Heartland
ECOLOGICAL GROUP INC
506 Springdale Street, Mount Horeb, WI 53572

August 14, 2023, amended October 2, 2023 and July 15, 2024

Mr. Adam Waszak
City of Verona
Park and Urban Forestry Director/Interim Public Works Director
410 Investment Ct.
Verona, WI 53593
adam.waszak@ci.verona.com

RE: Rare Species Surveys and Habitat Assessment, Dairy Ridge and Country View Roads, City and Town of Verona, Dane County, Wisconsin

Dear Mr. Waszak:

Heartland Ecological Group, Inc. (Heartland) conducted rare plant surveys and habitat assessments on behalf of the City of Verona for three local roadway improvement projects on August 1, 2023 (collectively the "Study Area"). The Study Area is located along portions of Dairy Ridge Road and Country View Road as well as a proposed new road crossing between Dairy Ridge Road and Country View Road, which crosses the Sugar River and its adjacent wetland areas. The Study Area is within the City and Town of Verona, Township 6 North, Range 8 East, Sections 8, 17, and 18 (Figure 1, Attachment A). Rare plant surveys and habitat assessments were conducted for the following four species that could potentially be present within the Study Area: white lady's slipper (*Cypripedium candidum*), eastern prairie white fringed orchid (*Platanthera leucophaea*), prairie parsley (*Polytaenia nuttallii*), and prairie bush-clover (*Lespedeza leptostachya*). This summary report provides information on habitat requirements for the four plants, a description of survey methods, results, conclusion, figures depicting the Study Area and habitat types observed, and representative photographs of the Study Area.

<u>October 2, 2023 Amendment and Additional Study Areas</u>

Following completion of this field assessment and submittal of this report on August 14, 2023, the City of Verona requested that Heartland expand the habitat assessment Study Area. This included an approximate 57-acre Additional Study Area as well an approximate 41-acre Alternative Study Area based on a request from the Wisconsin Department of Natural Resources (WDNR). The additional study areas are depicted on Figure 1 and 2 (Attachment A). Field work for the additional study areas was completed on September 8 and 12, 2023. Because the additional field work was completed outside the optimal identification window for the rare species of interest, only habitat assessments were completed. This report has been amended to include the results from the additional study areas, updated figures, and an updated photo log.

July 15, 2024 Amendment

Over the fall and winter of 2023 and the spring of 2024, the City of Verona, Epic, and the engineering firm designing the Dairy Ridge Road – Country View Lane connection, AECOM, settled on a preferred construction location in coordination with the WDNR. The proposed disturbance area, and the rare species habitat suitability and habitat types within this area, are depicted on Figures 6 and 7 (Appendix A).

The disturbance area contains potentially suitable habitat for the white lady's slipper orchid and eastern prairie white fringed orchid identified by surveys in late summer 2023. Previous rare species survey work was completed outside of the optimal identification periods of the orchids, so an additional field survey was performed on June 25, 2024 by Scott Fuchs of Heartland Ecological Group to further assess their presence/absence. This date falls within the late blooming/fruiting period of the white lady's slipper orchid and the early flowering period of the eastern prairie white fringed orchid. Potential habitat areas previously identified were assessed using meander surveys. Neither of the orchids were observed within potential habitat areas. Notes on the habitats encountered and species lists documenting plant species present within the disturbance area are included as Attachment E.

Habitat Requirements

Species Descriptions

The following section describes the habitats, blooming period, and optimal identification window for the rare plants.

White lady's slipper is a Wisconsin threatened orchid that is found in calcareous fens and moist prairies (WDNR, 2023). This small orchid is 8-12 inches tall. The optimal identification window is during blooming, which occurs late May through early June. This orchid does not occur in habitats with a history of grazing or crop production and is generally intolerant of anthropogenic disturbances.

Eastern prairie white fringed orchid is a Wisconsin endangered and federally threatened plant that is found in moist, undisturbed, deep-soiled and/or calcareous prairies, and rarely in tamarack fens (WDNR, 2023). This orchid reaches a height of about one-two feet tall and blooms from early July through early August. The optimal identification period is throughout July.

Prairie parsley is a Wisconsin threatened plant that is found in prairies and open areas that were once savannas (WDNR, 2023). This plant reaches a height of three feet and blooms from early May though late June. The optimal identification period is from early May through late August. Prairie parsley is rarely found in disturbed areas.

Prairie bush-clover is a Wisconsin endangered and federally threatened plant that is found in gravelly or sandy hillside prairies (WDNR, 2023). This legume ranges from 20-40 inches tall and blooms from late July through late August. The optimal identification period is throughout August.

Habitat Descriptions

The following section describes some of the suitable habitats for the four rare plants and some of the habitats observed within the Study Area, as well as other species that are commonly found in those communities (associate species).

Calcareous fens occur in areas of organic soil where calcium and magnesium-rich groundwater consistently outlets to the ground surface. Most fens are small and are often associated with and intergrade with other wetland communities such as southern sedge meadow, wet-mesic prairie, shrub-carr, and emergent marsh. Calcareous fens typically contain calciphiles (plants restricted to calcareous soils), as well as many of the species found in southern sedge meadows and wet-mesic prairies, as described below.

Southern sedge meadows are wetland communities with peat soils that are most common in glaciated landscapes and often border streams or drainage lakes. This community is typically dominated by tussock sedge (*Carex stricta*), which forms tall tussocks, and Canada bluejoint grass (*Calamagrostis canadensis*). Other common associates include other sedges, marsh bellflower (*Campanula aparinoides*), panicled and swamp aster (*Symphyotrichum lanceolatum* and *S. puniceum*), iris (*Iris* spp.), and Joe-Pye weed (*Eutrochium maculatum*), as well as species that prefer standing water

such as great water dock (*Rumex britannica*), broad-leaved arrowhead (*Sagittaria latifolia*), and marsh skullcap (*Scutellaria galericulata*).

Wet-mesic and wet prairies occur in areas of poor draining mineral soils in wetland complexes that may also contain southern sedge meadows, calcareous fens, and emergent marsh. Wet-mesic prairies are characterized by tall prairie grasses and forbs that may be associated with dry-mesic and mesic prairies such as yellow coneflower (*Ratibida pinnata*) and stiff goldenrod (*Solidago rigida*); whereas wet prairies have a higher prevalence of wetland forbs such as Joe-Pye weed, boneset (*Eupatorium perfoliatum*), and swamp milkweed (*Asclepias incarnata*) (WDNR, 2023). Dominant graminoids in wet prairie include Canada bluejoint grass, prairie cordgrass (*Spartina pectinata*), water sedge (*Carex aquatilis*), and woolly sedge (*Carex pellita*). Other common species in wet and wet-mesic prairies include big bluestem (*Andropogon gerardii*), Canada wild rye (*Elymus canadensis*), Bicknell's sedge (*Carex bicknellii*), saw-tooth sunflower (*Helianthus grosseserratus*), prairie blazing star (*Liatris pycnostachya*), rosinweed (*Silphium integrifolium*), New England aster (*Symphyotrichum novae-angliae*), northern bedstraw (*Galium boreale*), tall meadow-rue (*Thalictrum dasycarpum*), giant goldenrod (*Solidago gigantea*), golden Alexanders (*Zizia aurea*), and mountain-mint (*Pycnanthemum virginianum*).

Mesic prairies occur on rich, moist, well-drained sites, usually on level or gently rolling glacial topography (WDNR, 2023). Common grasses include big bluestem, little bluestem (*Schizachyrium scoparium*), needle grass (*Hesperostipa spartea*), prairie dropseed (*Sporobolus heterolepis*), Indian grass (*Sorgahstrum nutans*), and switch grass (*Panicum virgatum*). The forb layer has a diversity of species that include asters (*Symphyotrichum* spp.), wild bergamot (*Monarda fistulosa*), prairie coneflower, and spiderwort (*Tradescantia ohiensis*).

Methods

Desktop resources reviewed prior to the field assessment included recent aerial imagery, USGS topography maps (Figure 2, Attachment A), and Wisconsin Wetland Inventory (WWI) mapping (Figure 3, Attachment A). Information regarding the identification of and the suitable habitat for the rare plants was reviewed which specifically included the WDNR webpages for Rare Plants and Wisconsin's Natural Communities.

The initial field assessment was conducted on August 1, 2023, by Scott Fuchs and Sarah Kraszewski of Heartland. The field assessment timing generally aligned with optimal identification periods for the rare plants, except for white lady's slipper, a species for which the optimal identification period ends in early June. The Study Area was assessed on foot and the general land use and plant communities observed were mapped with GPS. Information regarding dominant species, presence and abundance of invasive species, and land use disturbances were collected for each habitat type observed. Focused searches were completed for rare plants in areas that contained potentially suitable habitat. Representative photographs were taken of the Study Area. Photograph locations are mapped on Figure 4 (Attachment A) and photographs are included in the photo log provided as Attachment B.

Observed plant communities/habitat types were classified and grouped on Figure 4 (Attachment A). Wetland areas were classified into polygons based on the floristic quality of the wetland observed, which included ruderal, lightly/moderately disturbed, and high quality.

Observed plant communities/habitat types were additionally classified and grouped based on their suitability for supporting the rare species of interest. Habitat suitability is depicted on Figure 5 (Attachment A). Habitat suitability was determined based on the rare species habitat requirements, level of disturbance observed, presence of associate species, and the surveyors' professional opinions.

Species lists were created for two high quality wetland communities. A list of common and dominant species was recorded during a meander survey through the communities. The creation of a comprehensive species list or quantitative assessment of abundance was outside of the scope of this assessment. Species lists were entered into the Universal FQA Calculator (Freyman et al. 2016) using the predetermined Coefficient of Conservatism (C values) and wetland indictor status assigned to each species in the WDNR Northcentral and Northeast Region of Wisconsin FQA database (Chung-Gibson et al. 2017).

Additional Study Areas

The field assessment for the additional study areas was conducted on September 8 and 12, 2023, by Sarah Kraszewski of Heartland. The above assessment methods were utilized except that focused searches were not completed for rare plants in areas that contained potentially suitable habitat due to the additional assessment being performed well outside of their optimal identification periods.

Due to the presence of multiple wetland plant communities and heterogeneity observed within the large wetland complex associated with the Sugar River and located west of Country View Road, discrete wetland community polygons mapped in the field were assigned a unique identification number and are depicted on Figures 4 and 5 (Attachment A). A summary of each mapped wetland community including wetland plant community type based on Eggers & Reed (2015) classification, a qualitative assessment of quality (low, medium, and high), dominant species, and other observations regarding disturbance or hydrology is provided in Table 1 (Attachment C).

Results

Results Overview

There were no observations of the four rare plants within the Study Area during the August 1, 2023, field assessment. However, the field assessment occurred after the optimal identification period for the white lady's slipper, so further discussion is warranted on habitat suitability within the Study Area. A general characterization of rare species habitat suitability across the Study Area is depicted on Figure 5 (Attachment A). The plant communities/habitat types within the Study Area were classified as having low, moderate, or high suitability for rare species based on the degree of disturbance or presence of remnant plant communities.

There was no suitable habitat observed for prairie parsley or prairie bush clover within the Study Area, including the additional study areas. Suitable habitat was observed for the white lady's slipper and eastern prairie white fringed orchid within portions of the large wetland complex associated with the Sugar River that straddles the Military Ridge State Trail (State Trail). This suitable habitat corresponded with moderate and high quality sedge meadow, wet prairie, wet meadow, and shallow marsh communities.

Although not a species of interest for this survey, several populations of glade mallow (*Napaea dioica*), a Wisconsin special concern plant, were observed and mapped within the Study Area (Figure 5, Attachment A). Glade mallow was observed within wet prairie, wet meadow, and sedge meadow communities and was commonly observed along the perimeter of the State Trail.

Observed Plant Communities

Uplands – Initial Study Area

Upland habitats observed within the Study Area were categorized as agricultural fields/hay fields, disturbed upland woodland/shrubland, and ROW/developed/turf. There were no remnant upland habitats, such as prairie or oak savanna, observed. Upland habitat along Dairy Ridge and Country View Roads consists primarily of Eurasian meadow with areas of shrub/tree lines in the road rights-of-way (ROWs) and agricultural fields beyond. A few residential lawns and farmyards are present. Mowing was observed along the road shoulder and within turf areas.

ROW/developed/turf areas were dominated by non-native species including smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), fescues (*Festuca* spp.), reed canary grass (*Phalaris arundinacea*), common plantain (*Plantago major*), wild parsnip (*Pastinaca sativa*), Canada thistle (*Cirsium arvense*), bird's-foot trefoil (*Lotus corniculatus*), Queen Anne's lace (*Daucus carota*), chicory (*Cichorium intybus*), and common dandelion (*Taraxacum officinale*). Commonly observed species within areas categorized as disturbed upland woodland/shrubland included smooth brome and dame's rocket (*Hesperis matronalis*) in the herbaceous layer; grape vine (*Vitis riparia*) and Virginia creeper (*Parthenocissus quinquefolia*) vines; invasive bush honeysuckle (*Lonicera* spp.), smooth sumac (*Rhus glabra*), gray dogwood (*Cornus racemosa*), and common buckthorn (*Rhamnus cathartica*) in the shrub layer; and box elder (*Acer negundo*) and black cherry (*Prunus serotina*) in the tree layer.

Country View Road was recently extended into the northeast portion of the Study Area. The sides of the newly constructed road have been graded, seeded, and were blanketed with erosion control mat during the field assessment.

Uplands – Additional Study Areas

Uplands within the additional study areas consisted of agricultural fields planted to corn and soybeans as well as disturbed upland woodland and Eurasian meadow along field edges.

Wetlands – Initial Study Area

Observed wetland community types included wet meadow, sedge meadow, shallow marsh, and shrub carr. Many of the larger wetlands observed in the Study Area contained multiple community types and these communities typically formed mosaics or transitioned between community types. When mosaics of community types were observed, the prominent community type or the two prominent community types were recorded for classification purposes. Wetland communities mapped and described within the large wetland complex associated with the Sugar River and along both sides of the State Trail are summarized in Table 1 (Attachment C), apart from the southern portion of the Study Area.

Low Habitat Suitability Wetlands

No wetlands were observed within the Study Area along Dairy Ridge Road. Wetland observed along County View Road consisted primarily of ruderal wet meadow dominated by reed canary grass, ruderal shrub carr dominated by sandbar willow (*Salix interior*) and reed canary grass, and ruderal shallow marsh dominated by non-native cattail (*Typha* spp.). Within the southern portion of the Study Area, there were some native associate species to the two rare orchid species observed within the transition from upland to shallow marsh along the western side of Dairy Ridge Road. These species were observed in small, scattered populations and included saw-tooth sunflower, great Angelica, tussock sedge, Joe-Pye weed, panicled and swamp aster, tall meadow-rue, and giant goldenrod. A population of glade mallow was observed within the mowed road shoulder above one of these wetland areas (Figure 5, Attachment A). Focused searches were conducted for the two orchids within these areas. These areas were highly degraded by reed canary grass, cattail, and roadside mowing activities and were determined to have low suitability for the rare species of interest.

A large wetland complex was observed in the central portion of the Study Area that is associated with the Sugar River and is bisected by the State Trail. Wetlands associated with the banks of the Sugar River consisted of ruderal wet meadow dominated by reed canary grass within this wetland complex. These areas may have been historically disturbed by ditching of the Sugar River. The eastern portion of this wetland also consisted of ruderal wet meadow near farmed areas that were dominated by reed canary grass with scattered native wetland species, as well as ruderal shallow marsh in areas of organic soil dominated by non-native cattail with scattered Joe-Pye weed and swamp aster. Based on the presence of some sedge meadow species, it is assumed that these wetland areas historically had higher floristic quality but have been significantly degraded by adjacent land use (farming) and invasive species. These ruderal wetland areas were determined to have low habitat suitability for the two orchid species.

Moderate and High Suitability Wetlands – Initial Study Area

The central portion of the wetland complex mentioned above contained high quality wetland along both sides of the Military Ridge State Trail that may provide moderate and high habitat suitability for the two orchid species (Figures 4 and 5, Attachment A). The high quality sedge meadow area east of the trail was dominated by tussock sedge,

Joe-Pye weed, and Canada bluejoint grass with a diversity of other native wetland species. Reed canary grass was only scattered along the edges and observed cattail appeared to be native broad-leaved cattail (*Typha latifolia*) that co-existed with other native species and did not form monoculture stands typical of non-native cattails. Closer to the upland/wetland transition within the high quality area, the wetland contained more wet prairie/wet meadow species and had taller tussocks and shallow inundation in areas with higher water table and/or groundwater upwelling. This high quality sedge meadow was identified as having high habitat suitability for the two rare orchids. The wetland transitioned to a high quality shallow marsh/sedge meadow community closer to the trail where shallow inundation was constant and more emergent species such as broadleaved arrowhead, broad-fruit bur-reed (*Sparganium eurycarpum*), and cattail were observed. This shallow marsh/sedge meadow was determined to provide moderately suitable habitat for the eastern prairie white fringed orchid but is likely too wet for the white lady's slipper.

High quality wetland to the west of the trail consisted of sedge meadow with shrub carr pockets. The sedge meadow community composition was similar to the community east of the trail but contained more shrub species. Observed shrubs consisted of native willows (*Salix* spp.) and dogwoods (*Cornus* spp.), but also included invasive bush honeysuckle. These wetland areas were determined to provide moderately suitable habitat for the two rare orchid species in areas that were not dominated by shrubs. Glade mallow populations were observed along both sides of the trail (Figure 5, Attachment A).

Species lists for the high quality sedge meadow (combined for both sides of the trail) and the shallow marsh/sedge meadow community are provided in Attachment D. As discussed in the Methods section, creating comprehensive species lists with abundance metrics was outside the scope of this assessment, rather these species lists contain common and dominant species observed during a meander survey through the communities.

Wetlands – Additional Study Areas

All wetlands assessed within the additional study areas were part of the large wetland complex associated with the Sugar River. Discrete wetland communities are summarized in Table 1 (Attachment C). Ruderal wet meadow dominated by reed canary grass was commonly observed, and shrub carr communities were typically low quality due to dominance by invasive species and/or low native species diversity. Wetlands directly adjacent to the Sugar River and along ditches were typically dominated by reed canary grass and/or non-native cattail or invasive shrubs. Wetlands were additionally disturbed by row crop agriculture and haying. Several areas of moderate and moderate-high quality sedge meadow, wet meadow, wet prairie, and shallow marsh communities were observed that had high floristic quality and were representative of remnant plant communities based on an ocular assessment, had low to moderate encroachment by invasive species, and were potentially suitable habitat for the two orchid species of interest.

Conclusion

Heartland biologists completed rare plant surveys and habitat assessments for four species on August 1, 2023, for three local roadway improvement projects on behalf of the City of Verona. The four rare species were not observed within the Study Area; however, the survey was completed outside of the optimal identification window for one of the species. Glade mallow, a listed special concern species in Wisconsin that was not a focus species for this survey, was recorded in several locations of the Study Area. Habitat assessment field work was completed on September 8 and 12, 2023, within additional study areas that are part of the large wetland complex associated with the Sugar River.

Upland habitats within the original Study Area and additional study areas are in agricultural production, maintained lawns, or have been graded and/or disturbed by prior roadway construction. The upland habitats are disturbed, have low native species presence, and do not provide suitable habitat for the rare species of interest.

Wetland communities within the Study Area were primarily disturbed and dominated by invasive species. Several areas within the large wetland complex associated with the Sugar River contain moderate to high quality sedge meadow, shallow marsh, wet meadow, and wet prairie communities that may provide suitable habitat for white lady's slipper and eastern white prairie fringed orchid. Although these species were not observed during the field assessment, we recommend avoiding wetland impacts to these areas due to the high quality of the wetlands. We recommend that you consult with WDNR staff in the Bureau of Natural Heritage Conservation (BNHC) prior to proceeding with construction in these areas and perform additional rare species surveys as they deem necessary.

Please contact us if you have any questions concerning the rare species survey and habitat assessments.

Sincerely,

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608.490.2450 Ext. 4

Attachments:

Attachment A. Figures

Attachment B. Photo Log

Attachment C. Wetland Community Descriptions

Attachment D. Species Lists

References:

Chung-Gibson, M., Bernthal, T., Doyle, K., Wetter, M., Haber, E. Wisconsin Department of Natural Resources, Water Quality Bureau. 2017. Wisconsin FQA (Floristic Quality Assessment) Database for WDNR Northcentral-Northeast Region for Universal FQA Calculator Website. http://universalfqa.org/. Accessed August 9, 2023.

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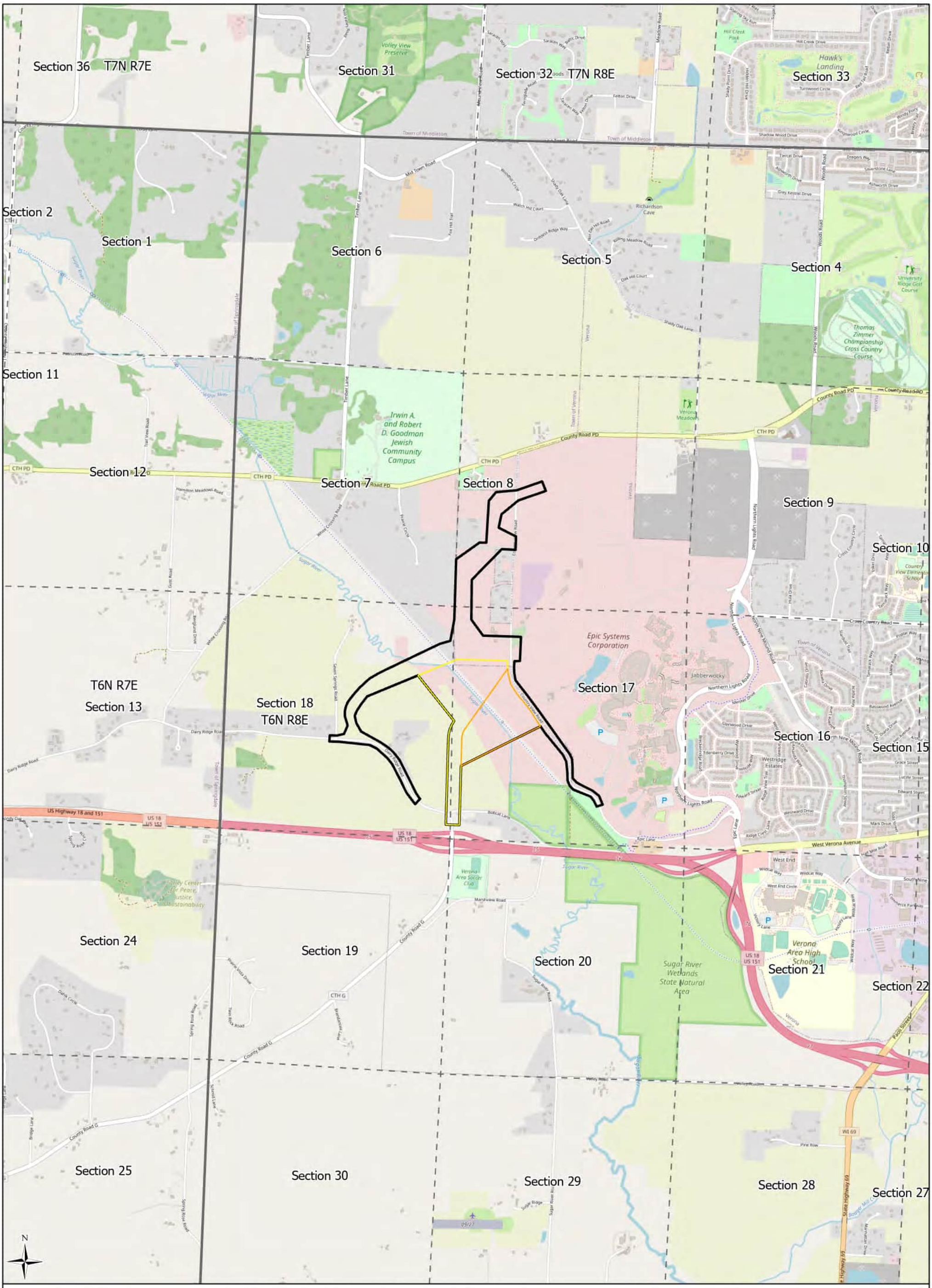
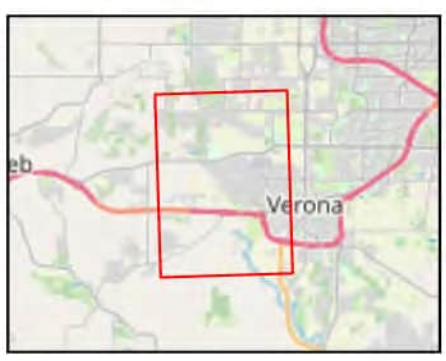
Attachment A | Figures





Dairy Ridge Rd / Country View Rd Study Area (212.18 ac)
Additional Study Area (56.77 ac)
DNR Alternative Study Area (41.18 ac)
Township
Section

0 1,000 2,000 Ft

Heartland ECOLOGICAL GROUP INC

Figure 1. Project Location

Dairy Ridge & Country View Rd.
Rare Species Survey
Project #20231044
T6N, R8E, S08, 17, 18
C & T Verona, Dane Co

OpenStreetMap
ESRI
LRR: MW

Figure Created: 9/27/2023

Section 36 T7N R7E
Section 31
Section 32 T7N R8E
Section 33
Section 2
Section 1
Section 6
Section 5
Section 4
Section 11
Section 12
Section 7
Section 8
Section 9
Section 10
T6N R7E
Section 13
Section 18
T6N R8E
Section 17
Section 16
Section 15
Section 24
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Section 20
Section 21
Section 22
Section 25
Section 30
Section 29
Section 28
Section 27

Dairy Ridge Rd / Country View Rd Study Area (212.18 ac)
Additional Study Area (56.77 ac)
DNR Alternative Study Area (41.18 ac)
Township
Section

0 1,000 2,000 Ft

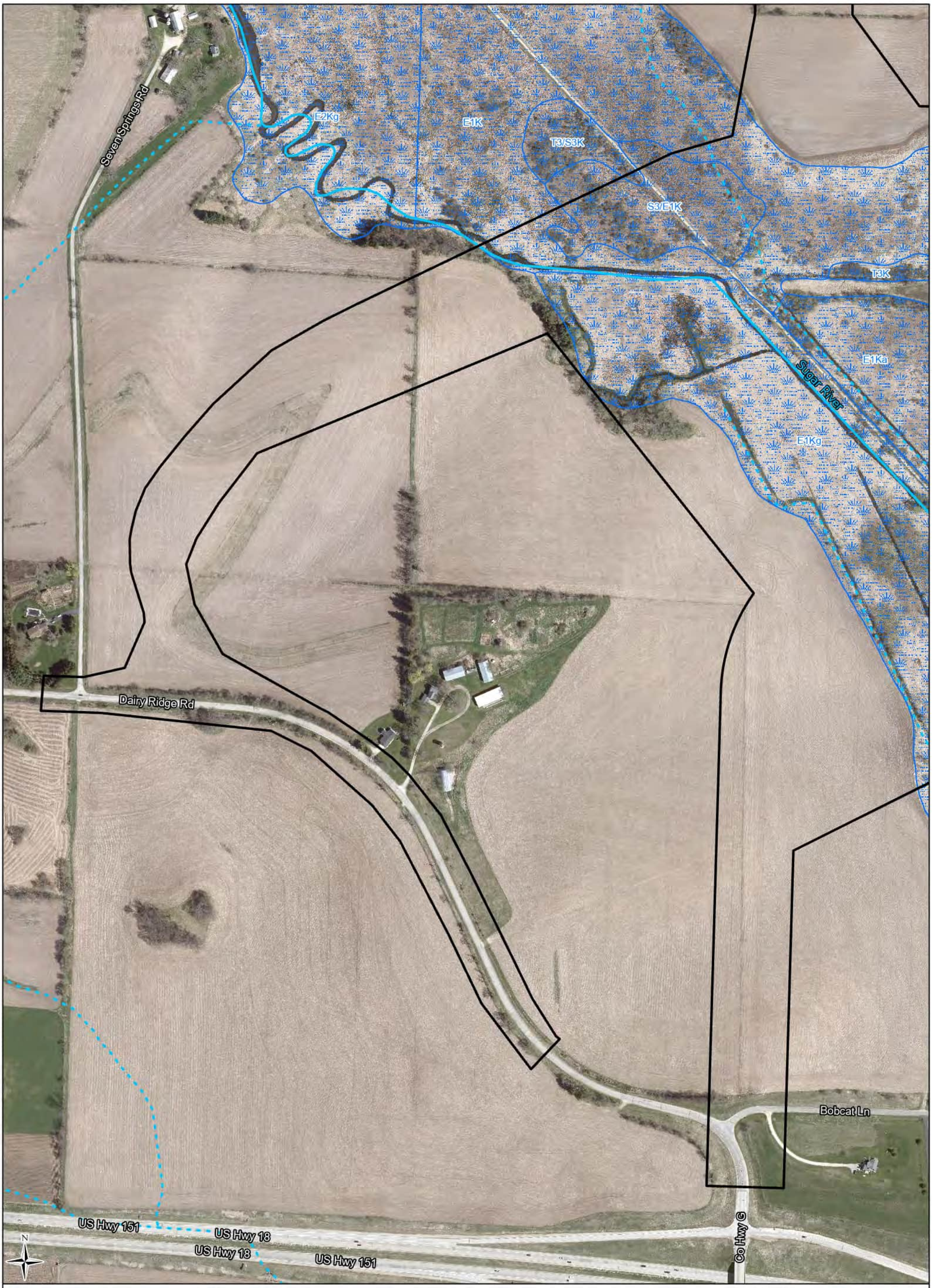
Heartland
ECOLOGICAL GROUP INC

Figure 2. USGS Topography

Dairy Ridge & Country View Rd.
Rare Species Survey
Project #20231044
T6N, R8E, S08, 17, 18
C & T Verona, Dane Co

USGSTopo
USGS LRR: MW

Figure Created: 9/27/2023



Dairy Ridge Rd / Country View Rd Study Area (212.18 ac)
WWI Wetland Polygons
WWI Wetland Points
Perennial Streams
Intermittent Streams
Waterbodies

0 350 Ft

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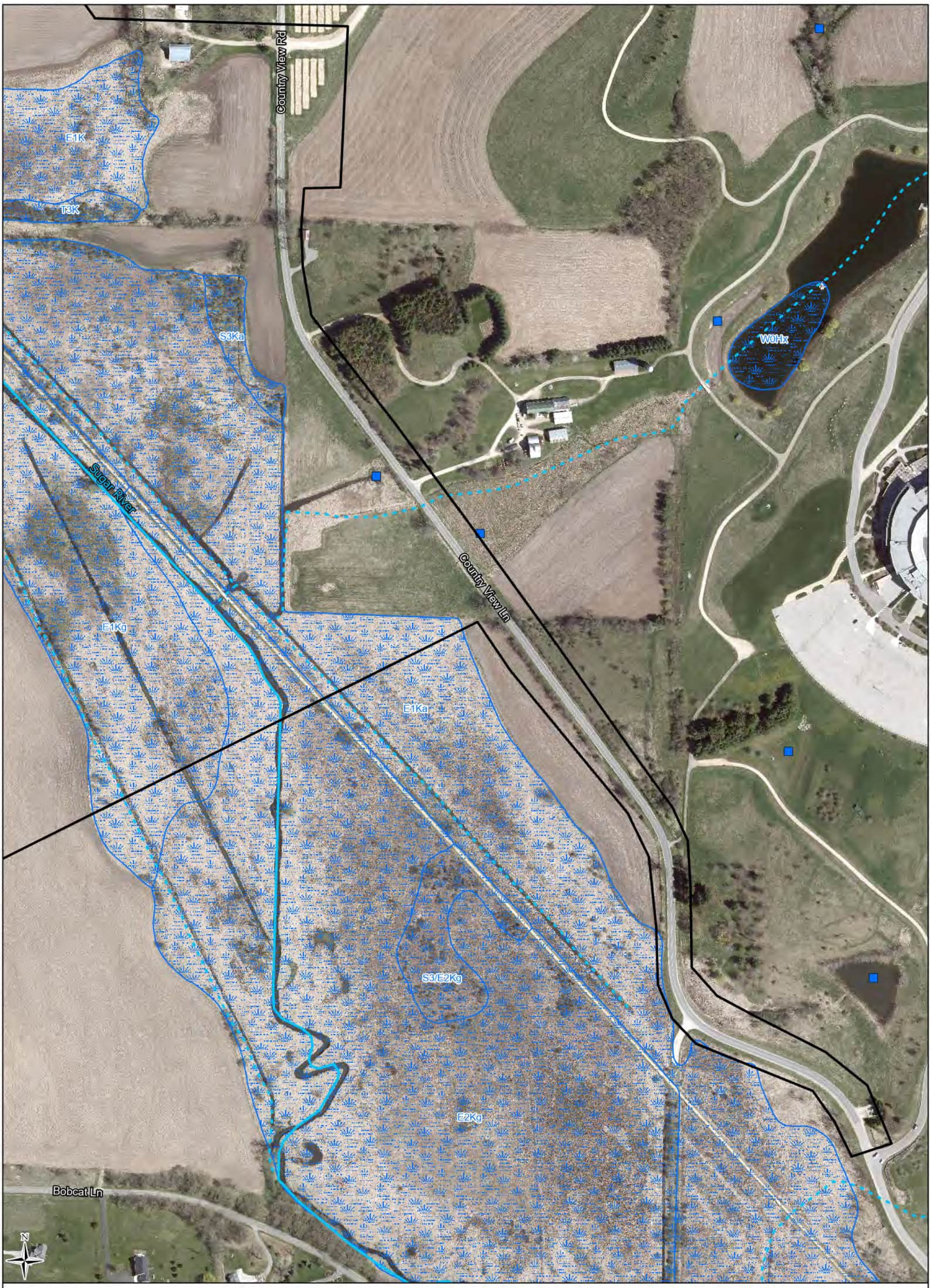
Figure 3a. Wisconsin Wetland Inventory

Dairy Ridge & Country View Rd.
Rare Species Survey
Project #20231044
T6N, R8E, S08, 17, 18
C & T Verona, Dane Co

2022 Dane Co Orthophoto
WDNR, USGS LRR: MW

Figure Created: 9/26/2023



- Dairy Ridge Rd / Country View Rd Study Area (212.18 ac)
- WWI Wetland Polygons
- WWI Wetland Points
- Perennial Streams
- Intermittent Streams
- Waterbodies

0 300 Ft

Heartland ECOLOGICAL GROUP INC

Figure 3b. Wisconsin Wetland Inventory

Dairy Ridge & Country View Rd.
Rare Species Survey
Project #20231044
T6N, R8E, S08, 17, 18
C & T Verona, Dane Co

2022 Dane Co Orthophoto
WDNR, USGS LRR: MW

Figure Created: 9/26/2023

Co Hwy Pd

Country View Ln

Country View Rd

E1K

T3/S3K

S3/E1K

E1Kg

T3K

N

gar River

Dairy Ridge Rd / Country View Rd Study Area (212.18 ac)

WWI Wetland Polygons

WWI Wetland Points

Perennial Streams

Intermittent Streams

Waterbodies

0 300 Ft

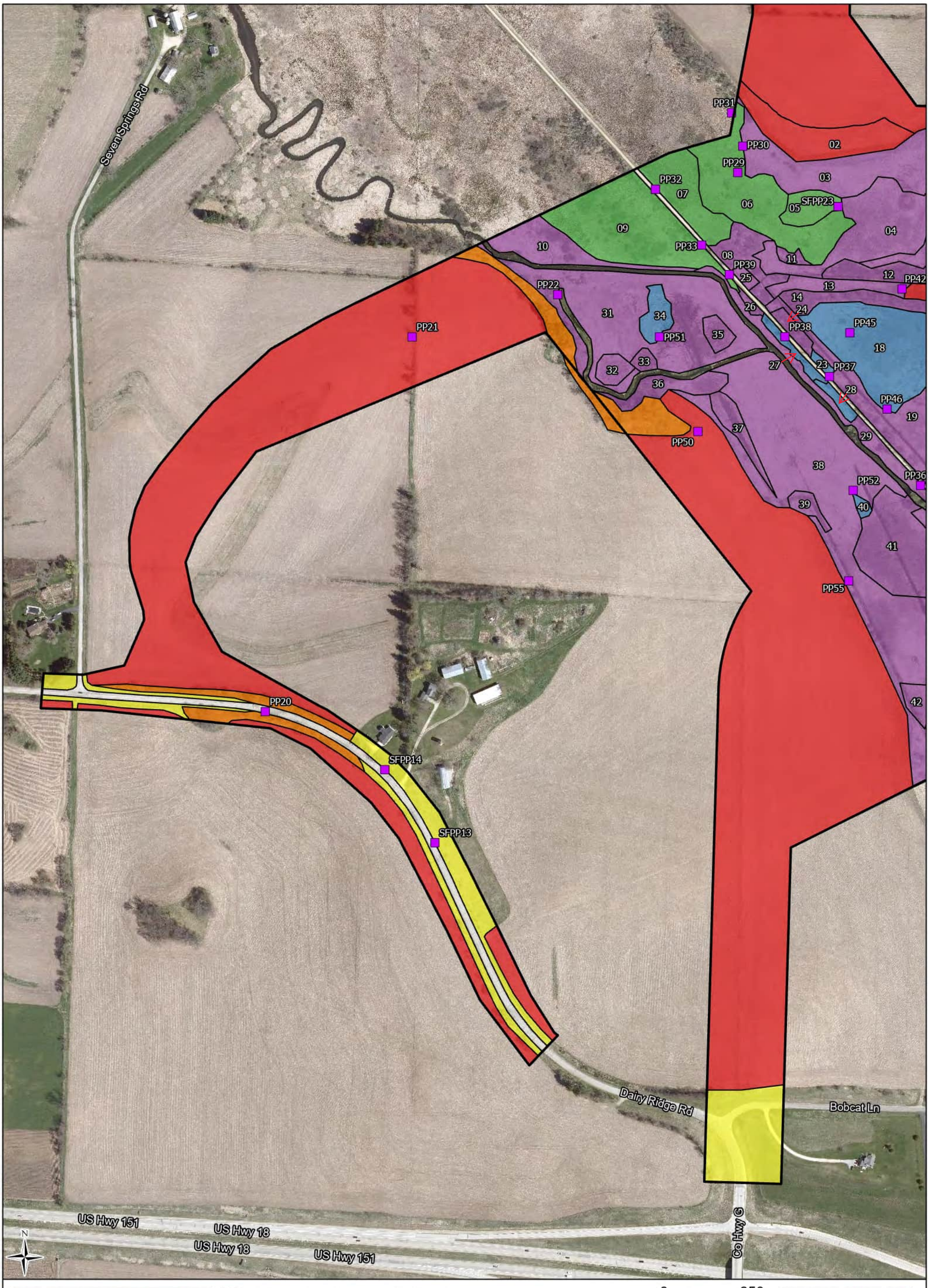
Heartland
ECOLOGICAL GROUP INC

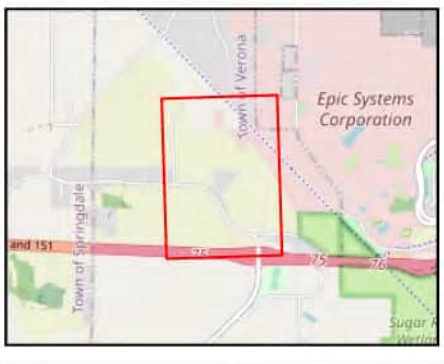
Figure 3c. Wisconsin Wetland Inventory

Dairy Ridge & Country View Rd.
Rare Species Survey
Project #20231044
T6N, R8E, S08, 17, 18
C & T Verona, Dane Co

2022 Dane Co Orthophoto
WDNR, USGS LRR: MW

Figure Created: 9/26/2023





Dairy Ridge Rd / Country View Rd Study Area (212.18 ac)

Photo Point

Habitat Types

- Agricultural Field / Hay Field
- Disturbed Upland Woodland/Shrubland
- Ruderal Wetland Communities
- Lightly/Moderately Disturbed Wetland Communities
- High Quality Wetland Communities
- Mesic Prairie
- New Section of Country View Rd
- ROW/Developed Area/Turf

0 350 Ft

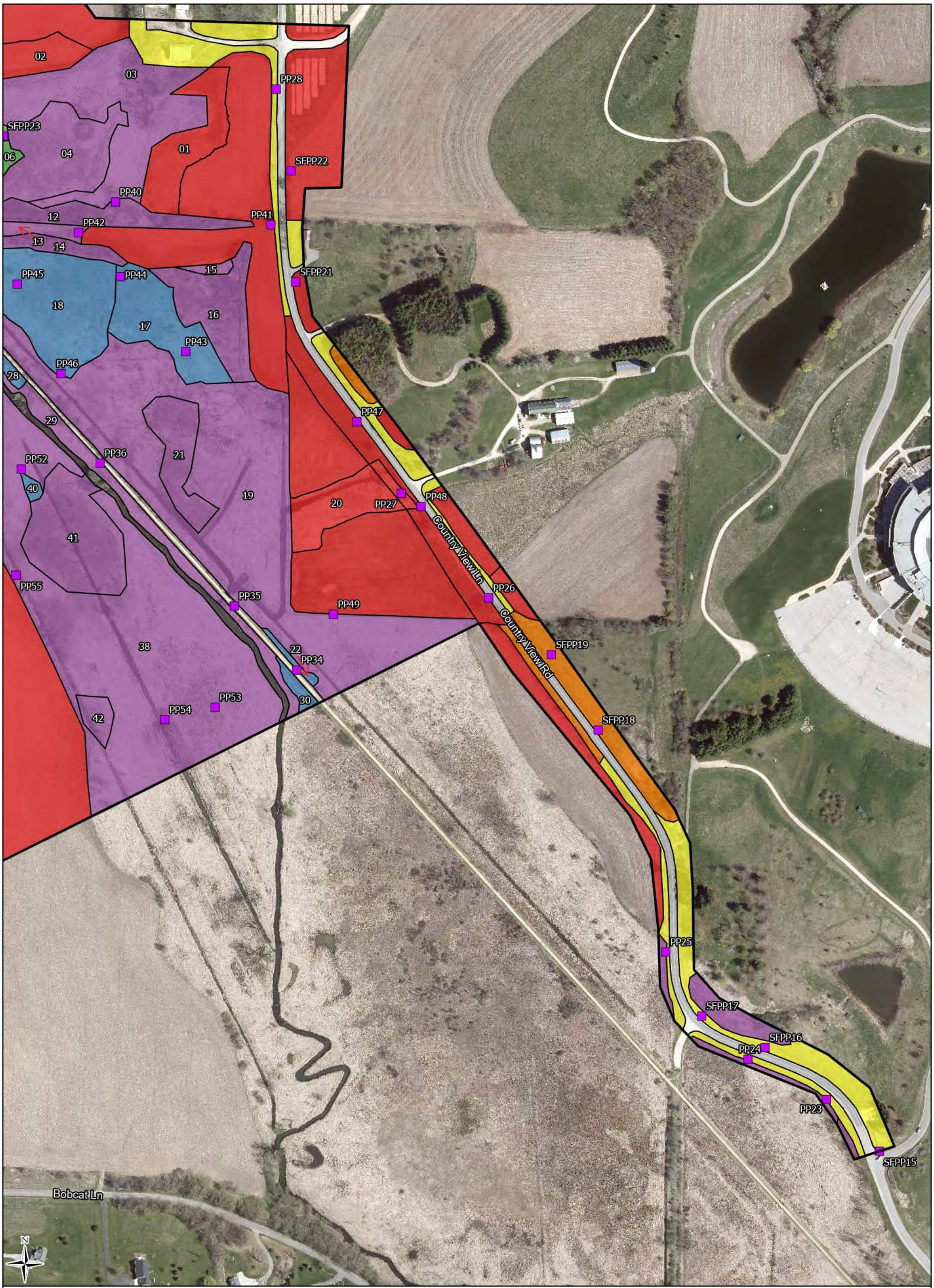
Heartland ECOLOGICAL GROUP INC

Figure 4a. Field Delineated Habitat Types

Dairy Ridge & Country View Rd.
Rare Species Survey
Project #20231044
T6N, R8E, S08, 17, 18
C & T Verona, Dane Co

2022 Dane Co Orthophoto
Dane Co, HEG LRR: MW

Figure Created: 9/27/2023


02
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PP27
PP48
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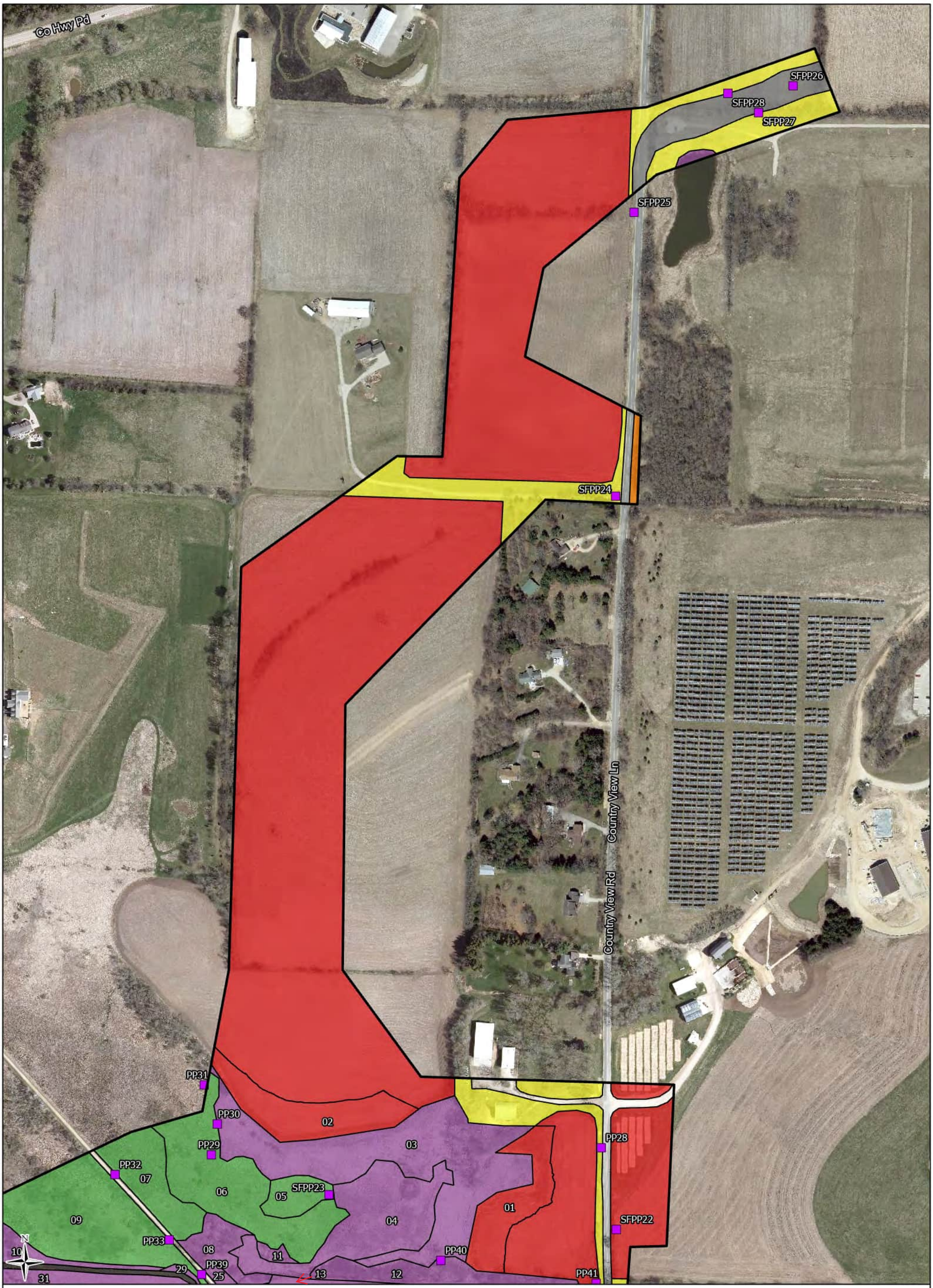
Country View Ln
PP55
PP35
PP26
PP49
Country View Rd
38
22
SFPP19
PP34
PP53
30
PP54
42
SFPP18
PP25
SFPP17
SFPP16
PP24
PP23
SFPP15
Bobcat Ln
N
Dairy Ridge Rd / Country View Rd Study Area (212.18 ac)
Photo Point
Habitat Types
Agricultural Field / Hay Field
Disturbed Upland Woodland/Shrubland
Ruderal Wetland Communities
Lightly/Moderately Disturbed Wetland Communities
High Quality Wetland Communities
Mesic Prairie
New Section of Country View Rd
ROW/Developed Area/Turf
Town of Verona
Epic Systems Corporation
0
300
Ft
Heartland
ECOLOGICAL GROUP INC
Figure 4b. Field Delineated Habitat Types
Dairy Ridge & Country View Rd.
Rare Species Survey
Project #20231044
T6N, R8E, S08, 17, 18
C & T Verona, Dane Co
2022 Dane Co Orthophoto
Dane Co, HEG
LRR: MW
Figure Created: 9/27/2023



Dairy Ridge Rd / Country View Rd Study Area (212.18 ac)

Photo Point

Habitat Types

- Agricultural Field / Hay Field
- Disturbed Upland Woodland/Shrubland
- Ruderal Wetland Communities
- Lightly/Moderately Disturbed Wetland Communities
- High Quality Wetland Communities
- Mesic Prairie
- New Section of Country View Rd
- ROW/Developed Area/Turf

0 300 Ft

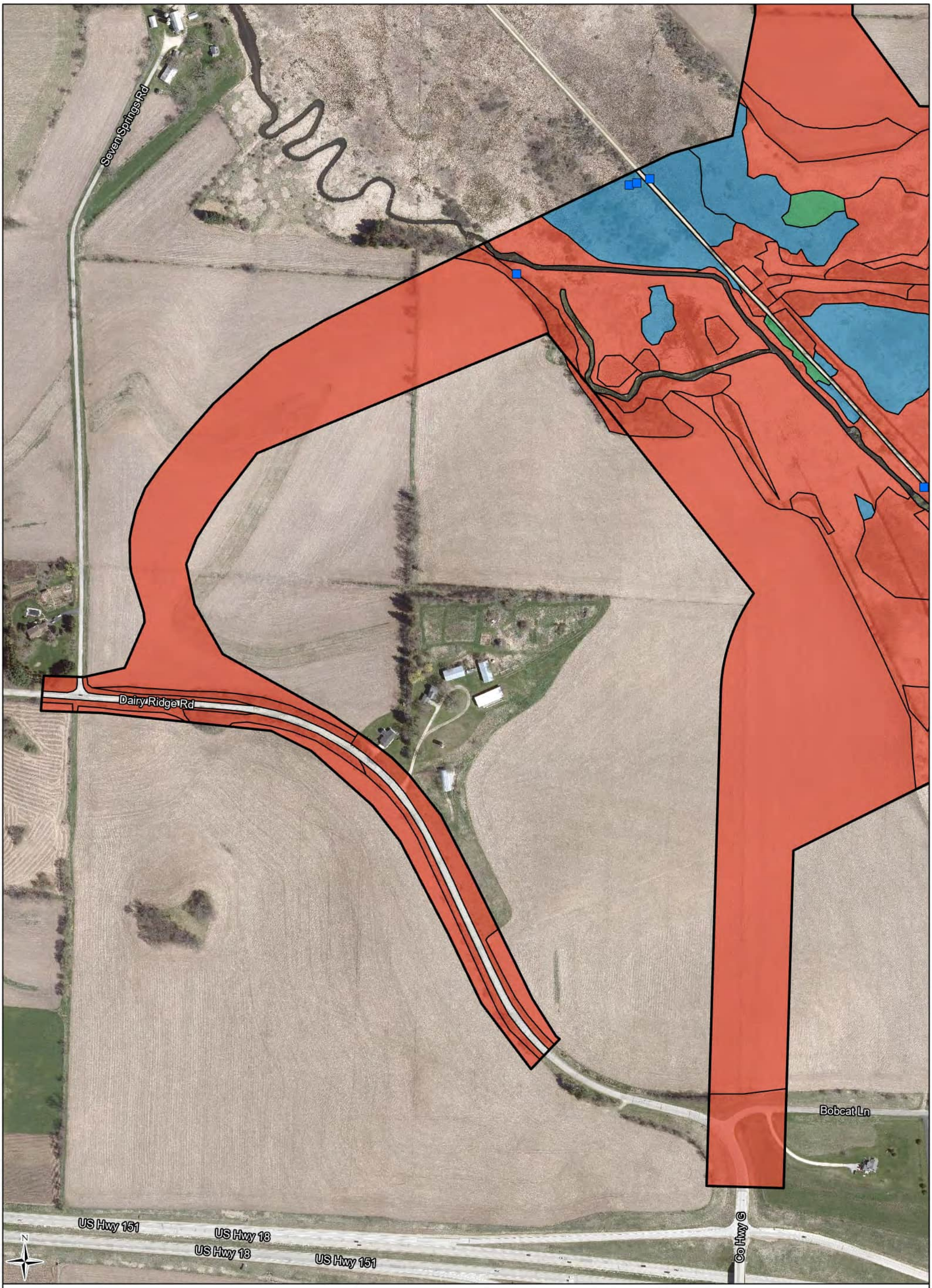
Heartland ECOLOGICAL GROUP INC

Figure 4c. Field Delineated Habitat Types

Dairy Ridge & Country View Rd.
Rare Species Survey
Project #20231044
T6N, R8E, S08, 17, 18
C & T Verona, Dane Co

2022 Dane Co Orthophoto
Dane Co, HEG LRR: MW

Figure Created: 9/27/2023



Dairy Ridge Rd / Country View Rd Study Area (212.18 ac)

Napaea dioca (glade mallow) observations

Rare Species Habitat Suitability

- High
- Moderate
- Low

0 350 Ft

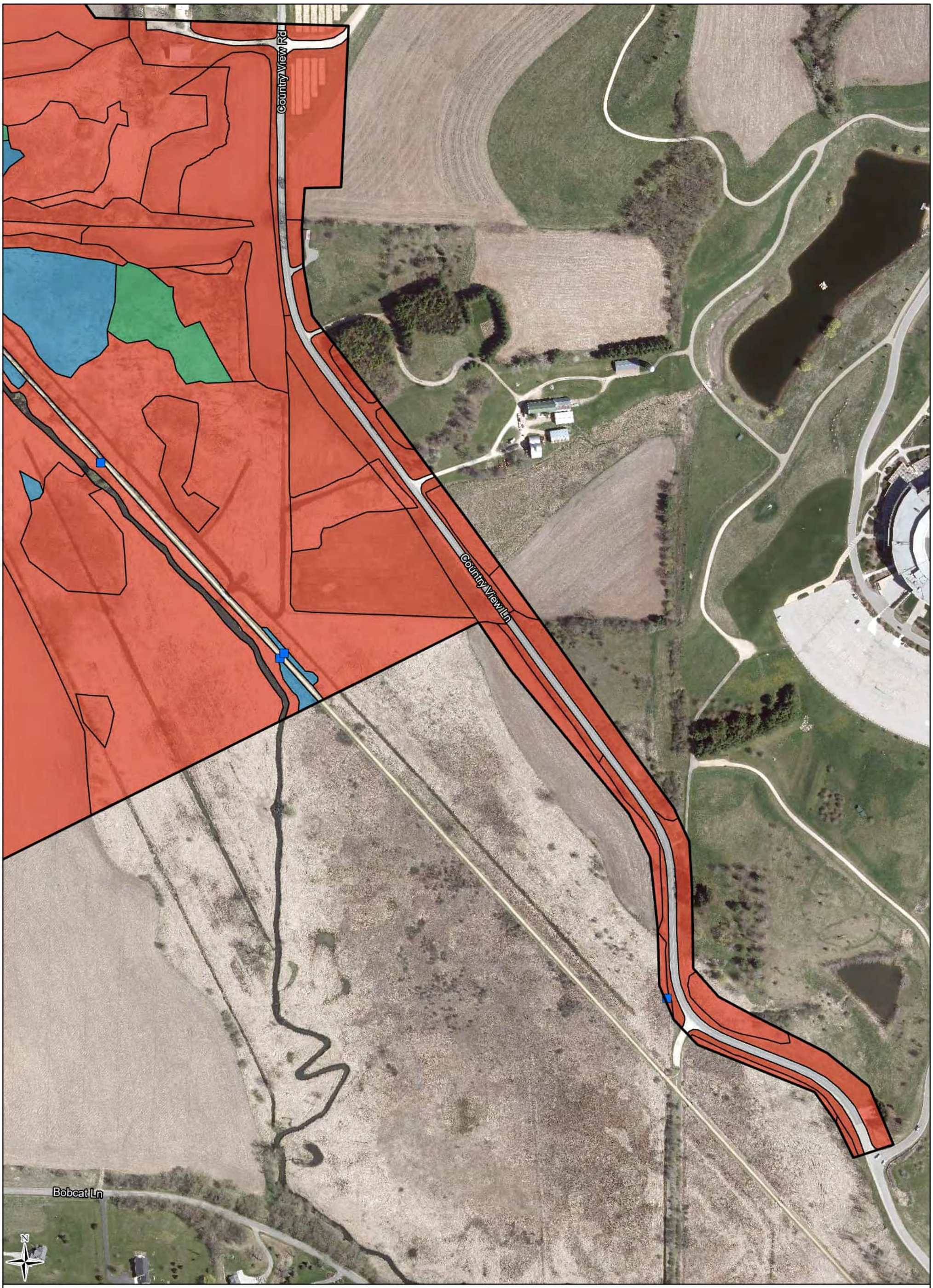
Heartland ECOLOGICAL GROUP INC

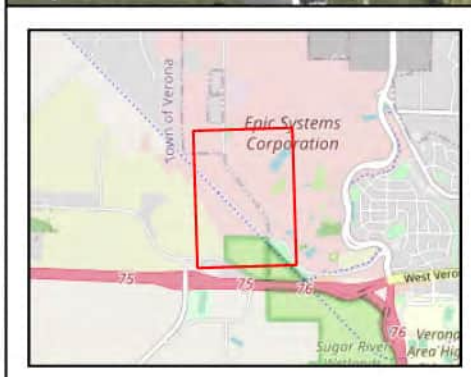
Figure 5a. Rare Species Habitat Suitability

Dairy Ridge & Country View Rd.
Rare Species Survey
Project #20231044
T6N, R8E, S08, 17, 18
C & T Verona, Dane Co

2022 Dane Co Orthophoto
Dane Co, HEG LRR: MW

Figure Created: 9/27/2023





Dairy Ridge Rd / Country View Rd Study Area (212.18 ac)

Napaea dioca (glade mallow) observations

Rare Species Habitat Suitability

High

Moderate

Low

0 300 Ft

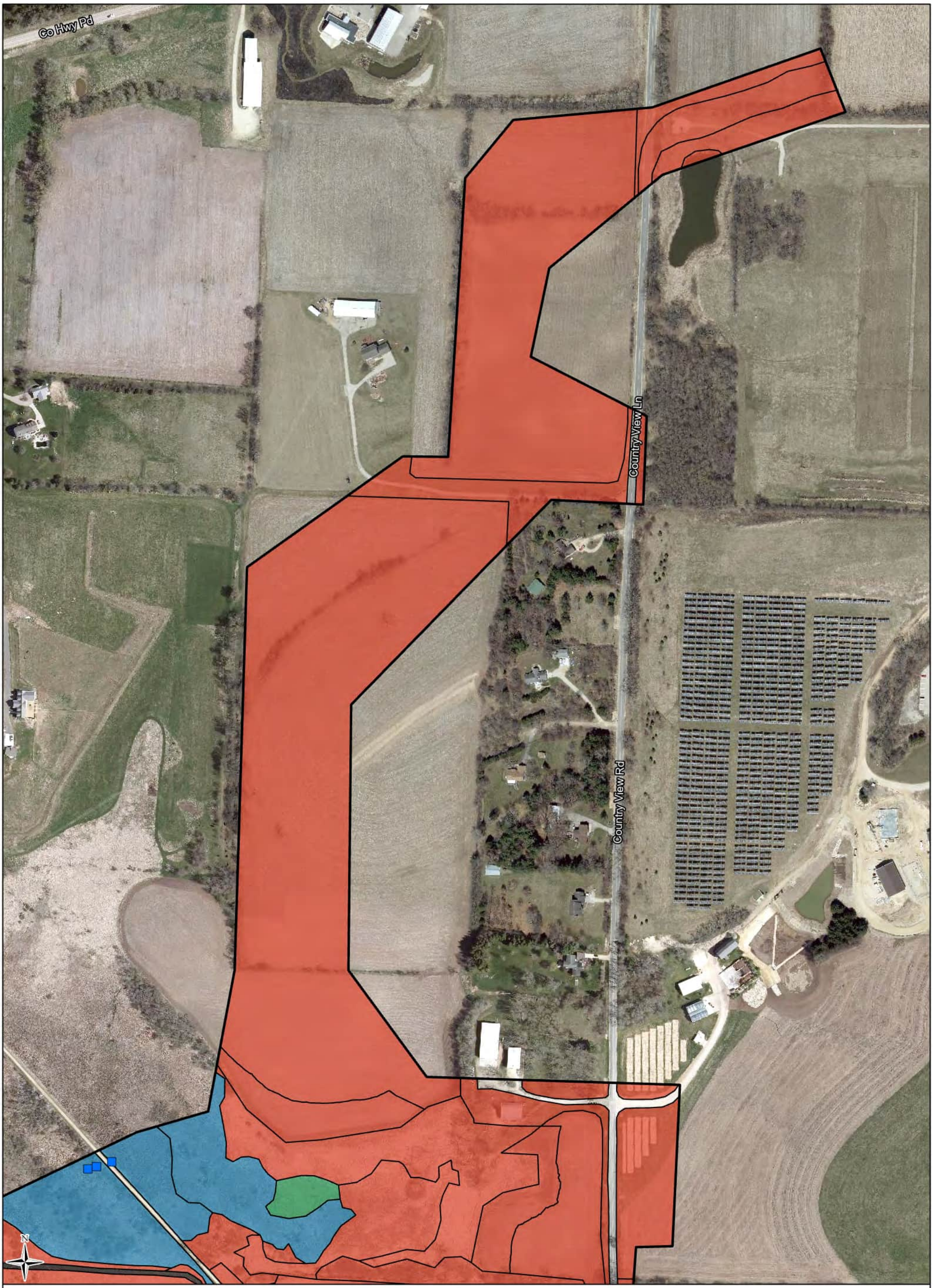
Heartland ECOLOGICAL GROUP INC

Figure 5b. Rare Species Habitat Suitability

Dairy Ridge & Country View Rd.
Rare Species Survey
Project #20231044
T6N, R8E, S08, 17, 18
C & T Verona, Dane Co

2022 Dane Co Orthophoto
Dane Co, HEG LRR: MW

Figure Created: 9/27/2023



Dairy Ridge Rd / Country View Rd Study Area (212.18 ac)

Napaea dioca (glade mallow) observations

Rare Species Habitat Suitability

- High
- Moderate
- Low

0 300 Ft

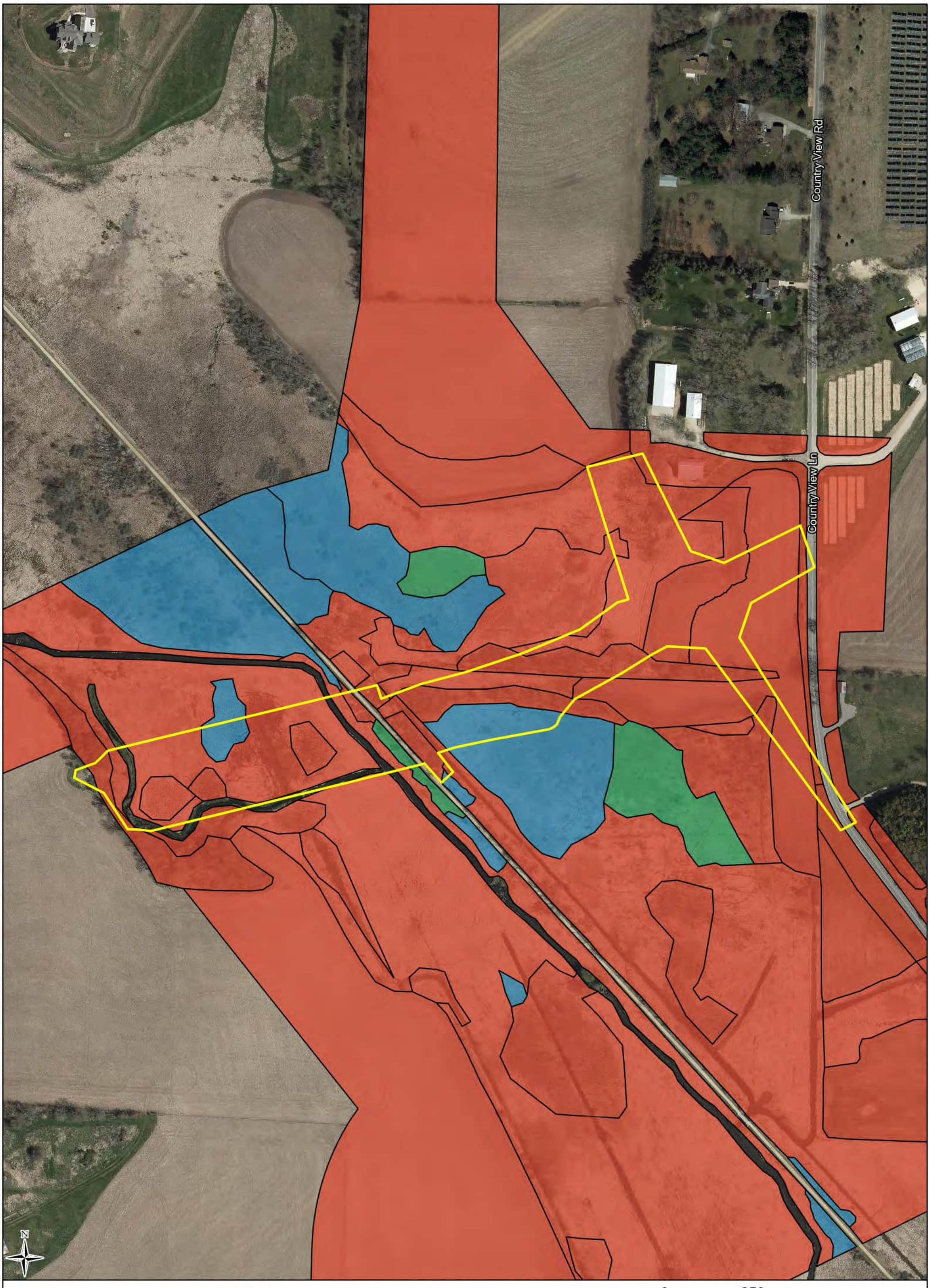
Heartland ECOLOGICAL GROUP INC

Figure 5c. Rare Species Habitat Suitability

Dairy Ridge & Country View Rd.
Rare Species Survey
Project #20231044
T6N, R8E, S08, 17, 18
C & T Verona, Dane Co

2022 Dane Co Orthophoto
Dane Co, HEG LRR: MW

Figure Created: 9/27/2023



2024 Proposed Disturbance and Orchid Survey Study Area (13.08 ac)

Rare Species Habitat Suitability

- High
- Moderate
- Low

0 250 Ft

Heartland ECOLOGICAL GROUP INC

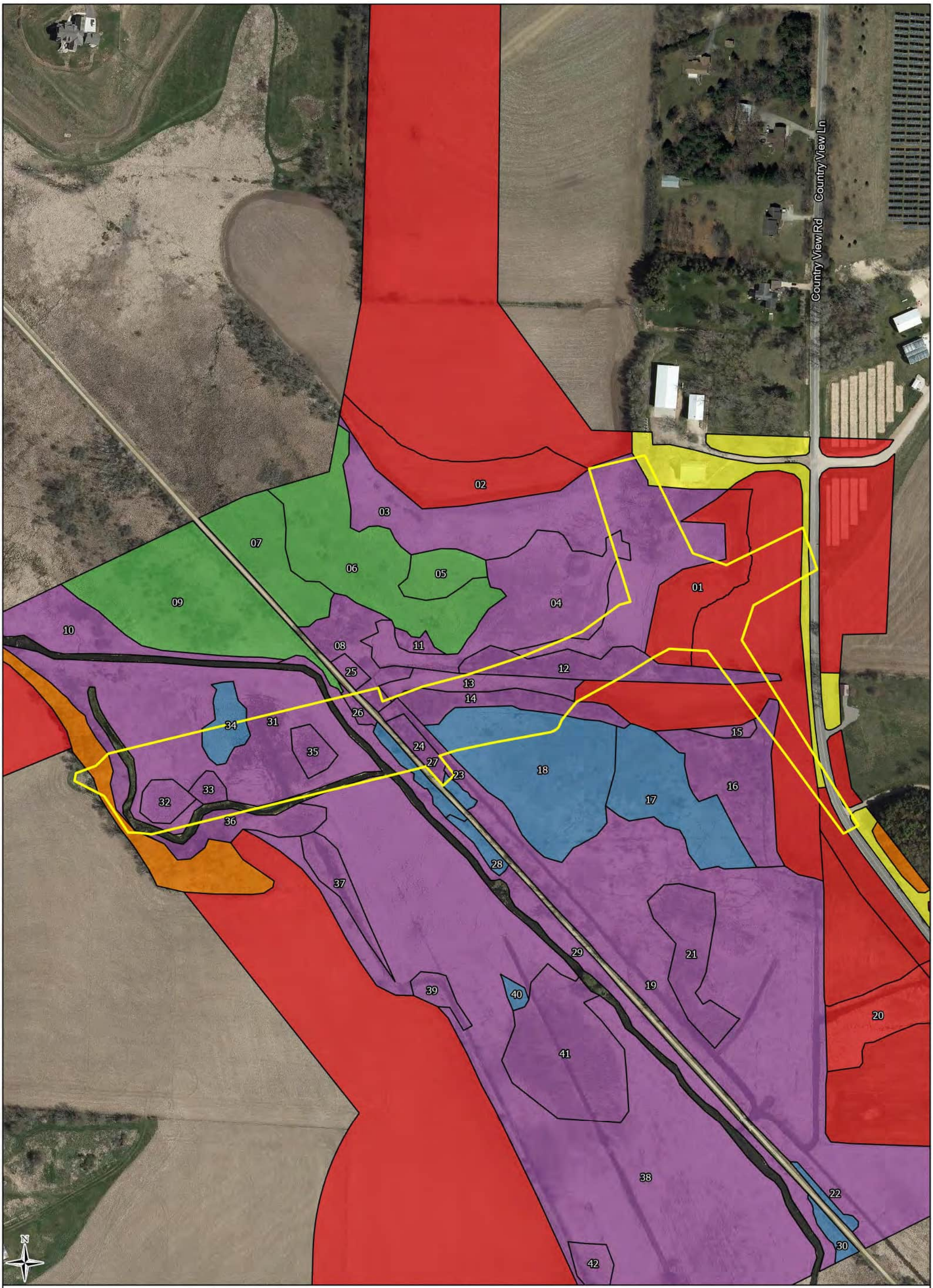
Figure 6. Proposed Disturbance Area Habitat Suitability

Dairy Ridge & Country View Rd.
Rare Species Survey
Project #20231044
T6N, R8E, S08, 17, 18
C & T Verona, Dane Co

2022 Dane Co Orthophoto
Dane Co, HEG

LRR: MW

Figure Created: 7/15/2024



2024 Proposed Disturbance and Orchid Survey Study Area (13.08 ac)

Habitat Types

- Agricultural Field / Hay Field
- Disturbed Upland Woodland/Shrubland
- Ruderal Wetland Communities
- Lightly/Moderately Disturbed Wetland Communities
- High Quality Wetland Communities
- Mesic Prairie
- New Section of Country View Rd
- ROW/Developed Area/Turf

0 250 Ft

Heartland ECOLOGICAL GROUP INC

Figure 7. Proposed Disturbance Area Habitat Types

Dairy Ridge & Country View Rd.
Rare Species Survey
Project #20231044
T6N, R8E, S08, 17, 18
C & T Verona, Dane Co

2022 Dane Co Orthophoto
Dane Co, HEG LRR: MW

Figure Created: 7/15/2024

Attachment B | Photo Log

Photo #1 SFPP13, view east along Dairy Ridge Rd of disturbed upland ROW and corn field

Photo #2 SFPP14, view north along Dairy Ridge Rd of residential lawn

Photo #3 PP20, view west along Dairy Ridge Rd of disturbed upland ROW and corn field with wooded field edge beyond

Photo #4 PP21, view west of soybean field

Photo #5 PP21, view north along field edge between soybean and corn fields

Photo #6 PP21, view east toward corn field

Photo #7 PP22, view southeast of ruderal wet meadow along banks of Sugar River

Photo #8 PP22, view northeast across the Sugar River with ruderal wet meadow on banks

Photo #9 PP22, view southwest in ruderal wet meadow toward disturbed upland woodland

Photo #10 PP33, view southwest from Military Ridge State Trail towards high quality sedge meadow

Photo #11 PP32, view southwest from Military Ridge State Trail towards high quality sedge meadow

Photo #12 PP32, view east from Military Ridge State Trail towards high quality shallow marsh/sedge meadow in background

Photo #13 PP29, view southeast towards high quality sedge meadow

Photo #14 PP30, view south towards high quality sedge meadow

Photo #15 PP31, view south towards high quality sedge meadow

Photo #16 SFPP23, view west towards high quality sedge meadow

Photo #17 SFPP23, view northwest towards high quality sedge meadow

Photo #18 SFPP23, view northeast towards high quality sedge meadow

Photo #19 SFPP24, view northwest of mowed turf around soybean field

Photo #20 SFPP 25, view northwest along recently disturbed roadside with soybean field beyond

Photo #21 SFPP 26, view northeast of recently constructed extension of Country View Road

Photo #22 SFPP 27, view southwest of road shoulder of recently constructed extension of Country View Road

Photo #23 SFPP28, view west of road shoulder of recently constructed extension of Country View Road

Photo #24 PP28, view west towards soybean field

Photo #25 SFPP22, view northeast toward hayfield

Photo #26 SFPP21, view southeast toward mowed turf

Photo #27 PP27, view northwest toward ruderal wet meadow within hayfield

Photo #28 PP27, view southeast toward ruderal wet meadow within hayfield

Photo #29 PP26, view northwest along Country View Road and hayfields

Photo #30 PP26, view southeast along Country View Road with tree lines between road and ag fields

Photo #31 SFPP19, view northwest of disturbed upland shrubland

Photo #32 SFPP19, view southeast of disturbed upland shrubland

Photo #33 SFPP18, view north of mowed road should and disturbed upland shrubland/woodland

Photo #34 PP25, view south of ruderal wet meadow transitioning to ruderal shallow marsh

Photo #35 SFPP17, view north of ruderal shallow marsh along Country View Road

Photo #36 PP24, view west of disturbed wet meadow fringe transitioning to ruderal shallow marsh

Photo #37 PP24, view southeast of ruderal wet meadow with scattered native species

Photo #38 PP23, view west of ruderal wet meadow

Photo #39 PP23, view south of ruderal wet meadow and shrub carr

Photo #40 SFPP16, view east of mowed road shoulder

Photo #41 SFPP15, view north upland roadside

Photo #42 PP34, view south from State Trail of moderate quality sedge meadow with wet prairie fringe. Ruderal wet meadow in background.

Photo #43 PP34, view west from State Trail of moderate quality wet meadow/wet prairie with glade mallow population.

Photo #44 PP34, view north of moderate quality wet meadow/wet prairie. Ruderal wet meadow in background.

Photo #45 PP35, view south of ruderal wet meadow and ditch. Glade mallow population along State Trail.

Photo #46 PP35, view east of ruderal wet meadow and ditch. Glade mallow population along State Trail.

Photo #47 PP36, view southwest of ruderal wet meadow with ruderal shrub carr in background

Photo #48 PP36, view north of ruderal wet meadow transitioning to ruderal shallow marsh

Photo #49 PP37, view west of moderate-high quality sedge meadow

Photo #50 PP37, view northeast of moderate quality sedge meadow

Photo #51 PP37, view northeast of moderate quality sedge meadow with ruderal shrub carr in background

Photo #52 PP38, view southwest of moderate-high quality sedge meadow with ruderal wet meadow in background

Photo #53 PP39, view south of sedge meadow along the Sugar River degraded by reed canary grass

Photo #54 PP39, view west of moderate quality sedge meadow

Photo #55 PP39, view north of wet meadow degraded by reed canary grass with ruderal shrub carr in background

Photo #56 PP40, view southwest of ruderal shrub carr and ruderal wet meadow

Photo #57 PP41, view west of ruderal shrub carr associated with a ditch in the soybean field

Photo #58 PP41, view southwest of ruderal shrub carr and soybean fields

Photo #59 PP42, view west of wet meadow degraded by reed canary grass between ruderal shrub carr areas

Photo #60 PP43, view northeast of moderate quality sedge meadow

Photo #61 PP44, view east of moderate quality sedge meadow with ruderal shrub carr in background

Photo #62 PP45, view east of moderate quality sedge meadow/shallow marsh

Photo #63 PP46, view northeast toward moderate quality sedge meadow

Photo #64 PP46, view southwest of ruderal shrub carr and wet meadow associated with a ditch

Photo #65 PP47, view southwest of hayfield with ruderal wet meadow in background

Photo #66 PP48, view west of ruderal wet meadow within hayfield

Photo #67 PP49, view east of reed canary grass hayfield with Country View Rd in background

Photo #68 PP49, view southwest of ruderal wet meadow from hayfield

Photo #69 PP50, view west toward disturbed upland woodland

Photo #70 PP50, view east toward ag field lobe with wetland complex in background

Photo #71 PP51, view north toward sedge meadow community surrounded by ruderal wet meadow

Photo #72 PP51, view southwest of ruderal wet meadow with ruderal shrub carr in background

Photo #73 PP52, view northwest towards ruderal wet meadow

Photo #74 PP52, view northeast towards ruderal wet meadow

Photo #75 PP52, view southeast towards small sedge meadow with ruderal shrub carr in background

Photo #76 PP53, view northwest in ruderal wet meadow

Photo #77 PP53, view northeast in ruderal wet meadow

Photo #78 PP53, view southeast in ruderal wet meadow

Photo #79 PP53, view southwest in ruderal wet meadow with willow trees along ditch in background

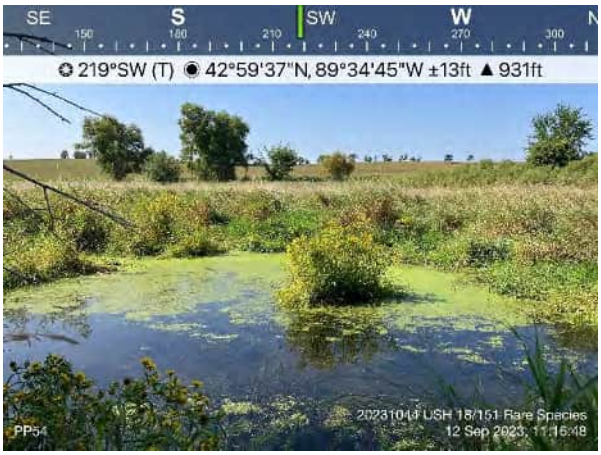


Photo #80 PP54, view southwest across ditch with ruderal wet meadow and shrub carr in background

Photo #81 PP55, view north along ditch between corn field and ruderal shrub carr

Attachment C | Table 1. Wetland Community Summary

Table 1. Wetland Community Summary

Wetland Community ID	Wetland Plant Community Type (Eggers & Reed 2015)	Wetland Quality	Wetland Characteristics
1	Farmed fresh (wet) meadow	Low	Planted to soybeans in 2023.
2	Farmed fresh (wet) meadow	Low	Planted to soybeans in 2023.
3	Fresh (wet) meadow/shallow marsh	Low	Degraded wet meadow dominated by reed canary grass with shallow marsh pockets dominated by non-native cattail.
4	Shallow marsh	Low	Degraded shallow marsh dominated by non-native cattail and reed canary grass with scattered Joe-Pye weed and purple-stem aster.
5	Sedge meadow	High	High quality sedge meadow dominated by Joe-Pye weed, tussock sedge and other sedges, Canada bluejoint, New England Aster, and purple-stem aster; scattered marsh marigold and great Angelica with a diversity of other native wetland species. Minimal reed canary grass.
6	Sedge meadow/shallow marsh	High	High quality sedge meadow/shallow marsh dominated by Joe-Pye weed, tussock sedge, broad-leaved cattail, and Canada bluejoint with a diversity of other native wetland species. High water table with groundwater upwelling, permanently saturated to permanently inundated. Areas of tall tussocks and pockets of wet meadow/wet prairie.
7	Shallow marsh	Moderate-High	High quality shallow marsh dominated by broad-leaved cattail, broad-fruit bur-reed, sedges, and greater water dock. Permanent shallow inundation.
8	Shrub carr	Low	Degraded shrub carr dominated by willows, invasive bush honeysuckle, common buckthorn, non-native cattail, and reed canary grass. Some native wetland plants remain in understory, but generally degraded by invasive species and shrub encroachment.
9	Sedge meadow/shrub carr	High	High quality sedge meadow dominated by Joe-Pye weed and tussock sedge with a diversity of native wetland plants including purple-stem aster, great Angelica, glade mallow, white meadowsweet, and mountain-mint. Minimal reed canary grass. Some woody encroachment and shrub carr formation from gray dogwood and invasive bush honeysuckle.
10	Fresh (wet) meadow/shrub carr	Low	Degraded wet meadow dominated by reed canary grass with few shrub pockets.
11	Shrub carr	Low	Degraded shrub carr dominated by willows and reed canary grass.
12	Shrub carr	Low	Degraded shrub carr associated with an ag ditch; dominated by common buckthorn and reed canary grass with some box elder trees.
13	Fresh (wet) meadow	Low	Native wetland community present but degraded by reed canary grass (75% cover). Dominant native species include purple-stem aster, Canada goldenrod, dark-green bulrush, and Joe-Pye weed.
14	Shrub carr	Low	Degraded shrub carr dominated by box elder, Bebb's willow, common buckthorn, black willow, and reed canary grass.
15	Fresh (wet) meadow	Low-Moderate	Native wetland community present but degraded by reed canary grass (50% cover). Dominant native species include purple-stem aster, Canada goldenrod, blue vervain, dark-green bulrush, and Joe-Pye weed.
16	Shrub carr	Low	Degraded shrub carr dominated by various willows and reed canary grass with moderate purple-stem aster and Canada goldenrod.
17	Sedge meadow/fresh (wet) meadow	Moderate	Sedge meadow/wet meadow dominated by tussock sedge, purple-stem aster, saw-tooth sunflower, giant goldenrod, and hairy fruit lake sedge. Seasonal-permanently saturated soils. Reed canary grass ranges from 5-35% cover, moderate plant diversity.
18	Sedge meadow/shallow marsh	Moderate	Mosaic of sedge meadow and shallow marsh with wet meadow pockets. Dominated by purple-stem aster, broad-leaved cattail, saw-tooth sunflower, and Joe-Pye weed with various sedged, bulrushes, and forbs. Reed canary grass ranges from 0-30% cover, moderate plant diversity.
19	Fresh (wet) meadow/shallow marsh/shrub carr	Low	Primarily degraded wet meadow dominated by reed canary grass. Degraded shrub carr between portion of State Trail and ditch dominated by common buckthorn, willow, and box elder. Shallow marsh dominated by reed canary grass and non-native cattail associated with ditches. Some native wetland vegetation present but overall highly degraded by ditching and non-native species encroachment.
20	Fresh (wet) meadow	Low	Degraded wet meadow dominated by reed canary grass with scattered natives, portions mowed for hay.

21	Shrub carr	Low	Low quality shrub carr dominated by various willows and a few cottonwood trees over reed canary grass.
22	Fresh (wet) meadow/wet prairire	Moderate	Wet prairie/wet meadow fringe along State Trail with a variety of forbs including panciled aster, cup-plant, glade mallow, and tall meadow-rue. Invasive species encroachment including 25% cover of invasive bush honeysuckle and 20% cover of reed canary grass. Pocket of broad-fruit bur-reed.
23	Sedge meadow/wet prairie	Moderate-Hgh	Sedge meadow with wet prairie fringe along State Trail. Dominated by saw-tooth sunflower, glade mallow, tussock sedge, purple-stem aster, and Joe-Pye weed. Similar to #27 across State Trail. Conservative species present, high species diversity, low invasive cover.
24	Shrub carr	Low	Low quality shrub carr dominated by common buckthorn, invasive bush honeysuckle, and box elder.
25	Fresh (wet) meadow/sedge meadow	Low-Moderate	Wet meadow/sedge meadow that has been degraded by reed canary grass (>50% cover). Dominant native species include Joe-Pye weed, saw-tooth sunflower, panicled aster, and saw-tooth wormwood.
26	Shrub carr	Low	Low quality shrub carr dominated by common buckthorn, invasive bush honeysuckle, box elder, and riverbank grape.
27	Sedge meadow/wet prairie	Moderate-Hgh	Sedge meadow with wet prairie fringe along State Trail. Dominated by saw-tooth sunflower, glade mallow, tussock sedge, purple-stem aster, and Joe-Pye weed. Similar to #23 across State Trail. Conservative species present, high species diversity, low invasive cover, some shrub encroachment.
28	Sedge meadow	Moderate	Sedge meadow dominated by broad-fruit bur-reed, Canada bluejoint grass, orange jewelweed, and great water dock with a wet prairie fringe along State Trail with glade mallow common.
29	Fresh (wet) meadow	Low	Degraded wet meadow dominated by reed canary grass between the Sugar River and the State Trail. Scatterd pockets of common buckthorn, willow, and box elder. Glade mallow scattered along State Trail perimeter.
30	Sedge meadow/wet prairie	Moderate	Sedge meadow with wet prairie fringe along State Trail. Moderate to high species diversity with approx. 7-10% cover reed canary grass. Dominated by panicled aster, tussock sedge, and Joe-Pye weed. Glade mallow common. Areas of tussocks and shallow inundation.
31	Fresh (wet) meadow	Low	Degraded wet meadow dominated by reed canary grass. Small area with scattered natives including Canada goldenrod, bottle gentain, saw-tooth sunflower, mountain-mint, and great Angelica but degraded by reed canary grass.
32	Shallow marsh	Low	Degraded shallow marsh dominated by non-native cattail with scattered reed canary grass and purple-stem aster.
33	Shrub carr	Low	Low quality shrub carr dominated by sandbar willow.
34	Sedge meadow	Moderate	Moderate quality sedge meadow dominated by tussock sedge (large tussocks), Canada bluejoint grass, Joe-Pye weed, and purple-stem aster. Approx. 10-35% cover reed canary grass.
35	Shrub carr	Low	Low quality shrub carr dominated by sandbar willow.
36	Shrub carr	Low	Low quality shrub carr dominated by sandbar willow and reed canary grass.
37	Shallow marsh	Low	Degraded shallow marsh associated with ditch. Dominated by non-native cattail and reed canary grass south of the ditch and broad-fruit bur-reed and reed canary grass north of the ditch
38	Fresh (wet) meadow	Low	Degraded wet meadow with shallow marsh pockets. Dominated by reed canary grass. Scattered Canada thistle, non-native cattail, saw-tooth sunflower, and hairy-fruit lake sedge.
39	Shallow marsh	Low	Shallow marsh associated with ditch; dominated by non-native cattail and reed canary grass.
40	Sedge meadow	Moderate	Small sedge meadow dominated by hairy-fruit lake sedge and giant goldenrod with saw-tooth wormwood common. Some encroachment by reed canary grass (15% cover) and sandbar willow (10% cover). Relatively low plant diversity.
41	Shrub carr	Low	Low quality shrub carr dominated by sandbar willow and reed canary grass with giant goldenrod.
42	Shrub carr	Low	Low quality shrub carr dominated by sandbar willow and reed canary grass.

Attachment D | Species Lists

Sedge Meadow

Shallow Marsh/Sedge Meadow

Sedge Meadow Species List - Wetland Communities 5, 6, and 9

Scientific Name	Common Name	Nativity	Physiognomy	C Value	NC-NE Wetland Indicator Status
Angelica atropurpurea	common great Angelica	native	forb	6	OBL
Calamagrostis canadensis	blue-joint grass	native	grass	5	OBL
Caltha palustris	cowslip	native	forb	6	OBL
Campanula aparinoides	marsh bellflower	native	forb	7	OBL
Carex bebbii	Bebb's oval sedge	native	sedge	4	OBL
Carex hystericina	bottlebrush sedge	native	sedge	3	OBL
Carex pseudocyperus	cypress-like sedge	native	sedge	8	OBL
Carex stipata	common fox sedge	native	sedge	2	OBL
Carex stricta	common tussock sedge	native	sedge	7	OBL
Cicuta maculata	common water-hemlock	native	forb	6	OBL
Cornus racemosa	gray dogwood	native	shrub	2	FAC
Equisetum arvense	common horsetail	native	forb	1	FAC
Eupatorium perfoliatum	boneset	native	forb	6	FACW
Eutrochium maculatum	spotted Joe-Pye weed	native	forb	4	OBL
Galium sp.	unidentified bedstraw	native	forb	NA	NA
Helianthus grosseserratus	saw-tooth sunflower	native	forb	2	FACW
Impatiens capensis	orange jewelweed	native	forb	2	FACW
Lathyrus palustris	marsh pea	native	forb	5	FACW
Lonicera x bella	Bell's honeysuckle	non-native	shrub	0	FACU
Lycopus americanus	American water-horehound	native	forb	4	OBL
Monarda fistulosa	bee balm	native	forb	3	FACU
Napaea dioica	glade mallow	native	forb	6	FACW
Persicaria sagittata	arrow-leaved tearthumb	native	vine	6	OBL
Phalaris arundinacea	reed canary grass	non-native	grass	0	FACW
Poa palustris	fowl meadow grass	native	grass	5	FACW
Pycnanthemum virginianum	common mountain mint	native	forb	6	FACW
Rumex britannica	greater water dock	native	forb	8	OBL
Salix amygdaloides	peach-leaved willow	native	tree	4	FACW
Scirpus cyperinus	wool-grass	native	sedge	4	OBL
Scutellaria galericulata	common skullcap	native	forb	5	OBL
Solidago gigantea	giant goldenrod	native	forb	3	FACW
Spiraea alba	white meadowsweet	native	shrub	4	FACW
Symphyotrichum novae-angliae	New England aster	native	forb	3	FACW
Symphyotrichum puniceum	swamp aster	native	forb	5	OBL
Typha latifolia	broad-leaved cat-tail	native	forb	1	OBL

Shallow Marsh Species List - Wetland Community 7

Scientific Name	Common Name	Nativity	Physiognomy	C Value	NC-NE Wetland Indicator Status
Alisma triviale	northern water-plantain	native	forb	4	OBL
Angelica atropurpurea	common great Angelica	native	forb	6	OBL
Caltha palustris	cowslip	native	forb	6	OBL
Campanula aparinoides	marsh bellflower	native	forb	7	OBL
Carex lasiocarpa	American woolly-fruit sedg	native	sedge	9	OBL
Carex lurida	shallow sedge	native	sedge	8	OBL
Carex stricta	common tussock sedge	native	sedge	7	OBL
Cicuta bulbifera	bulblet water-hemlock	native	forb	7	OBL
Epilobium sp.	unidentified willow-herb	native	forb	NA	NA
Eutrochium maculatum	spotted Joe-Pye weed	native	forb	4	OBL
Galium sp.	unidentified bedstraw	native	forb	NA	NA
Impatiens capensis	orange jewelweed	native	forb	2	FACW
Onoclea sensibilis	sensitive fern	native	fern	5	FACW
Persicaria amphibia	water hearts-ease	native	forb	5	OBL
Rumex britannica	greater water dock	native	forb	8	OBL
Sagittaria latifolia	broad-leaved arrowhead	native	forb	3	OBL
Salix bebbiana	beaked willow	native	tree	7	FACW
Salix interior	sandbar willow	native	shrub	2	FACW
Sparganium eurycarpum	broad-fruit bur-reed	native	forb	5	OBL
Symphyotrichum puniceum	swamp aster	native	forb	5	OBL
Typha latifolia	broad-leaved cat-tail	native	forb	1	OBL

Attachment E | June 25, 2024 Survey Notes

Heartland
ECOLOGICAL GROUP INC
506 Springdale Street, Mount Horeb, WI 53572

June 25, 2024 Rare Species Survey Notes

Survey performed by: Scott Fuchs, Senior Scientist

Disturbance Area West of Sugar River

Very wet conditions due to above average rain this spring. About 50% of the disturbance area west of the Sugar River has standing water ranging from an inch or two to one foot plus. Wettest areas are along an old excavated ditch in the center of this area and within shrub carr and shallow marsh pockets. These areas likely too wet to support orchids. 70% of the area west of the Sugar River is dominated by ruderal species and/or reed canary grass, while the remaining area consists of lightly disturbed wet prairie / sedge meadow, which could potentially support the orchids. However, no orchids found within potential habitat areas after a thorough meander survey.

Species Lists:

Ruderal Wet Meadow

Phalaris arundinacea 100
Carex stricta 5
Lemna minor 3
Cirsium arvense 3
Symphyotrichum novae-angliae 2
Stachys palustris 2
Apocynum cannabinum 1
Urtica dioica 1
Persicaria pensylvanica 1
Persicaria amphibia 1
Equisetum arvense 1

Shrub Carr

Shrub Stratum:
Salix interior 75

Heraceous Stratum:
Phalaris arundinacea 100
Calamagrostis canadensis 5
Cirsium arvense 2
Carex stricta 2
Stachys palustris 2
Persicaria pensylvanica 2
Asclepias incarnata 1

Solidago gigantea 1
Vitis riparia 1
Impatiens capensis 1
Mentha spicata 1

Inundated Sedge Meadow

Carex stricta 100
Phalaris arundinacea 30
Calamagrosis canadensis 10
Carex lacustris 5
Solidago gigantea 2
Symphyotrichum puniceum 2

Sedge Meadow / Wet Prairie

Spartina pectinata
Carex normalis
Solidago gigantea
Phalaris arundinacea
Stachys palustris
Calamagrostis canadensis
Mentha spicata
Pycnanthemum virginianum
Lycopus americana
Persicaria amphibia
Carex pellita
Anemone canadensis
Symphyotrichum puniceum
Vernonia fasciculata
Scirpus atrovirens
Lysimachia cilliata
Carex bebbii
Carex stipata
Carex vulpinoidea
Juncus dudleyii
Carex scoparia
Poa palustris
Angelica atropurpurea
Equisetum pratense
Allium cernuum
Thalictrum dasycarpum
Cornus alba
Galium obtusum
Eleocharis palustris

Lysimachia thyrsiflora

Disturbance Area East of Sugar River

The disturbance area east of Sugar River contains ruderal wet meadow / shallow marsh and farmed wet meadow north of an east-west ditch. A tree line is present along the ditch. A narrow band of an ostensibly previously farmed wet meadow is present oriented east-west south of the ditch, sandwiched by another tree line to its south. South of this second tree line, a moderate quality sedge meadow is present that transitions to a mosaic of sedge meadow and shallow marsh. Some surface water is present within the wet meadow / shallow marsh adjacent to outbuildings in the northwestern portion of the disturbance area. Pockets of the sedge meadow and sedge meadow / shallow marsh mosaic are also inundated. Immediately east of the military ridge trail, another tree line is present. West of the military ridge trail, a moderate quality shallow marsh is present and contains six inches of surface water throughout. East of the Sugar River, the only potential habitat consists of the sedge meadow along the southeastern boundary of the disturbance area. No orchids were observed during a thorough meander survey.

Species Lists:

Ruderal Shallow Marsh / Wet Meadow

Phalaris arundinacea 100
Typha latifolia 15
Impatiens capensis 5
Ambrosia trifida 2
Scirpus atrovirens 2
Cirsium arvense 1
Eutrochium maculatum 1

Farmed Wet Meadow

Cyperus esculentus 10
Phalaris arundinacea 5
Symphyotrichum puniceum 3
Persicaria maculosa 2
Erechtites hieraciifolius 1
Veronica peregrina 1

Treeline Along Ditch

Tree / Shrub Stratum:
Acer negundo 50
Rhamnus cathartica 50
Lonciera x bella 25
Salix amygdaloides 10
Sambucus nigra 10

Herbaceous Stratum:
Rhamnus cathartica 30
Impatiens capensis 10
Aegopodium podagraria 10
Phalaris arundinacea 5
Circaea alpina 5
Solidago gigantea 3
Ribes americana 3
Rubus idaeus 3
Carex grisea 2

Previously Farmed Narrow Wet Meadow Strip

Phalaris arundinacea 80
Symphyotrichum puniceum 8
Solidago gigantea 5
Eupatorium perfoliatum 1
Potentilla norvegica 1
Scirpus cyperinus 1
Eutrochium maculatum 1
Scirpus atrovirens 1
Schoenoplectus tabernaemontani 1
Impatiens capensis 1
Typha angustifolia 1
Carex bebbii 1
Juncus dudleyii 1
Urtica dioica 1

Low Quality Wet Meadow

Phalaris arundinacea 70
Sympohyotrichum puniceum 40
Artemisia serrata 8
Stachys palustris 2
Heracleum maximum 1
Urtica dioica 1
Solanum dulcamara 1
Eutrochium maculatum 1
Helianthus grosseserratus 1

Sedge Meadow

Carex stricta 80
Symphyotrichum puniceum 15

Calamagrostis canadensis 5
Phalaris arundinacea 5
Eutrochium maculatum 3
Carex retrorsa 3
Onoclea sensibilis 3
Impatiens capensis 1
Persicaria pensylvanica 1
Poa palustris 1
Typha latifolia 1
Equisetum arvense 1

Sedge Meadow / Shallow Marsh Mosaic

Carex stricta 50
Symphyotrichum puniceum 25
Phalaris arundinacea 20
Calamagrostis canadensis 15
Typha latifolia 15
Eutrochium maculatum 8
Scirpus atrovirens 3
Scirpus cyperinus 3
Carex stipata 3
Lycopus americana 3
Carex bebbii 2
Persicaria pensylvanica 2
Lysimachia thyrsiflora 1
Asclepias incarnata 1
Poa palustris 1
Solidago gigantea 1
Equisetum arvensis 1
Symphyotrichum lanceolatum 1

Sedge Meadow / Shallow Marsh Area Adjacent to Military Ridge Trail

Carex retrorsa 60
Carex stricta 30
Typha latifolia 10
Eutrochium maculatum 8
Sagittaria latifolia 5
Lemna minor 5
Phalaris arundinacea 5
Lysimachia thyrsiflora 5
Angelica atropurpurea 3
Salix bebbii 5
Calamagrostis canadensis 3

Stachys palustris 3
Symphyotrichum lancolatum 2
Osmundastrum cinnamomeum 2
Napaea dioica 1