in the prairie community (**Appendix D-10-B – Animal Species List**).

Figure D-10-3: Prairie community: landscape.

6.2.2 Tame Grassland Habitat and Community

The tame grassland habitat at Bylin Dam makes up the largest community group in the AA with 722.42 acres (82 % of the survey area) and was observed at 25 points (**Figure D-10-4.**, **Exhibit D-10-2: Habitat and Plant Community Map**). This semi-natural community shows higher species diversity than the non-managed prairie areas. Tame grasslands make up the largest portion of the undeveloped land in the AA, consisting of soils that were seeded for stabilization once the dam was completed, grazed areas, and areas that are mowed for dam maintenance or tourism (fishing access). This community is located in the floodplain adjacent to the river and along the reservoir, up the valley slopes, and downstream of the dam. There are large areas where cattle graze, in some places intensively, and in many cases in the river and along the valley slopes. These areas show evidence of overgrazing and subsequent erosion or establishment of non-native/noxious weeds.

6.2.2.1 Plants

This community consists of forb, grass, other graminoid, and shrub species (**Appendix D-10-A – Plant Species List**). There were 64 total species observed, 43 of which are native species (67%). *Carduus nutans* (musk thistle), *C. arvense,* and *Euphorbia esula* (leafy spurge), which are state-listed noxious weeds, were identified in this habitat area.

6.2.2.2 Animals

There were nine animal species noted consisting of mammal, insect, and amphibian species (**Appendix D-10-B – Animal Species List**). Pollinators were more common than in other habitats.

6.2.3 Upland Deciduous Forest Habitat and Community

The upland deciduous forest habitat at Bylin Dam was observed at five locations and represented 1.2 % (10.59 acres) of the survey area (**Figure D-10-5, Exhibit D-10-2: Habitat and Plant Community Map**). This community is found downstream from the dam.

6.2.3.1 Plants

This community consists of mostly of forb, tree, and shrub species, with few grass, other graminoid, and vine species (**Appendix D-10-A – Plant Species List**). There were 41 total species observed, 31 of which are native species (76 %). *E. esula*, a state-listed noxious weed, was identified in this habitat area.

6.2.3.2 Animals

There were nine animal species noted consisting of birds, insects, mammals, and one amphibian (**Appendix D-10-B – Animal Species List**). *Danaus plexippus* (monarch butterfly), which is a Level I Species of Conservation Priority, was observed during the survey.

6.2.4 Wetland and Lake Habitat and Communities

The lake habitat (80.08 acres) was not assessed for plants (per instruction from NRCS) but animal species were noted. The wetland habitats comprise 4.0 % of the total survey area (35.36 acres) and were observed at 26 sites. There were two different wetland types along the hydrology gradient from wetter to drier. These marsh and wet prairie communities are located in the riverbed at the western end of the AA and also where the water flow slows approaching the reservoir pool. There are also many small wetland areas along small tributaries on the valley slopes and along the lacustrine fringe.

6.2.5 Fen Community

No fens were identified in the field survey.

Figure D-10-4: Tame grassland community: landscape east of the reservoir (top), Carduus nutans (lower left), and Hyles euphorbiae (leafy spurge hawkmoth) (lower right).

Figure D-10-5: Upland deciduous forest community: landscape downstream from the dam (top), a fungus species on a tree (lower left), and Hyla chrysoscelis (tree frog) (lower right).

6.2.6 wet prairie community

The wet prairie habitat at Bylin Dam was observed at 20 locations and represented 2.1 % of the survey area (18.46 acres) (**Figure D-10-6, Exhibit D-10-2: Habitat and Plant Community Map**). This community shows higher plant species diversity but lower animal species diversity relative to the size and quality of the tame grassland community.

6.2.6.1 Plants

This community consists of grasses, other graminoids, and forbs (**Appendix D-10-A – Plant Species List**). There were 38 total species observed, 30 of which are native species (79 %). *C. arvense* a state-listed noxious weeds, was identified in this habitat area. *Phalaris arundinacea* (reed canary grass), an aggressive colonizer, is abundant.

6.2.6.2 Animals

Two dragonfly species (*Libellula sp.* and *Sympetrum sp.*) were identified within the wet prairie community (**Appendix D-10-B – Animal Species List**). Fewer animal species were observed here than in neighboring communities.

6.2.7 Marsh community

The marsh habitat at Bylin Dam was observed at six separate locations and represented 1.9 % of the survey area (16.90 acres) (**Figure D-10-7**, **Exhibit D-10-2: Habitat and Plant Community Map**). This community shows relatively higher species diversity in both plant and animal species compared with the rest of the habitats.

6.2.7.1 Plants

This community consists of forb, grass, wetland graminoid, and a few aquatic and shrub species (**Appendix D-10-A – Plant Species List**). There were 64 total species observed, 46 of which are native species (72 %). *C. arvense* and *E. esula*, state-listed noxious weeds, were identified in this community as are *P. arundinacea* and *Typha X glauca*.

6.2.7.2 Animals

There were 11 animal species noted consisting of insects, amphibians, birds (**Appendix D-10-B – Animal Species List**). Invertebrates and amphibians were common.

6.2.8 Lake community

The lake community at Bylin Dam was observed at several locations and represented 9.1 % of the survey area (80.08 acres) (**Figure D-10-8**., **Exhibit D-10-2: Habitat and Plant Community Map**). This community was not surveyed for plant species, but animals were observed. This community is comprised of the reservoir pool.

6.2.8.1 Animals

There were five animal species noted consisting of birds and an arthropod (**Appendix D-10-B – Animal Species List**). There were three species of water birds, one passerine, and crayfish.

igure D-10-6: Wet prairie community: landscape on western tributary (top), Phalaris arundinacea upstream from the dam (lower left), and cattle grazing near tributary west of the reservoir (lower right).

Figure D-10-7: Marsh community: landscape view of marsh fringe along reservoir (top), upstream of reservoir at the northern end of the AA, with algal growth (lower left), and caterpillar (lower right).

Figure D-10-8: Lake community: landscape with Pelecanus erythrorhynchos (American white pelican) (top), viewing lake from fishing pier on eastern edge (lower left), and Petrochelidon pyrrhonota (cliff swallow) nests (lower right).

6.2.9 Rivers and Streams Habitat and Community

The rivers and streams habitat at Bylin Dam was observed at four separate locations and represented
1.3 % of the total survey area (11.30 acres) (**Figure D-10-9**., **Exhibit D-10-2: Habitat and Plant Community Map**). This community shows similar species diversity rates to the wet prairie and

upland deciduous forest communities. This community is located below the ordinary high-water mark in the river channel. The North Branch of the Forest River is classified as a perennial stream, with many ephemeral tributaries.

6.2.9.1 Plants

This community consists of forb, grass, other graminoid, and one aquatic species (**Appendix D-10-A – Plant Species List**). There were 35 total species observed, 27 of which are native species (77 %). No state-listed noxious weeds were identified in this community.

6.2.9.2 Animals

There were three animal species noted consisting of birds and fish (**Appendix D-10-B – Animal Species List**).

Figure D-10-9: Rivers and streams community: landscape view upstream of dam (top left), downstream of reservoir (top right and lower left), and Lithobates pipiens (northern leopard frog) (lower right).

6.2.10 Riparian Zone Habitat and Community

The total riparian zone in the survey area is 138.23 acres (**Exhibit D-10-3: Riparian Zone Map**) and includes riparian woodlands, wetland, and riverine communities, in addition to some grasslands located within the floodplain. A large area of riparian woodlands was lost once the dam was built and the reservoir pool filled. The total riparian zone was observed at 30 separate locations and represented 15.7 % of the survey area (**Exhibit D-10-2: Habitat and Plant Community Map**).

The subcategory of riparian **woodland community** at Bylin Dam was observed at one location and represents 1.7 % of the total survey area (15.35 acres) (**Figure D-10-10**., **Exhibit D-10-2: Habitat and Plant Community Map**). This community has 17 plant species. There are 10 animal species within the riparian community, which is on par with the marsh, tame grassland, and upland deciduous forest communities. The riparian woodland community is located at several locations within the AA. Where it exists along the western tributaries upstream, some of the riparian woodland has been heavily grazed and the understory has been significantly degraded. The area is calculated for the purposes of this report within the riparian woodland community. Downstream of the dam, there are larger areas of riparian woodland along the river.

6.2.10.1 Plants – riparian Zone

This community consists of a mix of forb, grass, tree and shrub, and a graminoid species (**Appendix D-10-A – Plant Species List**). There were 87 total species observed, 64 of which are native species (74 %). *C. arvense* and *E. esula*, state-listed noxious weeds, were identified in this community as were *P. arundinacea, Rhamnus cathartica* (European buckthorn), and *Typha X glauca*.

6.2.10.2 Animals – Riparian Zone

There were 23 animal species noted consisting of birds, insects, and amphibians (**Appendix D-10-B – Animal Species List**). Birds, and particularly songbirds, were more common in this habitat than in other communities.

Figure D-10-10: Riparian woodland community: downstream of the dam (top, lower left, lower right)

6.3 Community Quality Evaluations

6.3.1 Presence of Listed Invasive Species

There were several plant species present in the AA that are either listed as noxious weeds or are noted as troublesome (**Table D-10-23**) including *Asclepias syriaca, Carduus nutans, Cirsium arvense, Euphorbia esula, Melilotus officinalis, Phalaris arundinacea, Poa pratensis, Rhamnus cathartica, Sonchus arvensis,* and *Typha x glauca. Asclepias syriaca* is on the list of Ikley 2020*,* but this list was likely compiled from an agricultural perspective. This plant is critical for survival of *D. plexippus* (monarch butterfly) and *Speyeria idalia* (regal fritillary), so its ecosystem service value is extremely high and is beneficial for the habitats in the AA. There were no invasive animal species observed during the survey.

Table D-10-23. Troublesome or state listed noxious weeds present in the AA.

Species Name	Community
Asclepias syriaca (common milkweed) [1]	Tame grassland
Carduus nutans (musk thistle)[1, 2]	Tame grassland
Cirsium arvense (Canada thistle) [1, 2]	Prairie, tame grassland, wet prairie, marsh
Euphorbia esula (leafy spurge) [1, 2]	Tame grassland, upland deciduous forest, marsh, rivers, and streams
Melilotus officinalis (white/yellow sweet clover) *	Tame grassland, marsh
Phalaris arundinacea (reed canary grass) *	Tame grassland, wet prairie, marsh, rivers, and streams
Poa pratensis (Kentucky blue grass) *	Prairie, Tame grassland, upland deciduous forest, wet prairie, marsh, rivers and streams, riparian woodlands
Rhamnus cathartica (European buckthorn) *	Upland deciduous forest, riparian woodlands
Sonchus arvensis (perennial sow thistle) [1]	Marsh
Typha X *glauca* (hybrid cattail) *	Wet prairie, marsh, rivers, and streams

[1] Troublesome non-native species (Ikley J 2020)
[2] State-listed noxious weeds (North Dakota Department of Agriculture 2017a)
** Other species*

6.3.2 Biological Condition

The quality of the various plant communities varied with the species diversity and the presence of non-native species (**Table D-10-24**). The proportion of native species is between 53% to 79%. The riparian woodlands zone had the highest species richness and the prairie community showed the lowest diversity. The FQA showed the community quality ranges between 6 and 23 based on a combination of species richness and native status (Data available upon request from ND NRCS). The proportion of native species ranges between 57 % to 75 %.

The wet prairie community had an abundance of *Phalaris arundinacea* and the marsh community had abundant *Typha x glauca*, both of which could negatively impact the diversity and community quality. The communities show overall a Biological Condition rating of “fair” to

"good." This metric describes the condition of the community relative to a natural plant community which would be supported by the characteristics of the site (e.g., tame grassland in a location that would originally have been mixed grass prairie) (Bourdaghs 2014). The condition of "fair" to "good" reflects moderate changes to community structure with disturbance forcing species abundance toward fewer native species and greater proportion of tolerant taxa.

Because the lake was not surveyed for plant species during this assessment, there is no evaluation for this community. Though no harmful algal blooms have been confirmed at Bylin Dam, the lake is known to have large blooms (North Dakota Department of Health 2019).

Table D-10-24: Community data for the AA, Floristic Quality Index and Biological Condition.

Community Name	Total Number of Animal Species	Total Number of Plant Species (number native)	FQA Analysis		Biological Condition
			Number of Species in Analysis (% native) *	**Total FQI**	
Prairie	0	8 (5)	7 (57)	9.5	Fair
Tame grassland	9	64 (43) abundant *Carduus nutans*	61 (69)	23.4	Fair
Upland deciduous forest	9	41 (31)	35 (74)	20.1	Good
Wetland: fen	0	0 (0)	n/a	n/a	n/a
Wetland: wet prairie	2	38 (30) abundant *Phalaris arundinacea*	37 (78)	16.4	Good
Wetland: marsh	11	64 (46) abundant *Typha x glauca*	60 (72)	21.7	Good
Lake	5	n/a	n/a	n/a	n/a
Rivers, streams	3	35 (27)	32 (75)	13.6	Good
Riparian woodland	10	17 (9)	14 (57)	6.0	Fair
Total unique species	36	143 (131)	-	-	-
Riparian zone	23	87 (64)	-	-	Good

6.4 Species and Habitats of Conservation Concern

6.4.1 Federal Threatened and Endangered Species

6.4.1.1 Species observed

No species listed by the Endangered Species Act as Endangered or Threatened or associated critical habitat were observed during the field surveys in the AA. No whooping cranes were observed during the survey period. However, this was not unusual because part of the survey

was conducted outside of the migratory period through North Dakota and known sightings have been outside the region of the AA. CornellLab of Ornithology (2020a reports cranes observed near Valley City and Jamestown and west of Bismarck and Minot between 2015-2020, but none in Walsh County. No northern long-eared bats were found during the survey period. However, Walsh County is listed on the USFWS County Occurrence list (US Fish and Wildlife Service 2020d).

6.4.1.2 Preferred habitat evaluation

According to the USFWS County Occurrence list, Walsh County is potential territory for the whooping crane to stop in during spring and fall migration (US Fish and Wildlife Service 2020c). However, Walsh County is not within the core migration route (Pearse et al. 2015). Bylin Dam currently does not provide suitable habitat for whooping crane; therefore, is not likely to stop in during their migration. The adjacent cropland and grazed fields may be considered acceptable, temporary feeding sites, but human disturbance is common.

For the northern long-eared bat, the woodland habitat at Bylin Dam offers potential roosting and pup rearing habitat and lies within the known territory of the bat. Dead trees and trees with crevices and cavities were common and scattered throughout the woodland areas. This would be habitat for northern long-eared bats (**Figure D-10-11**) (US Fish and Wildlife Service 2020d).

Figure D-10-11: Examples of trees that maybe suitable habitat for northern long-eared bat.

6.4.2 Birds of USFWS Conservation Priority

6.4.2.1 Species observed

Of the USFWS list of migratory birds of concern, only *Leucophaeus pipixcan* (Franklin's gull) was observed.

6.4.2.2 Preferred habitat evaluation

Many of the birds on this list require open water, wetlands, natural stands of mature deciduous trees, or grasslands. The preferred habitats for these animals are located in the AA.

6.4.3 State Listed Plant Species

6.4.3.1 Species observed

There were no Level I plant species of conservation priority identified during the field survey.

6.4.3.2 Preferred habitat evaluation

Preferred habitat was found in the survey for *Asclepias lanuginosa* (**Table D-10-25)**, but the habitats are not suitable for most of the species of Level I concern. No key plant species potentially vulnerable to climate change were observed during the survey.

Table D-10-25: North Dakota plants of Level I conservation priority and potential presence at Bylin Dam.

Latin Name	Common Name	Confirmed or Potential Presence (preferred habitat present)
Allium canadense	meadow onion	Not likely
Asclepias lanuginosa	wooly milkweed	Potential
Astragalus neglectus	Cooper's milkvetch	Not likely
Botrychium campestre	prairie grapefern	no
Carex formosa	handsome sedge	no
Chenopodium subglabrum	smooth goosefoot	Not likely
Cypripedium candidum	white lady's slipper	Not likely
Eriogonum visheri	Dakota buckwheat	no
Helianthemum bicknellii, syn. Crocanthemum bicknellii	Bicknell's sunrose	no
Mentzelia pumila	dwarf mentzelia	no
Platanthera praeclara	western prairie fringed orchid	Not likely
Polygonum leptocarpum (syn. P. ramosissimum)	thin-fruited knotweed	no
Triantha glutinosa	sticky false-asphodel	no

6.4.4 State Listed Animal Species

6.4.4.1 Species observed

Of the Level I animal species of conservation priority, *Danaus plexippus* (monarch butterfly) and *Leucophaeus pipixcan* (Franklin's gull) were observed (**Table D-10-26**). *Pelecanus erythrorhynchos* (American white pelican), a Level II species, was observed in the lake habitat.

6.4.4.2 Preferred habitat evaluation

Within the AA the existing habitats present opportunities for many of animals of conservation concern. Of the Level I species, the following have the potential to be present: *Ammodramus bairdii, Ammodramus savannarum, Anaxyrus hemiophrys, Anthus spragueii, Botaurus lentiginosus, Buteo swainsoni, Calcarius ornatus, Chlidonias niger, Coccyzus erythropthalmus, Coturnicops noveboracensis, Danaus plexippus, Eptesicus fuscus, Lasmigona compressa, Leucophaeus pipixcan, Limosa fedoa, Margariscus nachtriebi, Myotis lucifugus, Myotis septentrionalis, Opheodrys vernalis, Phalaropus tricolor,* and *Podiceps auritus.* Many of the birds on this list require open water, wetlands, natural stands of mature deciduous trees, or grasslands. The toad and snake species require wetland margins. There are numerous trees suitable for bat roosting sites. *Danaus plexippus* (monarch butterfly) requires a variety of prairie or areas with forbs for feeding. The tame grassland habitat in the AA supports *Asclepias syriaca* (common milkweed) that the butterfly requires for breeding. The fish *Nocomis biguttatus* (hornyhead chub), a Level III species and known in the Forest River, requires pools and slow runs of clear, small rivers, as does the Level I species *Margariscus nachtriebi* (northern pearl dace). Overall, because the natural habitats required by sensitive animals are small, fragmented in the region, and subject to disproportionate edge effects of disturbance, these animals may not be present nor expand their distributions into the AA. Other animals on the list require habitat characteristics not present in the AA. No key species potentially vulnerable to climate change were observed within the AA.

Table D-10-26: North Dakota state animals of Level I conservation priority with potential presence at Bylin Dam.

Latin Name	Species	Confirmed or Potential Presence (preferred habitat present)
Ammodramus bairdii	Baird's sparrow	Potential
Ammodramus nelson	Nelson's sparrow	Not likely
Ammodramus savannarum	grasshopper sparrow	Potential
Anaxyrus hemiophrys	Canadian toad	Potential
Anthus spragueii	Sprague's pipit	Potential
Botaurus lentiginosus	American bittern	Potential
Buteo regalis	ferruginous hawk	Not likely
Buteo swainsoni	Swainson's hawk	Potential
Calcarius ornatus	chestnut-collared longspur	Potential
Chlidonias niger	black tern	Potential
Coccyzus erythropthalmus	black-billed cuckoo	Potential

Latin Name	Species	Confirmed or Potential Presence (preferred habitat present)
Coturnicops noveboracensis	yellow rail	Potential
Danaus plexippus	monarch butterfly	Confirmed
Eptesicus fuscus	big brown bat	Potential
Lasmigona compressa	creek heelsplitter	Potential
Leucophaeus pipixcan	Franklin's gull	Confirmed
Limosa fedoa	marbled godwit	Potential
Margariscus nachtriebi	northern pearl dace	Potential
Melanerpes erythrocephalus	red-headed woodpecker	Potential
Myotis lucifugus	little brown bat	Potential
Myotis septentrionalis	northern long-eared bat	Potential
Opheodrys vernalis	smooth green snake	Potential
Phalaropus tricolor	Wilson's phalarope	Potential
Podiceps auritus	horned grebe	Potential
Speyeria idalia	regal fritillary	Not likely

6.5 Mitigation Options for the Northern Long-eared Bat

The primary concern with the northern long-eared bat at this site would be disturbance to potential maternity/roost habitat. Pregnant northern long-eared bats will give birth to one pup during late spring to summer in North Dakota. Disturbance to roosting and nursery habitat while the northern long-eared bats are present (May through September) can potentially result in a “take” (death) of an individual. Tree removal during this period will have direct effect on individuals, colonies, and habitat. Noise and other human activities during construction that may cause disturbance can directly impact movement, especially during early and late evening time periods.

Minimization measures can be implemented to eliminate any direct effect on the northern long-eared bat, which would include construction practices that minimize disturbances. Construction should be timed as such to avoid disturbance in areas with potential roost habitat. Removal of trees should be performed between October 1 and April 1, which is outside the period of time when the bat is present.

7 Conclusions

The field survey identified six major habitat types following NDGFD categories and some additional subdivided wetland habitats: prairie, tame grassland, upland deciduous forest, wetlands (wet prairie, marsh) and lake, rivers and streams, and riparian zone. The survey identified 143 plant species and 36 animal species.

There were several plant species present in the AA that are either listed as noxious weeds or are considered troublesome, including *Asclepias syriaca* (common milkweed)*, Carduus nutans*

(musk thistle), *Cirsium arvense* (Canada thistle)*, Euphorbia esula* (leafy spurge)*, Melilotus officinalis* (white/yellow sweetclover)*, Phalaris arundinacea* (reed canary grass)*, Poa pratensis* (Kentucky blue grass)*, Sonchus arvensis* (perennial sow thistle)*,* and *Typha X glauca* (hybrid cattail)*. A. syriaca* is critical for survival of *Danaus plexippus* (monarch butterfly), so its ecosystem service value is extremely high and is beneficial for the habitats in the AA. There were no invasive animal species observed during the survey.

The quality of the various plant communities varied with the species diversity and the presence of non-native species. The riparian zone had the highest species richness, but the marsh showed high diversity for this community type. The prairie community had the lowest diversity, while the tame grassland showed surprisingly high species richness. The proportion of native species was between 57 % to 75 %. The communities showed overall a Biological Condition rating of “good” for the upland deciduous, wet prairie, marsh, rivers and streams, and the riparian zone, to “fair” for the prairie, tame grassland, and riparian woodland communities. This indicates the communities have been subject to mild to extreme changes in community structure with disturbance forcing species abundance toward fewer native species and greater proportion of tolerant taxa.

No federally listed threatened and endangered species were observed, but habitat for the northern long-eared bat is present. Of the USFWS list of migratory birds of concern, only *Leucophaeus pipixcan* (Franklin’s gull) was observed. Many of the birds on this list require open water, wetlands, natural stands of mature deciduous trees, or grasslands. The preferred habitats for these animals are located in the AA. There were no Level I plant species of conservation priority identified during the field survey. Preferred habitat was found in the survey for several plant species including *Allium canadense Astragalus neglectus, Chenopodium subglabrum,* and *Cypripedium candidum.* Of the state animal species of conservation priority, *Danaus plexippus* (monarch butterfly, Level I) *Leucophaeus pipixcan* (Franklin’s gull, Level I), and *Pelecanus erythrorhynchos* (American white pelican, Level II), were observed. Within the AA the existing habitats present opportunities for many of the animals of conservation concern. Of these, the following have the potential to be present: *Ammodramus bairdii, Ammodramus savannarum, Anaxyrus hemiophrys, Anthus spragueii, Botaurus lentiginosus, Buteo swainsoni, Calcarius ornatus, Chlidonias niger, Coccyzus erythropthalmus, Coturnicops noveboracensis, Danaus plexippus, Eptesicus fuscus, Lasmigona compressa, Leucophaeus pipixcan, Limosa fedoa, Margariscus nachtriebi, Myotis lucifugus, Myotis septentrionalis, Opheodrys vernalis, Phalaropus tricolor,* and *Podiceps auritus. Nocomis biguttatus* (hornyhead chub), a Level III species is known to be present in the Forest River. No key species potentially vulnerable to climate change were observed within the AA.

In general, the communities and habitats in the AA have experienced disturbance from introduced species, human activity, and habitat loss. This means the natural habitats required by sensitive animals are small, fragmented in the region, and subject to disproportionate edge effects of disturbance, but are important in the landscape. Preferred habitat does remain in the AA, so there is the potential for populations of federal and state listed species.

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9 Surveyor Credentials

MARK D. AANENSON, CMWP

HEI SENIOR ENVIRONMENTAL SCIENTIST

Education: Minnesota State University Moorhead – BS Biology

Professional Membership: MN Wetland Professionals Association

Certifications/Licenses: Minnesota Wetland Professional Certification (no. 1001)

Training: Board of Water and Soil Resources – Jurisdictional Delineation of Wetlands in Minnesota; Advanced Delineation Practicum; Hydrologic Monitoring; Minnesota Routine Assessment Method; Wetland Plant Identification; University of Minnesota St. Paul – Soils 5555 – Wetland Soils, Dr. Jay Bell; NRCS – Engineering Properties of Soils; Minnesota DNR Native Plant Community Field Guide Training; Minnesota DNR Native Plant Community Field Plant Identification, Sedges of Minnesota Laboratory and Field Identification, 25+ years of fieldwork experience in the Northern Plains, UMN Approved Self-study course: Grasses of the Northern Plains

DONNA JACOB, PhD, PWS, CMWP

HEI PROJECT MANAGER ENVIRONMENTAL

Education: Beloit College – BS Environmental Biology, University College Dublin – MSc Botany, University College Dublin – PhD Botany (wetland biogeochemistry)

Professional Membership: Society of Wetland Scientists, American Association for the Advancement of Science, Research Associate Professor Affiliate at North Dakota State University, elected to Minnesota School Board Association

Certifications/Licenses: Professional Wetland Scientist (no. 2672), Minnesota Wetland Professional Certification (no. 1267)

Training: 25 years' experience including applied science and basic research in ecology and wetlands (most recently Research Associate Professor, North Dakota State University, 30+ peer-review publications); vegetation and biological inventories; wetland bank application preparation, preparing applications for 404 permitting; wetland delineations and fieldwork in the US (MO, CO, NE, WI) and other regions (Europe, Central Asia); Minnesota Wetland Professional Wetland Delineator Course, Minnesota DNR Native Plant Community Field Guide Training; Minnesota DNR Native Plant Community Field Plant Identification, Sedges of Minnesota Laboratory and Field Identification, UMN Approved Self-study course: Grasses of the Northern Plains

EXHIBITS

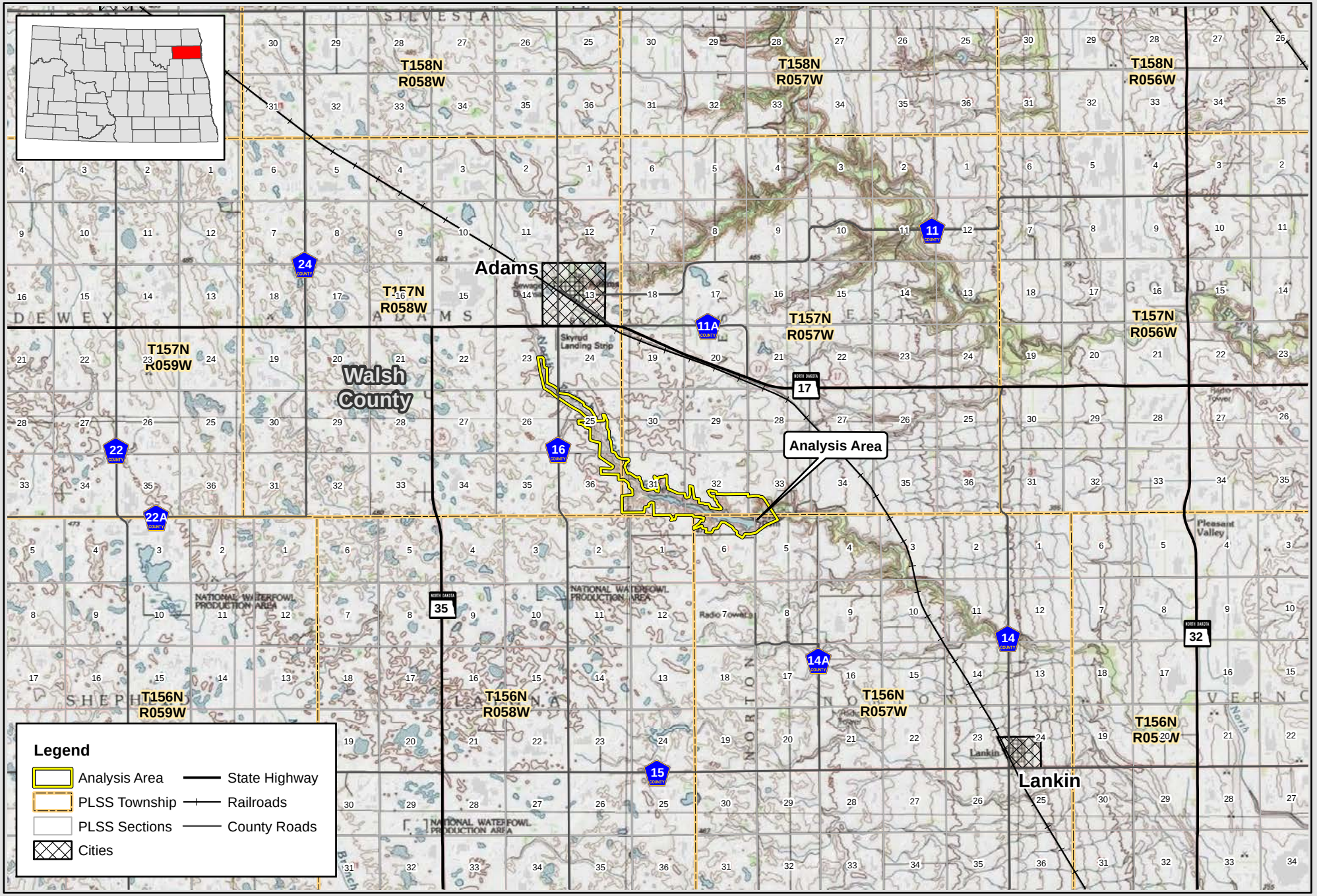

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Exhibit D-10-1: Project Location Map

North Branch Forest River Dam No. 1 (Bylin Dam)
Biological Inventory Report
Natural Resource Conservation Service (NRCS)

0 1 2 4 Miles

1 in = 2 miles

N W E S

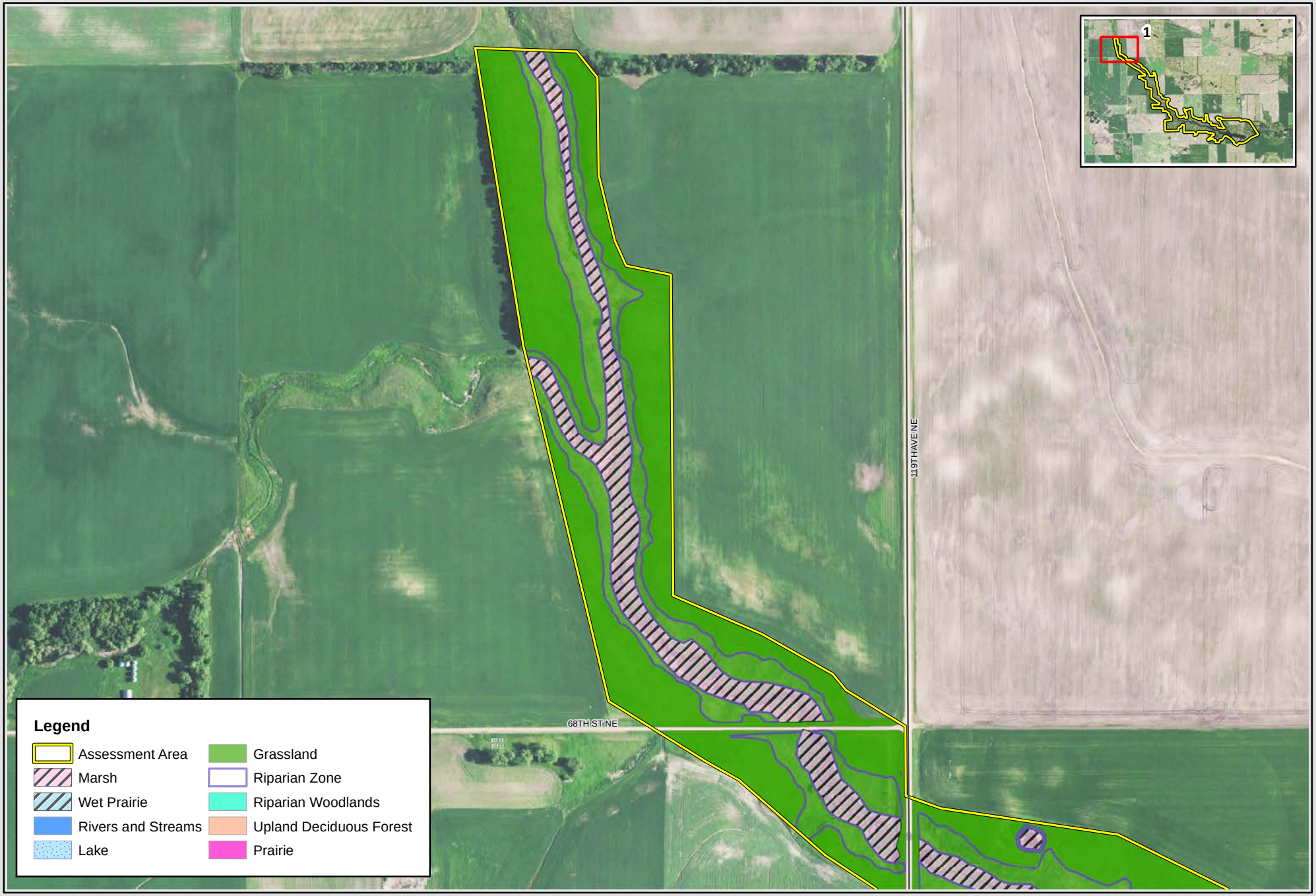

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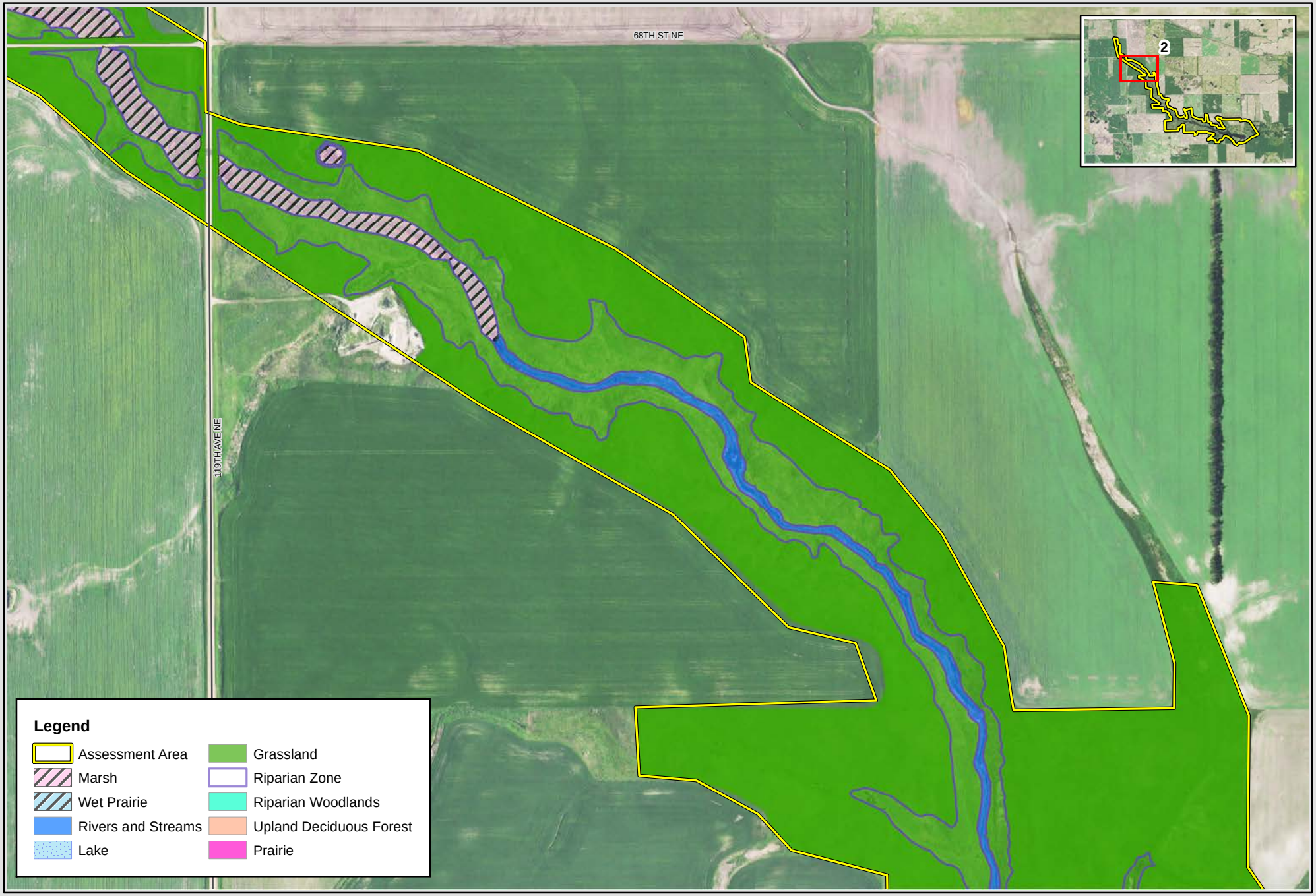
Exhibit D-10-2: Habitat/Plant Community Map

North Branch Forest River Dam No. 1 (Bylin Dam)
Biological Inventory Report
Natural Resource Conservation Service (NRCS)

0 250 500 1,000 Feet

1 inch = 500 feet

N W E S



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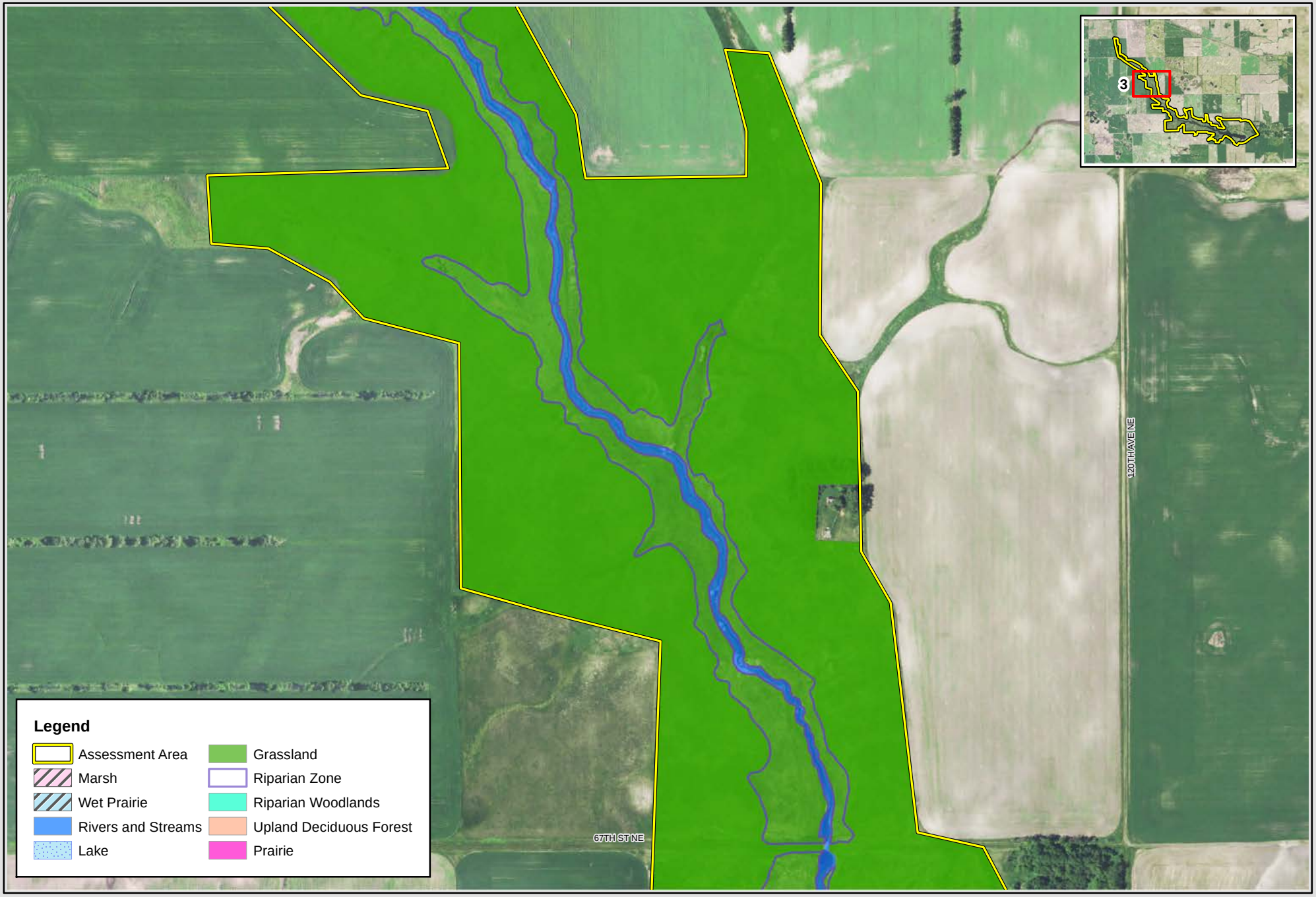

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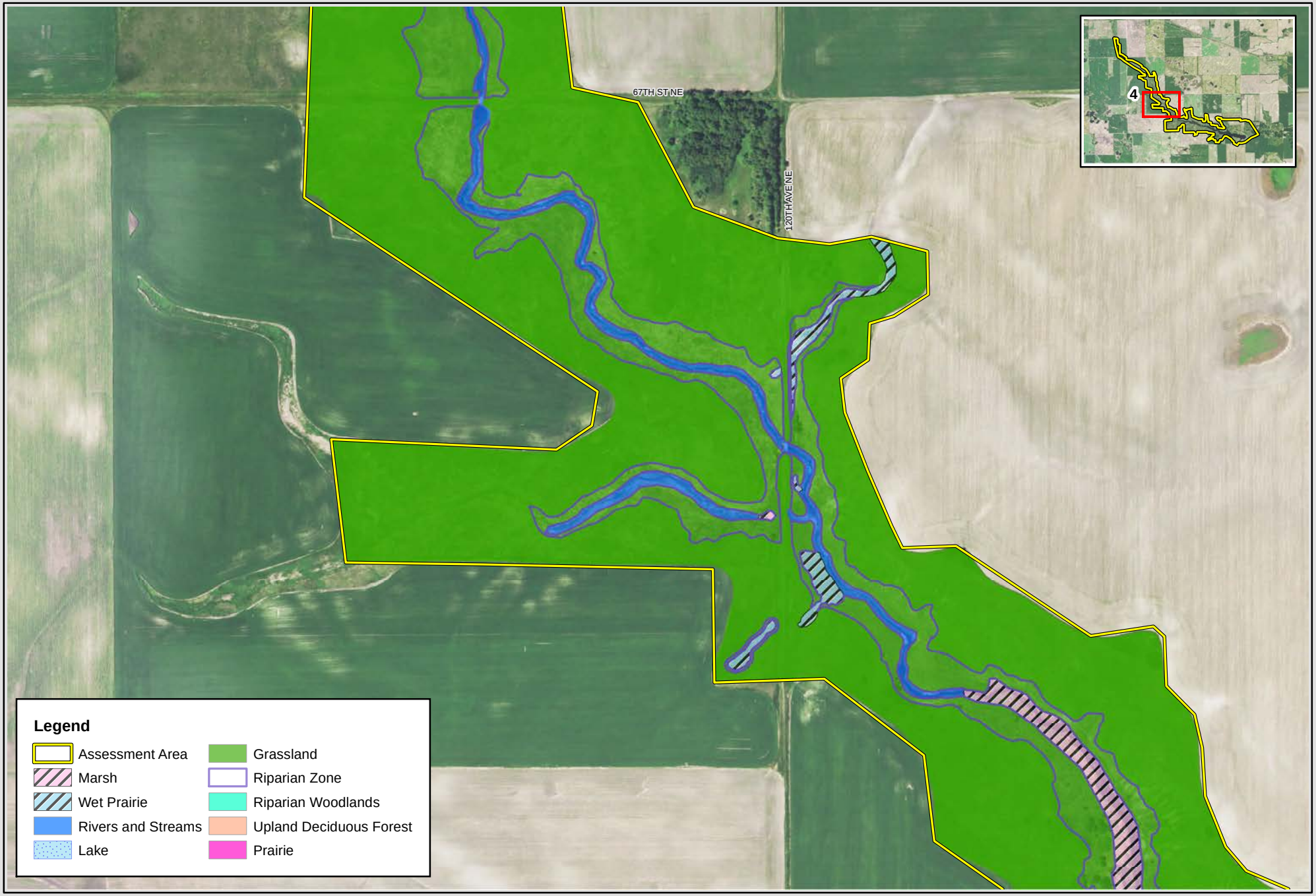

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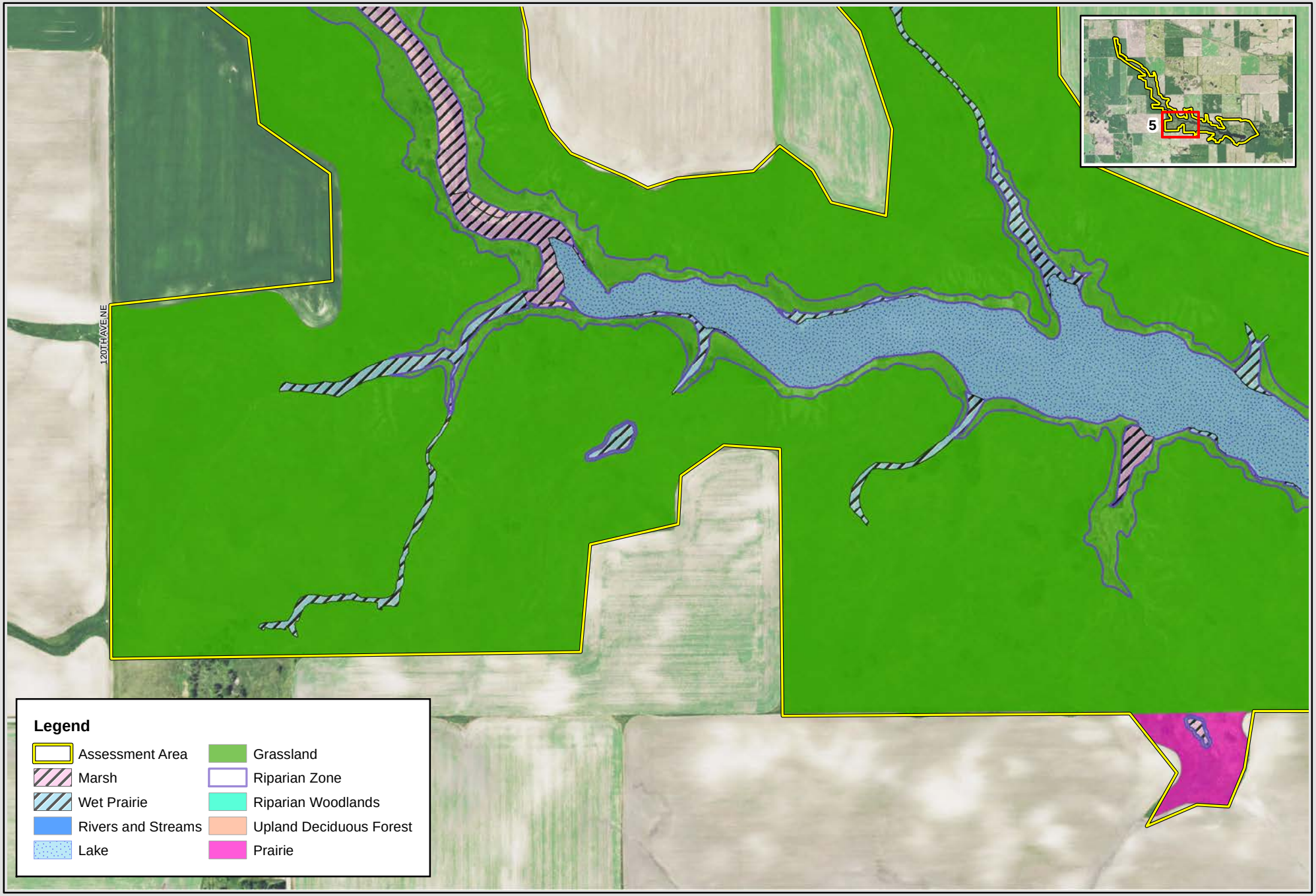

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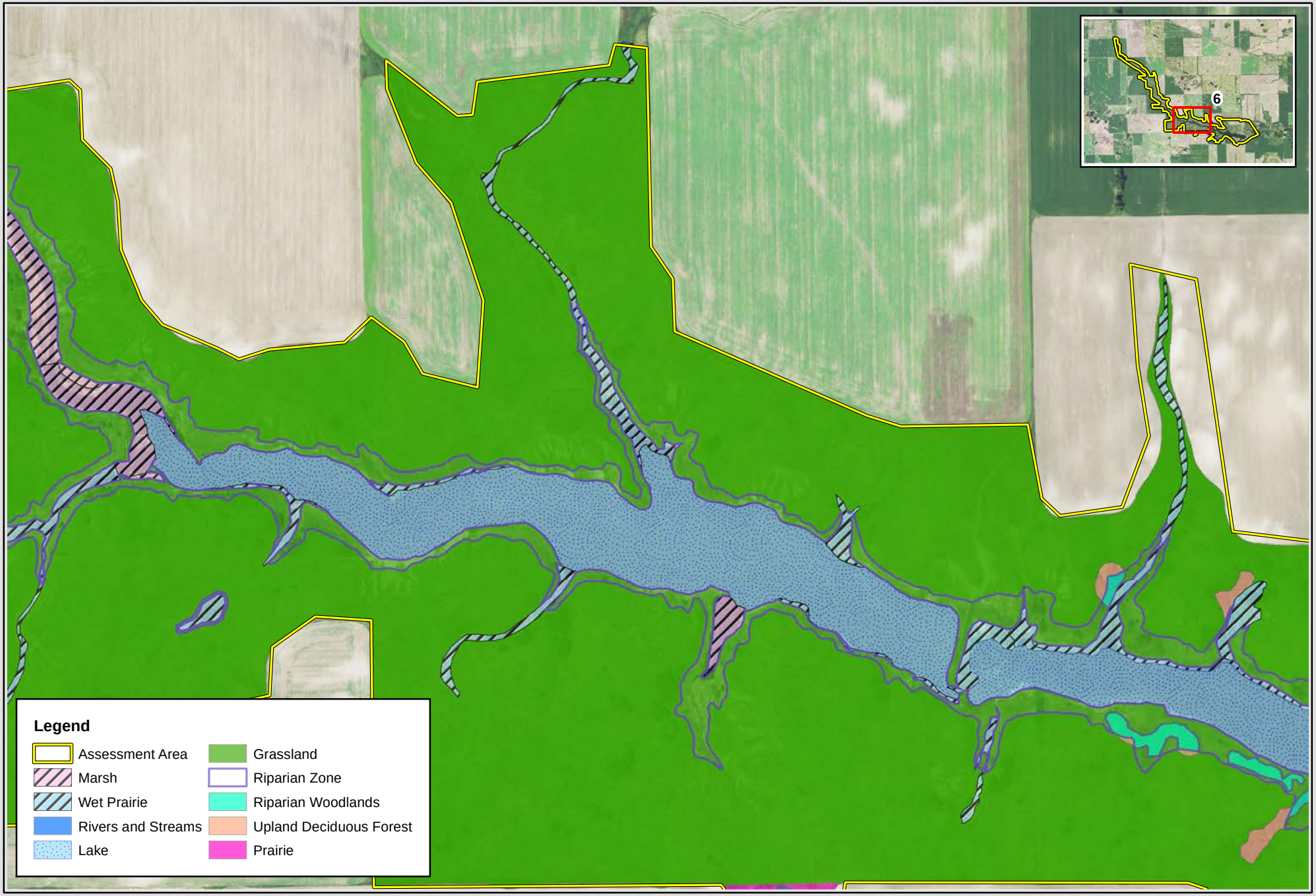

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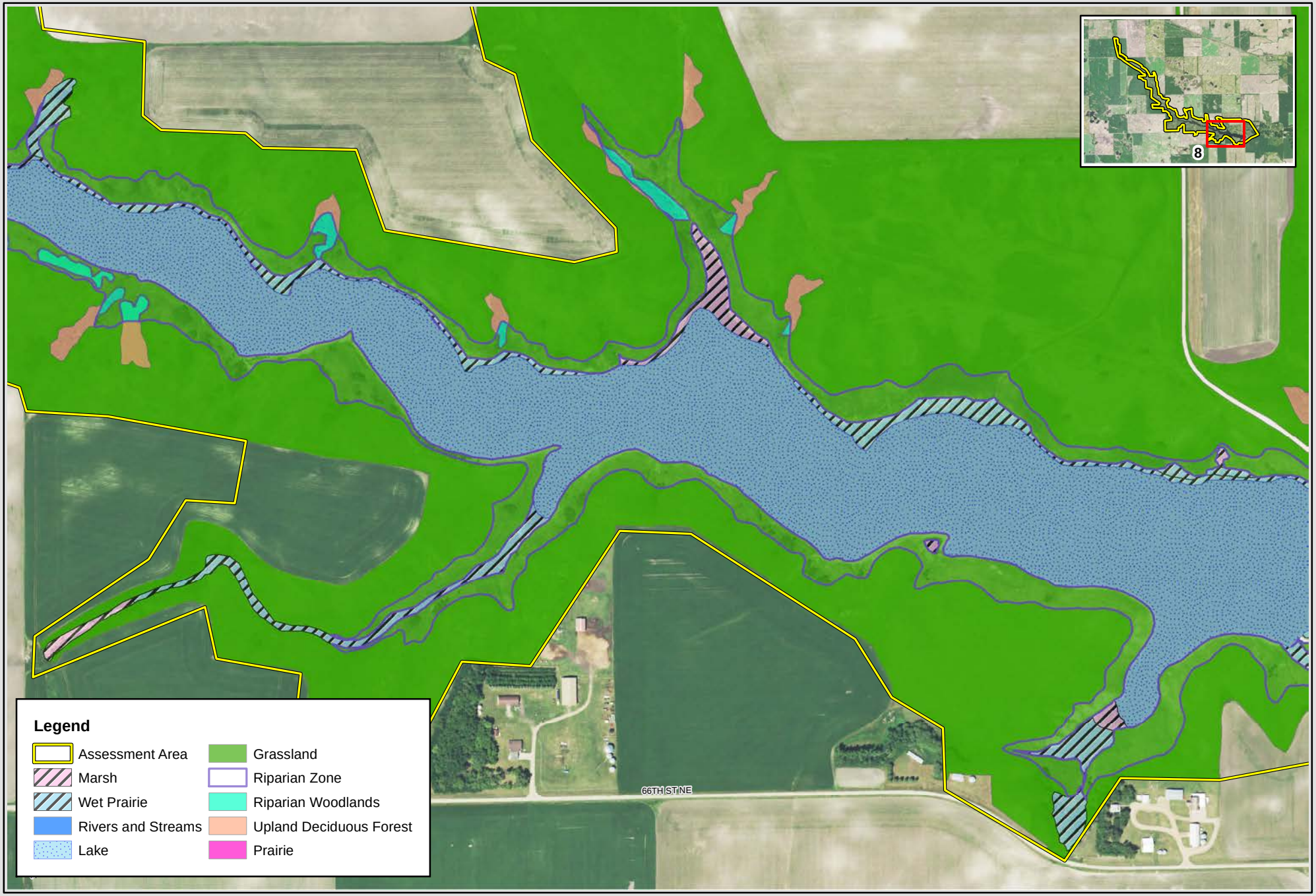

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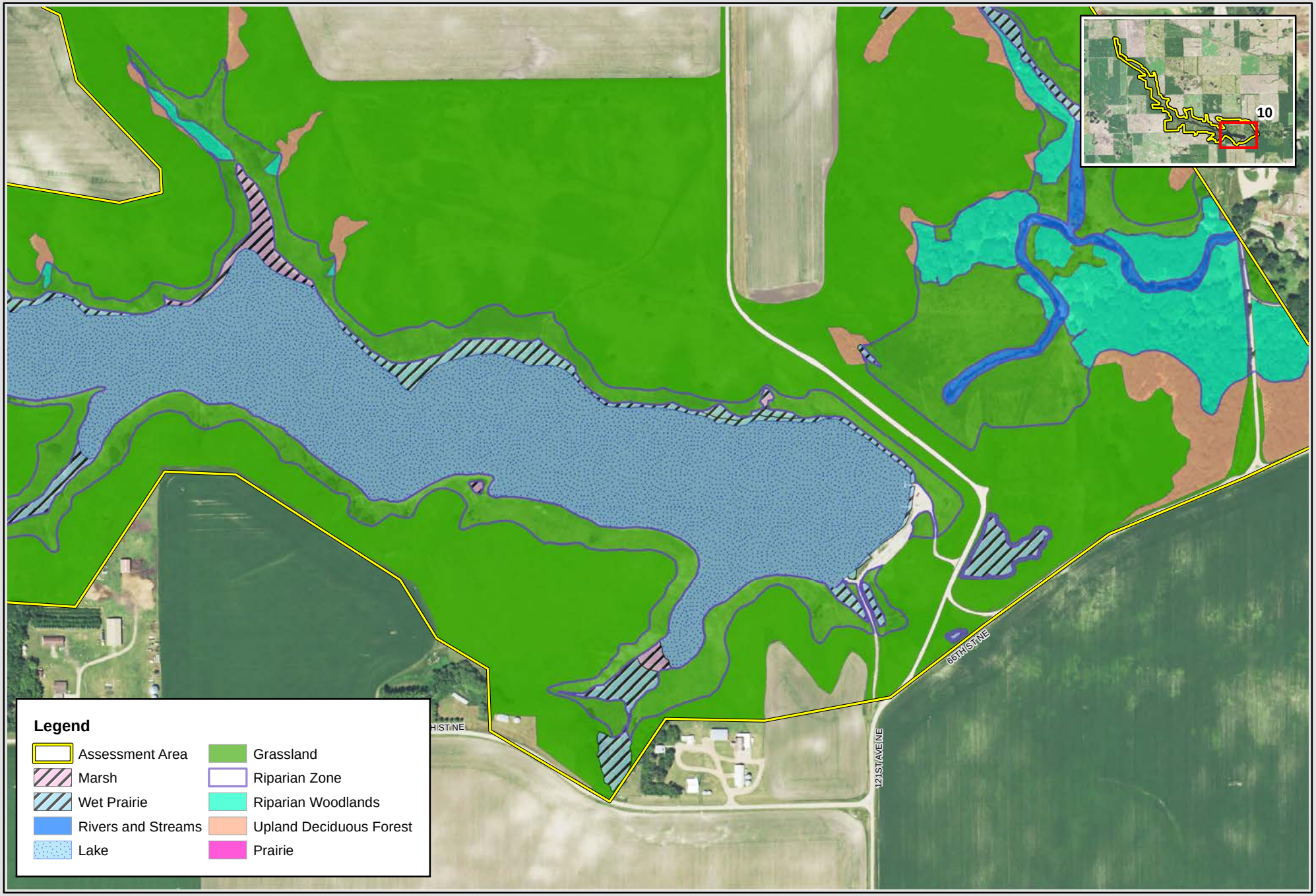

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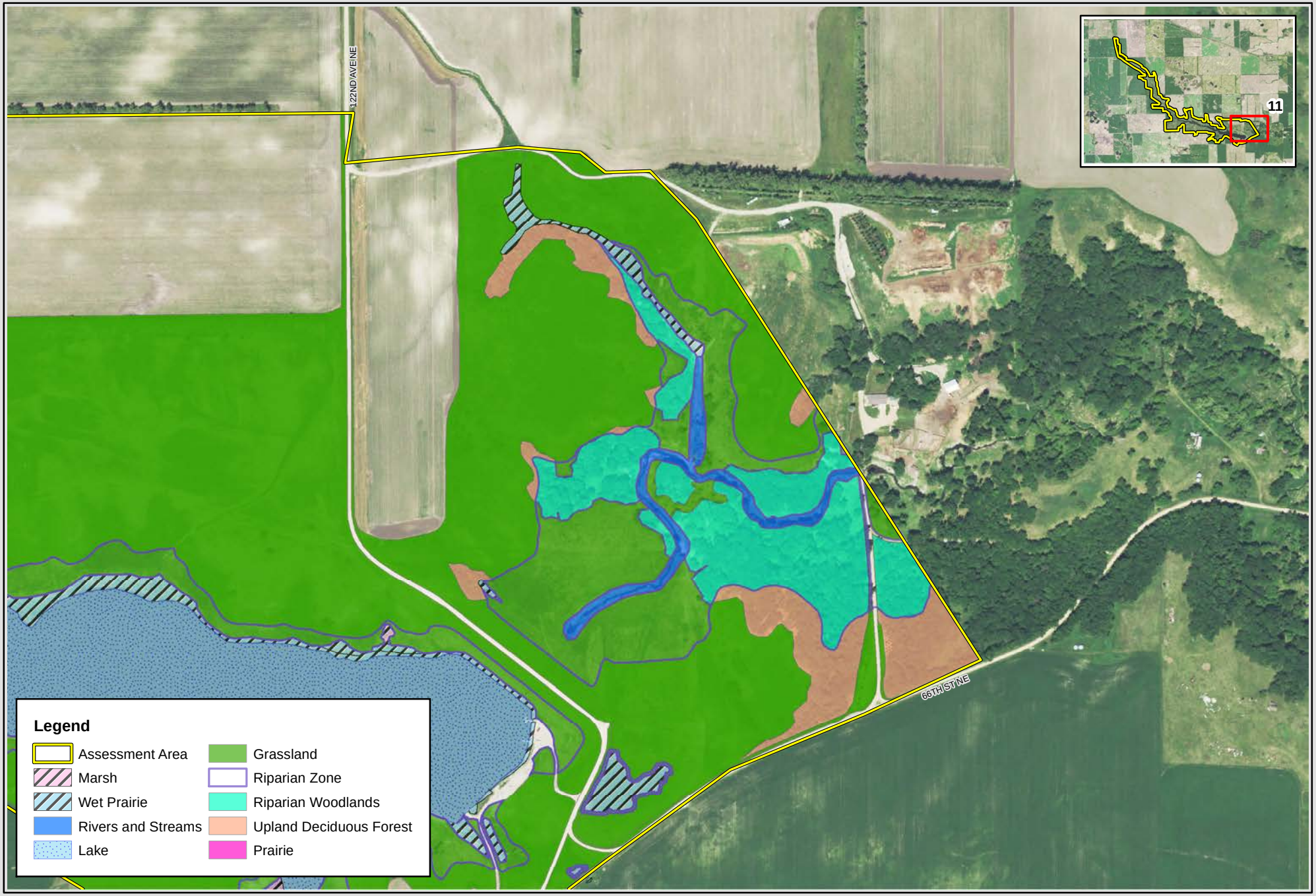

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Exhibit D-10-3: Riparian Zones Map

North Branch Forest River Dam No. 1 (Bylin Dam)
Biological Inventory Report
Natural Resource Conservation Service (NRCS)

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1 inch = 500 feet

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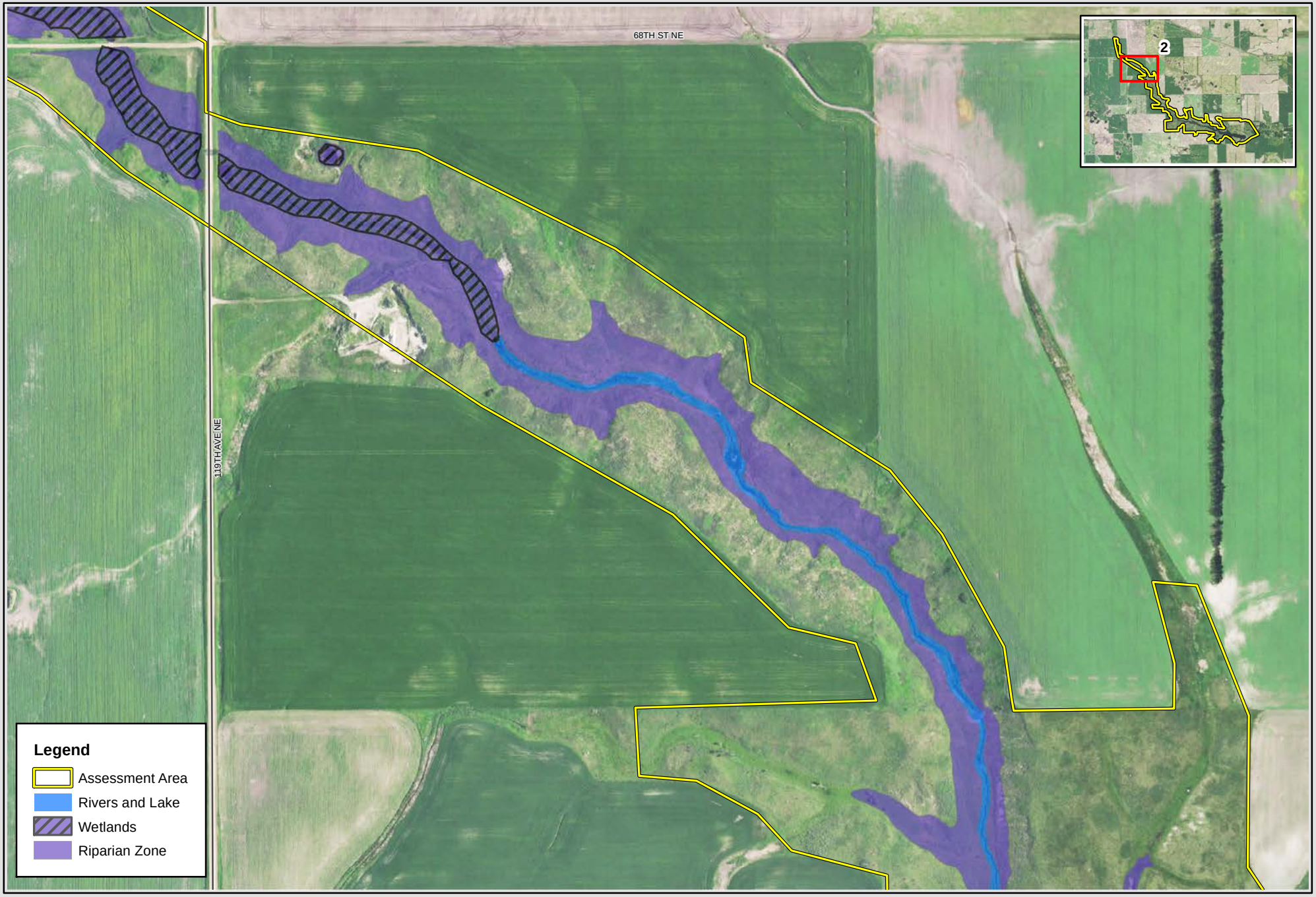

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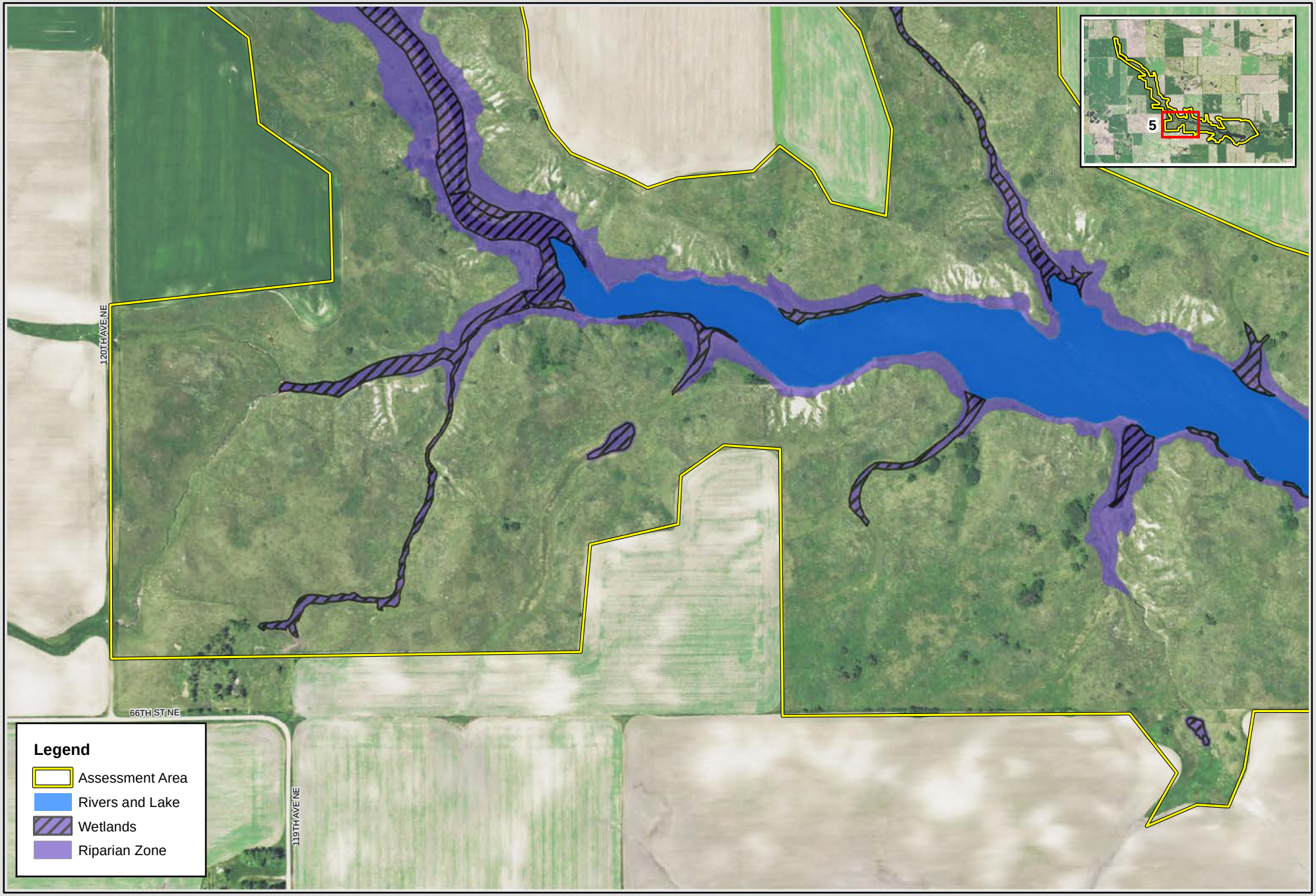

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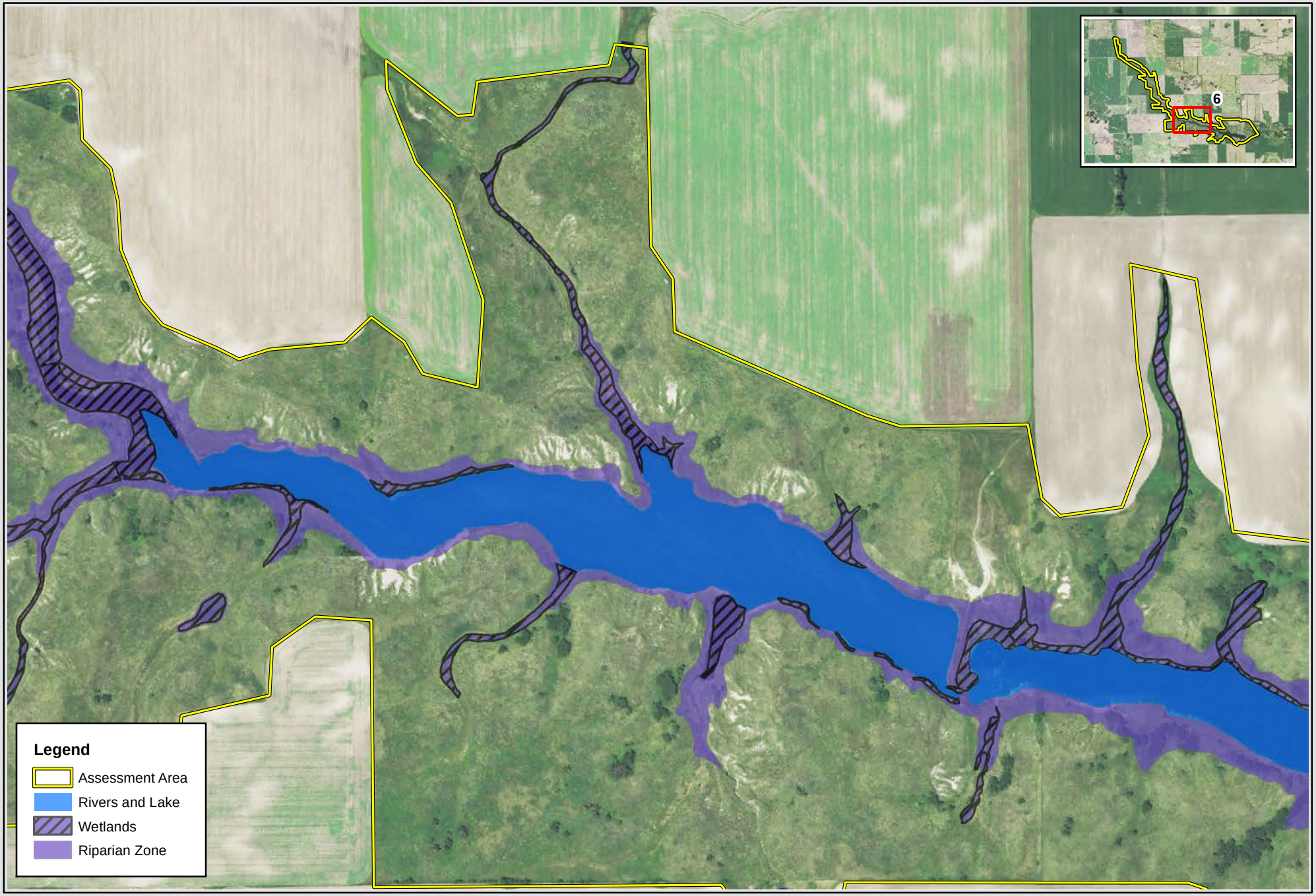

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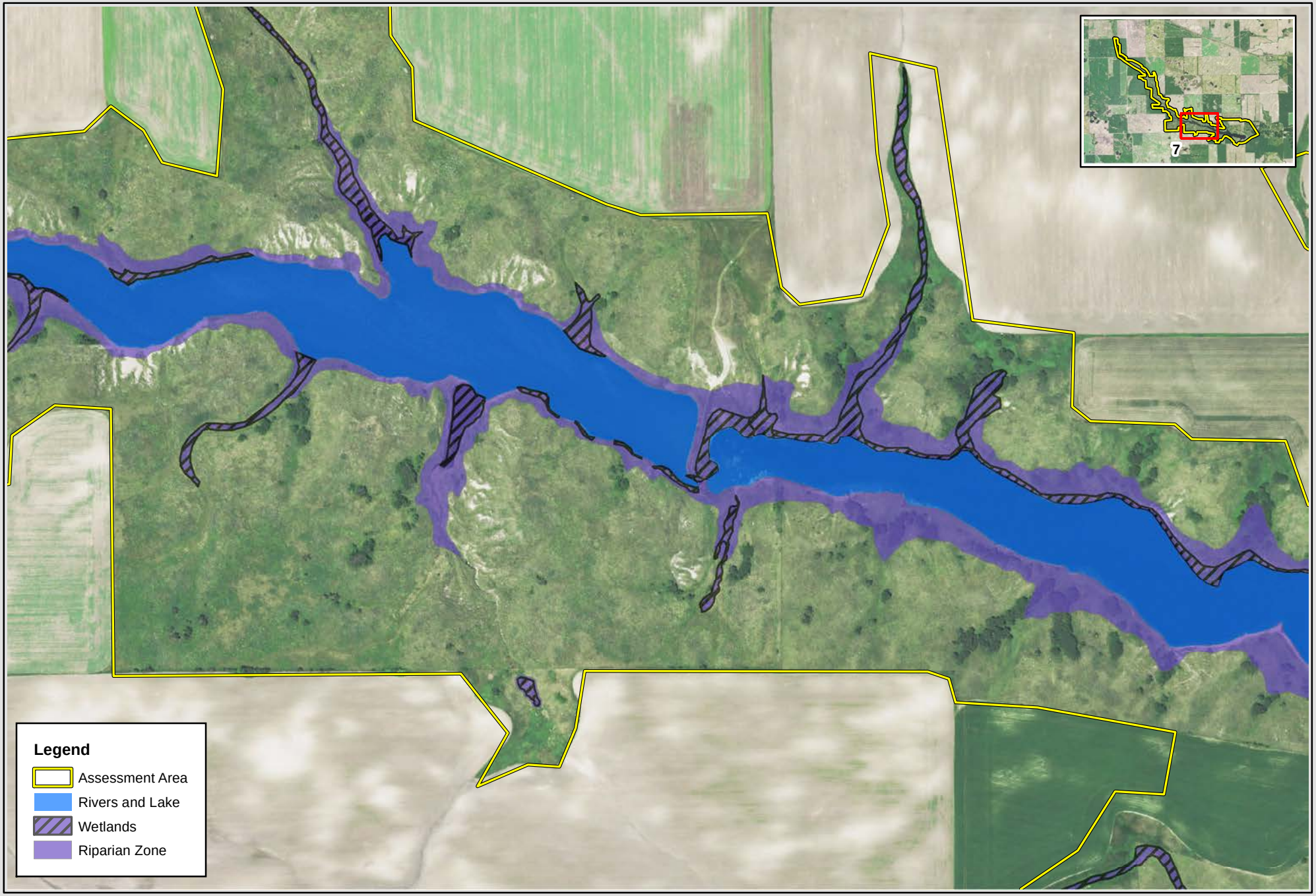

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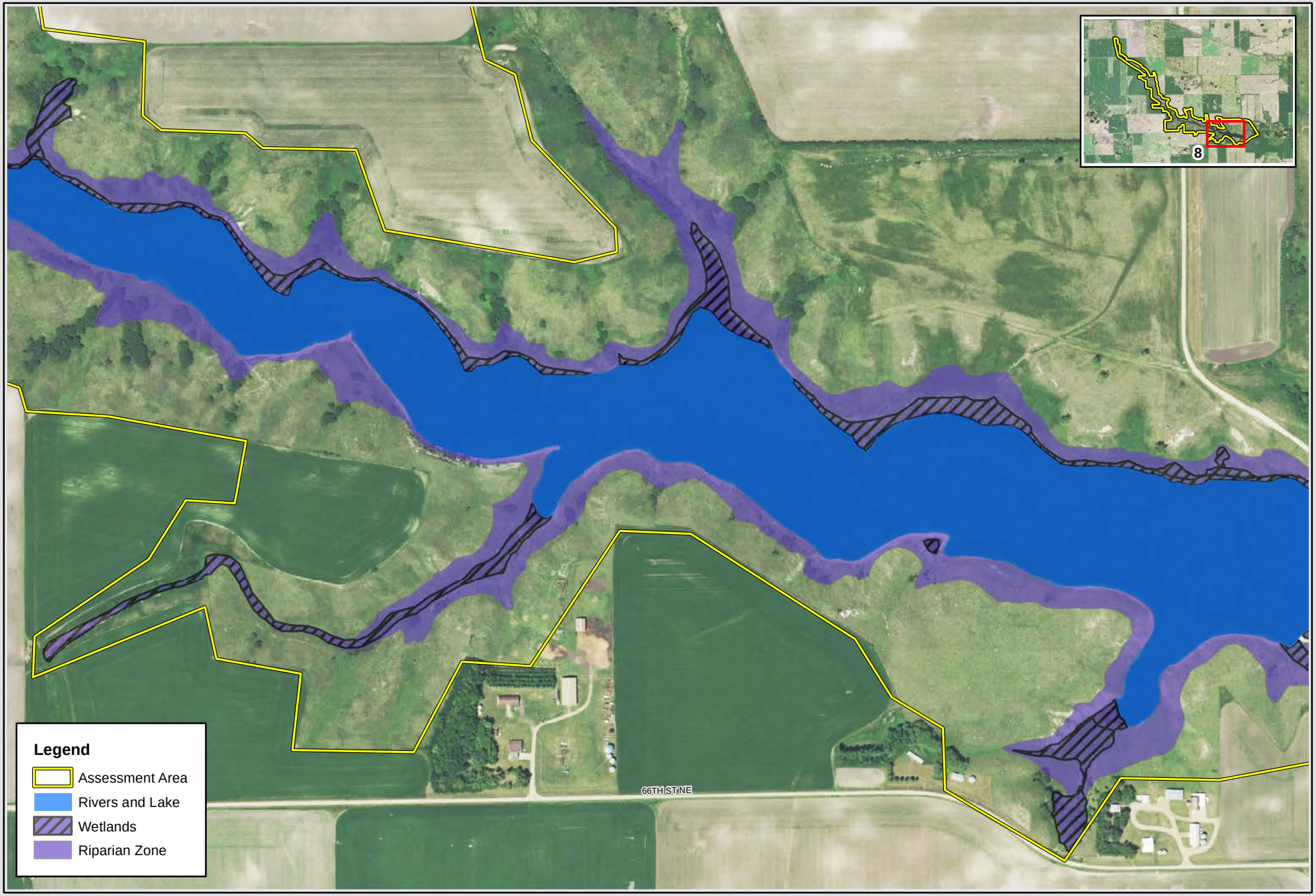

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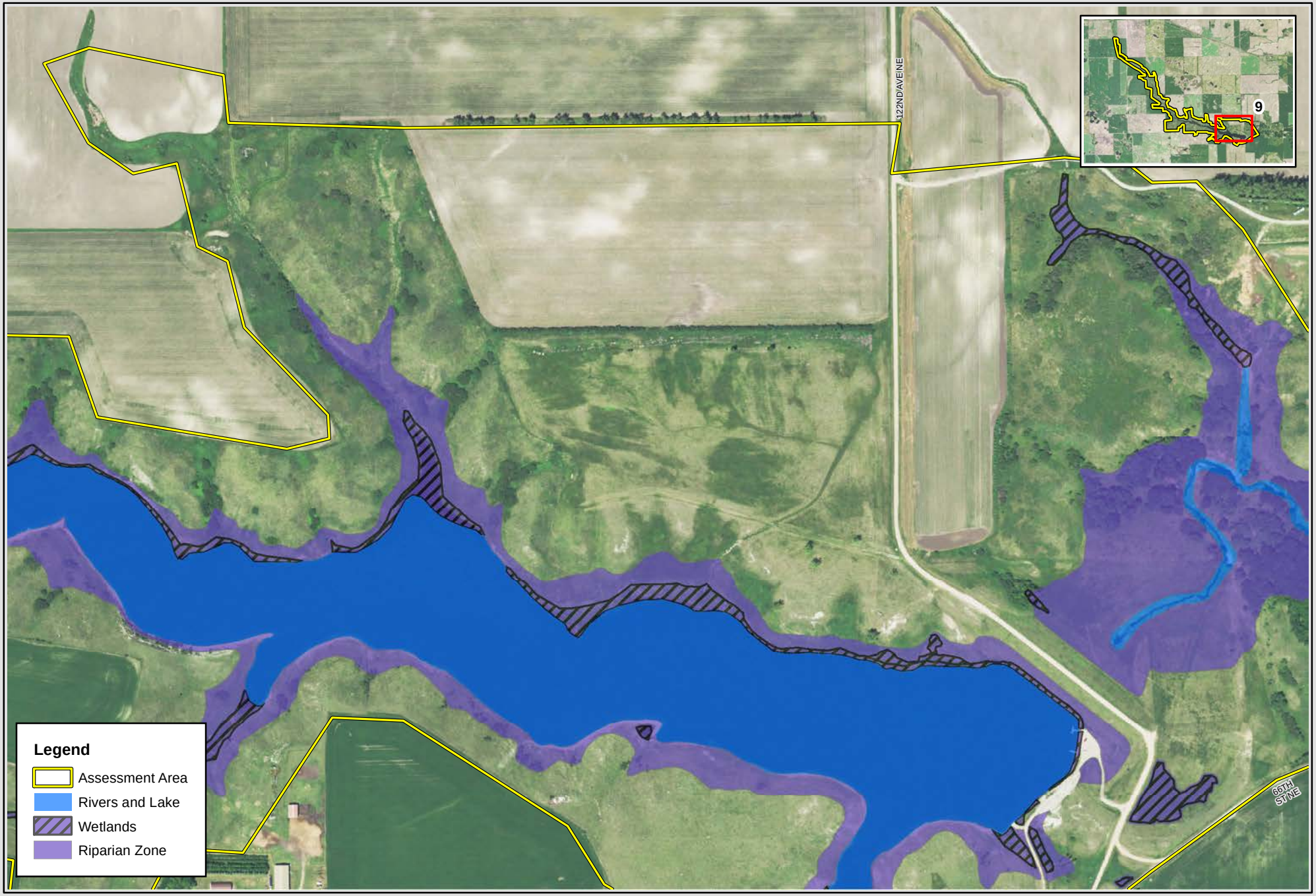

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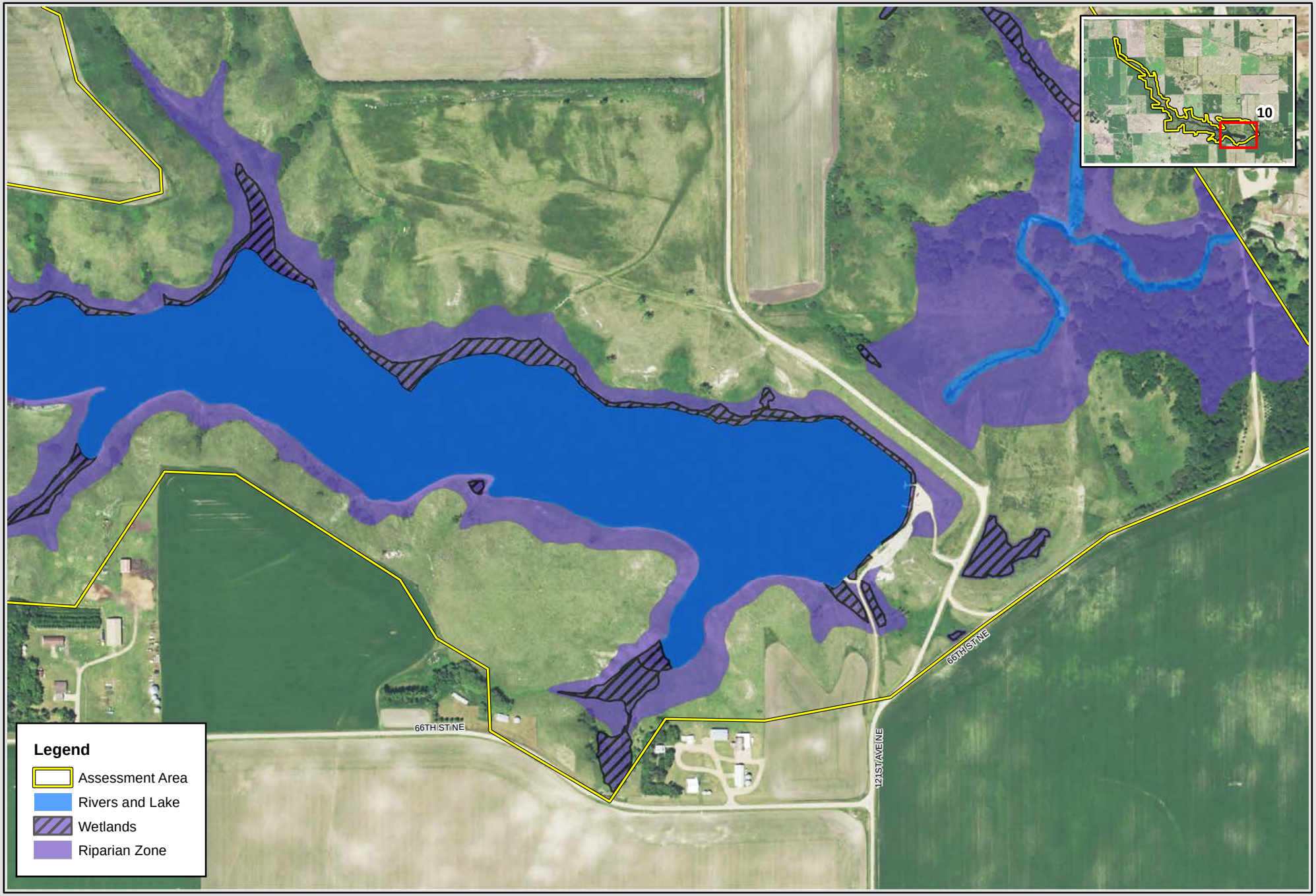
Biological Inventory Report
Natural Resource Conservation Service (NRCS)

0 250 500 1,000 Feet

1 inch = 500 feet

N W E S



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HOUSTON engineering, inc.

Exhibit D-10-3: Riparian Zones Map

North Branch Forest River Dam No. 1 (Bylin Dam)
Biological Inventory Report
Natural Resource Conservation Service (NRCS)

0 250 500 1,000 Feet

1 inch = 500 feet

N W E S

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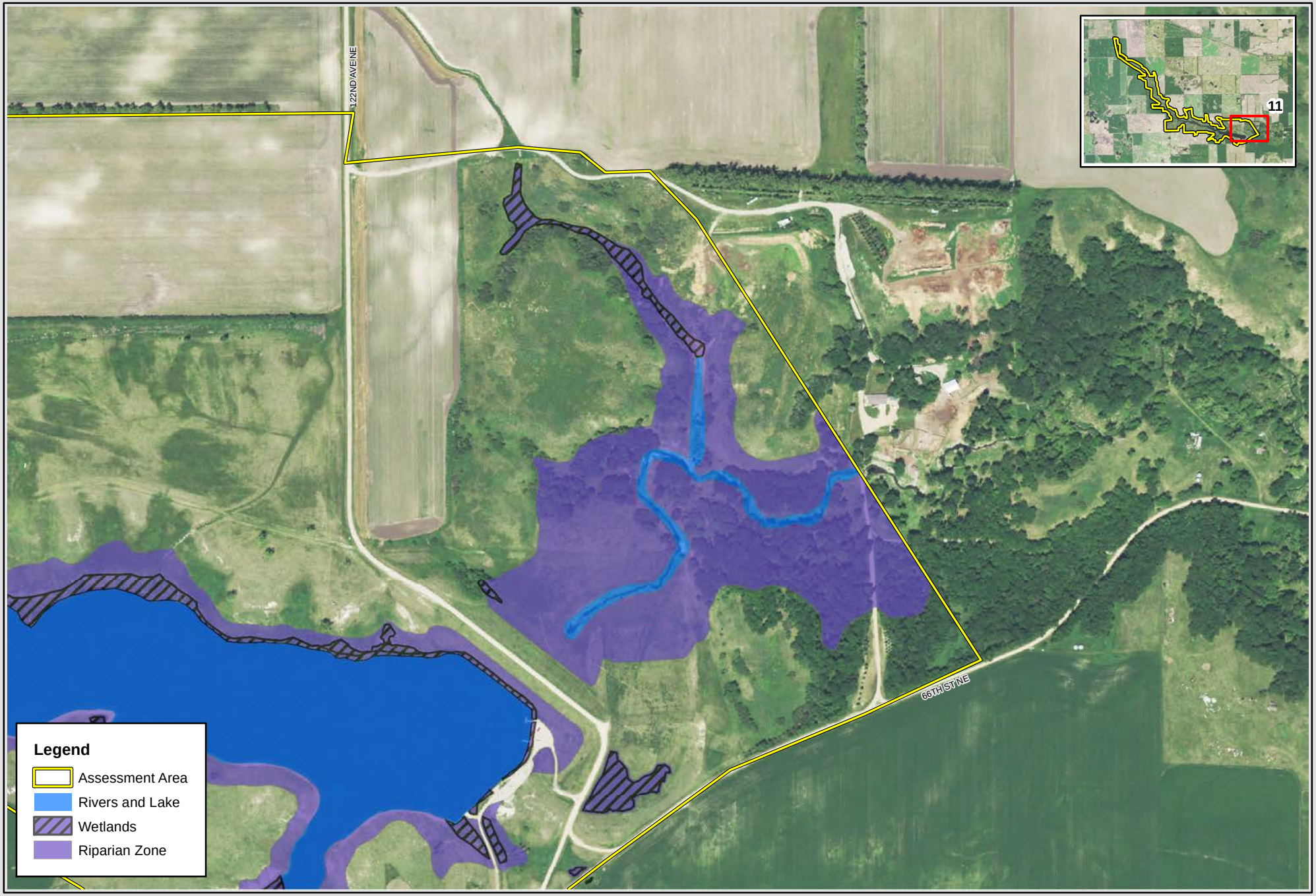

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HOUSTON engineering, inc.

Exhibit D-10-3: Riparian Zones Map

North Branch Forest River Dam No. 1 (Bylin Dam)
Biological Inventory Report
Natural Resource Conservation Service (NRCS)

0 250 500 1,000 Feet

1 inch = 500 feet

N W E S

APPENDIX D-10-A

Plant Species List

Appendix D-10-A

Species name	Native status	Taxon	Prairie	Tame grassland	Upland deciduous forest	Wet prairie	Marsh	Rivers and streams	Riparian woodlands
Acer negundo		tree/shrub			X	X			X
Achillea millefolium		forb		X	X				
Agrostis stolonifera		grass		X			X	X	
Alisma subcordatum		forb					X	X	
Allium stellatum		forb		X					
Alopecurus arundinaceus	I	grass		X		X	X	X	
Alopecurus pratensis	I	forb		X		X			
Amelanchier alnifolia		shrub		X	X				
Amorpha canescens		forb		X					
Amphicarpaea bracteata		forb			X				X
Andropogon gerardii		grass		X					
Anemone canadensis		forb			X				
Anemone cylindrica		forb		X	X		X		
Apocynum cannabinum		forb		X					
Artemisia biennis	I	forb		X	X		X		
Artemisia campestris		forb					X		
Artemisia ludoviciana		forb		X					
Asclepias syriaca		forb		X					
Beckmannia syzigachne		grass				X	X		
Bidens cernua		forb					X	X	
Bromus inermis	I	grass	X	X	X	X	X		
Calamagrostis canadensis		grass		X		X	X		
Calamagrostis stricta		grass					X		
Campanula rotundifolia		forb		X					
Caragana arborescens	I	shrub			X				
Carduus nutans	I	forb		X					
Carex atherodes		graminoid				X	X		
Carex cryptolepis		graminoid				X			
Carex lacustris		graminoid					X		
Carex pensylvanica		graminoid			X				
Carex retrorsa		graminoid						X	

Species names and native status from US Department of Agriculture Plants Database (2020), I - introduced (all non-specified species are native), noxious status from North Dakota Department of Agriculture 2017a.

Appendix D-10-A

Species name	Native status	Taxon	Prairie	Tame grassland	Upland deciduous forest	Wet prairie	Marsh	Rivers and streams	Riparian woodlands
Carex sp.		graminoid	X	X	X			X	X
Carex sprengelii		graminoid			X				
Carex vulpinoidea		graminoid						X	
Castilleja coccinea		forb		X					
Chamaecrista fasciculata		forb			X				
Chenopodium album	I	forb		X					X
Cicuta maculata		forb				X	X	X	
Cirsium arvense	I, noxious	forb	X	X		X	X		
Cornus sericea L. ssp. sericea		shrub					X		
Corylus americana		tree/shrub		X	X				
Dalea purpurea		forb		X					
Echinochloa crus-galli	I	grass				X	X		
Elaeagnus commutata		shrub		X					
Eleocharis erythropoda		graminoid		X					
Eleocharis palustris		graminoid		X		X	X		
Elymus repens	I	grass		X		X	X		X
Elymus virginicus		grass		X					
Epilobium sp.		forb			X		X		
Equisetum arvense		graminoid					X		
Erigeron annuus	I	forb		X					
Erigeron philadelphicus		forb			X				
Euphorbia esula	I, noxious	forb		X	X		X	X	
Euthamia graminifolia		forb	X	X			X	X	
Fraxinus pennsylvanica		tree/shrub		X	X				
Galeopsis tetrahit	I	forb			X		X	X	X
Galium aparine		forb							X
Galium boreale		forb			X				
Glyceria grandis		grass				X	X	X	
Glycyrrhiza lepidota		forb		X					
Grindelia squarrosa		forb		X		X	X		
Hackelia virginiana		forb			X				

Species names and native status from US Department of Agriculture Plants Database (2020), I - introduced (all non-specified species are native), noxious status from North Dakota Department of Agriculture 2017a.

Appendix D-10-A

Species name	Native status	Taxon	Prairie	Tame grassland	Upland deciduous forest	Wet prairie	Marsh	Rivers and streams	Riparian woodlands
Helianthus strumosus		forb					X		
Hordeum jubatum		grass				X	X		
Juncus arcticus (syn. J. balticus)		graminoid		X		X	X		
Lathyrus ochroleucus		forb			X				
Leersia oryzoides		grass					X		
Lemna minor		aquatic				X	X		
Lemna trisulca		aquatic						X	
Leucanthemum vulgare	I	forb		X					
Liatris aspera		forb	X	X					
Lycopus americanus		forb				X	X		
Matricaria chamomilla	I	forb						X	
Medicago lupulina	I	forb		X	X				
Medicago sativa	I	forb		X					
Melilotus officinalis	I	forb		X			X		
Mentha arvensis		forb					X	X	
Nassella viridula		grass		X					
Oxalis stricta	I	forb		X					X
Panicum virgatum		grass				X			
Parthenocissus vitacea		vine			X				
Persicaria amphibia		forb		X		X	X	X	
Persicaria lapathifolia	I	forb					X		
Persicaria pensylvanica		forb					X	X	
Persicaria punctata		forb				X			
Phalaris arundinacea		grass		X		X	X	X	
Phleum pratense	I	grass					X		X
Plantago major	I	forb					X		
Poa pratensis	I	grass	X	X	X	X	X	X	X
Populus deltoides		tree/shrub			X				
Potamogeton sp.		Aquatic							
Potentilla anserina		forb				X	X	X	

Species names and native status from US Department of Agriculture Plants Database (2020), I - introduced (all non-specified species are native), noxious status from North Dakota Department of Agriculture 2017a.

Appendix D-10-A

Species name	Native status	Taxon	Prairie	Tame grassland	Upland deciduous forest	Wet prairie	Marsh	Rivers and streams	Riparian woodlands
Prunus pensylvanica		tree/shrub							X
Prunus serotina		tree/shrub			X				
Prunus virginiana		tree/shrub			X				
Psoralidium tenuiflorum		shrub		X					
Quercus macrocarpa		tree/shrub			X				
Ratibida columnifera		forb		X					
Rhamnus cathartica	I	tree/shrub			X				X
Rosa arkansana		shrub		X	X				
Rudbeckia laciniata		forb					X		
Rumex altissimus		forb					X	X	
Rumex crispus	I	forb					X	X	
Sagittaria latifolia		forb				X	X	X	
Salix amygdaloides		tree/shrub					X		X
Salix interior		shrub				X	X	X	
Salix petiolaris		tree/shrub					X		
Schoenoplectus pungens		graminoid				X			
Schoenoplectus tabernaemontani		graminoid				X	X	X	
Scirpus atrovirens		graminoid		X		X	X	X	
Scirpus pallidus		graminoid				X			
Shepherdia argentea		shrub		X					
Sium suave		forb				X			
Solidago canadensis		forb	X	X		X			
Solidago nemoralis		forb		X	X		X		
Solidago rigida		forb		X					
Sonchus arvensis	I	forb					X		
Sparganium eurycarpum		forb					X	X	
Spartina pectinata		grass		X		X	X	X	
Sporobolus heterolepis		grass	X						
Symphyotrichum boreale		forb		X					
Symphyotrichum ericoides		forb		X			X	X	

Species names and native status from US Department of Agriculture Plants Database (2020), I - introduced (all non-specified species are native), noxious status from North Dakota Department of Agriculture 2017a.

Appendix D-10-A

Species name	Native status	Taxon	Prairie	Tame grassland	Upland deciduous forest	Wet prairie	Marsh	Rivers and streams	Riparian woodlands
Symphyotrichum laeve		forb				X			
Symphyotrichum lanceolatum		forb		X		X	X	X	
Symphyotrichum lateriflorum		forb					X	X	
Taraxacum officinale	I	forb		X	X		X		X
Thalictrum dioicum		forb			X				
Thinopyrum intermedium	I	grass		X			X	X	
Tragopogon dubius	I	forb		X					
Trifolium hybridum	I	forb			X				
Trifolium pratense	I	forb		X					
Trifolium repens	I	forb		X					
Typha latifolia		graminoid					X		
Typha x glauca	I	graminoid				X	X	X	
Ulmus americana		tree/shrub			X				X
Ulmus rubra		tree/shrub			X				
Urtica dioica		forb		X	X	X	X	X	X
Verbena hastata		forb							
Veronica catenata		forb		X				X	
Vicia americana		forb			X				
Vicia sp.		forb			X				
Viola sp.		forb			X		X		X

Species names and native status from US Department of Agriculture Plants Database (2020), I - introduced (all non-specified species are native), noxious status from North Dakota Department of Agriculture 2017a.

APPENDIX D-10-B

Animal Species List

Appendix D-10-B

Species Name	Taxon	Prairie	Tame grassland	Upland deciduous forest	Wet prairie	Marsh	Lake	Rivers and streams	Riparian woodlands
Aeshna sp. (dragonfly)	insect		X			X			
Anaxyrus sp. (toad)	amphibian					X			
Apis sp. (honey bee)	insect		X						
Bombycilla cedrorum (cedar waxwing)	bird					X			
Buteo jamaicensis (red-tailed hawk)	bird								X
Charadrius vociferus (killdeer)	bird						X		
Contopus virens (Eastern wood pewee)	bird								X
Cyanocitta cristata (blue jay)	bird								X
Danaus plexippus (monarch butterfly)	insect			X					
Hirundo rustivca (barn swallow)	bird						X	X	
Hyla chrysoscelis (tree frog)	amphibian								X
Icterus galbula (oriole)	bird			X					
Leucophaeus pipixcan (franklin gull)	bird					X			
Libellula sp. (dragonfly)	insect				X				
Lithobates pipiens (northern leopard frog)	amphibian		X			X			
Lithobates sylvaticus (wood frog)	amphibian			X		X			
Luxilus sp. (shiner minnows)	fish							X	
Mareca strepera (gadwall)	bird						X		
Melospiza melodia (song sparrow)	bird								X
Mephitis mephitis (skunk)	mammal			X					
Odocoileus virginianus (white-tailed deer)	mammal		X	X					
Orconectes immunis (calico crayfish)	arthropod						X		
Pelecanus erythrorhynchos (white pelican)	bird						X		
Petrochelidon pyrrhonota (cliff swallow)	bird							X	
Phoebis sennae (cloudless sulphur butterfly)	insect		X						
Pieris rapae (cabbage butterfly)	insect		X	X		X			X
Poecile atricapillus (black-capped chickadee)	bird					X			
Pseudacris maculata (chorus frog)	amphibian		X						
Sitta carolinensis (white-breasted nuthatch)	bird								X
Spinus tristis (gold finch)	bird			X		X			X
Sympetrum sp. (dragonfly)	insect		X		X	X			
Tamiasciurus hudsonicus (red squirrel)	mammal			X					
Thomomys talpoides (northern pocket gopher)	mammal		X						
Turdus migratorius (American robin)	bird			X					X
Zenaida macroura (mourning dove)	bird								X
Zygoptera sp. (damselfly)	insect					X			