Appendix D2: Ecological Systems

Contents

Ecological Systems

D2.1. Vegetation and Habitat

Habitats within the Project Study Area are primarily in disturbed railroad ROW, residential, commercial, and undeveloped areas with wetlands and prairies of low to high natural quality. Streams along existing UPRR are bridged. Wildlife usage in the build alternatives is likely to be species tolerant of disturbance and human presence. Habitat for the species listed as critical for the Grand Prairie Natural Division by the Illinois Wildlife Action Plan are found within the build alternatives. These habitats include grasslands, streams, forests, and wetlands.

The build alternatives contain scattered trees and hedgerows associated with commercial areas, developed areas, and undeveloped areas as well as some forested areas associated with the Prairie Creek and Grant Creek riparian areas. The build alternatives extend through MNTP, the DPSFWA, and two Illinois Natural Areas Inventory (INAI) sites. The INAI sites are the the Hitts Siding Prairie Nature Preserve and the Joliet Army Ammunition Plant INAI site. These areas provide habitat for listed species.

Forested Areas

Forests in the Project Study Area are typically upland forest and woodland edge. In Illinois, a Memorandum of Understanding (MOU) between the IDNR and IDOT (IDOT, 2013) requires IDOT to determine whether an alignment bisects or fragments forested areas greater than 20 acres. Of the forest tracts in the Project Study Area, there are no forested areas greater than 20 acres within the build alternatives.

Prairies

Although much of the Study Area was likely historically covered by prairie (Homoya *et al*., 1985), remnant prairie areas are now scarce due in part to succession and conversion to agricultural land. Some of the observed remnant prairies include intermediate areas between forbland (with few prairie species) and remnant prairie, and as such some of the areas identified as forbland in this study were likely prairie historically.

During the botanical field surveys, nine noteworthy, significant, or exceptional prairies were identified in the build alternatives (INHS, 2014 and Huff & Huff, Inc. 2020, updated in 2025). Botanical surveys were conducted in June, July, and September 2014, June, July, and August 2020, and June, July and August 2024, to identify high quality remnant natural communities. Prairies considered significant are high quality natural communities reflecting presettlement conditions. Prairies considered exceptional are similar quality, but not meeting other requirements (such as minimal size). Prairies considered noteworthy do not meet the requirements for significant or exceptional remnant communities, but have regionally important natural quality.

Observed plant species were noted to obtain the Floristic Quality Index (FQI) and mean C-value (coefficient of conservatism). Areas of high natural quality include native plants with C-values ranging from approximately 4 to 10. C-values are assigned to native plants as listed in *Plants of the Chicago Region* (Swink and Wilhelm, 1994). A low C-value indicates that a plant is generally not considered high quality or is a habitat generalist. An FQI for each site is obtained by multiplying the mean C-value of all native plants encountered by the square root of the number (N) of native species. FQI values of 0 to 5.0 are considered severely degraded, 5.1 to 9.9 are degraded, 10 to 19.9 are moderate quality with some native character, and those with values greater than 20 have natural characteristics and are considered an environmental asset. Noteworthy prairies are those prairies that have native FQI values greater than 20 and native C-values greater than 3.0.

After the FQI was obtained on remnant habitats possessing noteworthy remnant quality, further evaluation to substantiate empirical determinations of community quality was based on INAI grades of natural quality.

Community classification and INAI grades of natural quality follow White (1978). Grades of natural quality are as follows:

- Grade A: Relatively stable or undisturbed communities
- Grade B: Late successional or lightly disturbed communities
- Grade C: Mid-successional or moderately to heavily disturbed communities
- Grade D: Early successional or severely disturbed communities
- Grade E: Very early successional or very severely disturbed communities.

Grading methodology of prairies is further explained in INHS 2014 (attached).

High quality natural communities which reflect presettlement conditions are considered significant and would qualify for the INAI as a Category 1 natural area. Sites of similar quality, but not meeting other requirements (such as minimal size), are considered exceptional. Sites not meeting the requirements for significant or exceptional remnant communities but with regionally important natural quality, native plant species diversity, or populations of rare plant species are considered noteworthy. Tables D2-1 and D2-2 summarize the potential impacts to significant, exceptional, and noteworthy (Grades A, B, and C+) prairies within the build alternatives.

In addition to the delineated prairies in the 2014 INHS survey, three botanical sites were identified within the ESR limits during the 2020 botanical surveys. These botanical sites correspond to some of the prairies delineated in 2013 and 2014. Sites A and B were considered regionally noteworthy and Site C was considered significant. Botanical Site A is located within MNTP, along the west side of the railroad ROW south of Damien Mills Road. Site B is located within MNTP, along the east side of the ROW south of Damien Mills Road (coincident to the Mola and Vulcan Tract Restoration areas). Site C is located at the Hitts Siding Prairie. Additional detail about each of these natural resource populations can be found in the Chicago to St. Louis High Speed Rail Elwood to Braidwood (Tier 8)_Natural Resources Update Report from November 2020 (revised February 2025).

Table D-2-1. Significant, Exceptional, and Noteworthy Prairies

Botanical Resource Area/ Prairie Site Number	FQI/Mean C-Value	Grade	INHS Category	Surveyor	2020 Update
Site 1	29.6/3.8	B	Exceptional	INHS	Degraded/woody encroachment
Site 2	37.3/4.0	C+	Noteworthy	INHS	Degraded/woody encroachment
Site B (Site 5)	46.9/3.9	C+	Noteworthy	H&H	Huff & Huff Site B
Sites 7 and 8[1]	37.5/4.0	C+	Noteworthy	INHS	Outside of Project Limits
Site 9	Not provided	C+	Noteworthy	INHS	Degraded - Phragmites encroachment
Site C - (Sites 10, 11,12 , 13 , 14, and 15[2]	58.0/4.6	B-	Significant	INHS & H&H	Huff & Huff 2020 Site C
Site 24	48.8/3.9	C+	Noteworthy	INHS	Degraded - Phragmites encroachment

Botanical Resource Area/ Prairie Site Number	FQI/Mean C-Value	Grade	INHS Category	Surveyor	2020 Update
Site A (Site 6)	45.5/3.9	C+	Noteworthy	H&H	Huff & Huff 2020 Site A

[1] Prairie Sites 7 and 8 were combined due to proximity.

[2] Prairie Sites 10, 11, 12 , 13 , 14, and 15 were combined due to proximity.

Build Alternative 1B: The acreage impacts from Build Alternative 1B to forested areas and significant, exceptional, or noteworthy prairie remnants are outlined in the tables below. A range of impacts is listed for areas within UPRR right-of-way since there are several different ways the contractor may chose to construct the project.

Table D2-3. Build Alternative 1B Impacted Forested Areas

Forest Resource Location	Permanent Impacts (acre)
Abraham Lincoln National Cemetery	2.36
DPSFWA	0.00
Hitts Siding Prairie	0.28
MNTP	0.52
UPRR	6-12.86
Other	0.33

Table D2-2. Build Alternative 1B Impacted Botanical Sites

Surveyed Botanical Site [1]	Permanent Impacts (acre)
Site A	0.60
Site B	0.00
Site C (Prairie Sites 10-15)	0.85
Site 1	0.11
Site 2	0.28
Site 8	0.10
Site 9	0.20
Site 24	0.01
Total	**2.15**

[1] Grades C+ and above only

Build Alternative 2A: The acreage of impacts from Build Alternative 2A forested areas and significant, exceptional, or noteworthy prairie remnants are outlined in the table below. A range of impacts is listed for areas within UPRR right-of-way since there are several different ways the contractor may chose to construct the project.

Table D2-4. Build Alternative 2A Impacted Forested Areas

Forest Resource Location	Permanent Impacts (acre)
Abraham Lincoln National Cemetery	0.40
DPSFWA	0.00
Hitts Siding Prairie	0.28
MNTP	0.19
UPRR	6-12.86
Other	3.07

Table D2-5. Build Alternative 2A Impacted Botanical Sites

Surveyed Botanical Site [1]	Permanent Impacts (acre)
Site A	0.60
Site B	0.00
Site C	0.85
Site 1	0.11
Site 2	0.58
Site 8	0.10
Site 9	0.20
Site 24	0.01
Total	**2.45**

[1] Grades C+ and above only

D2.2. Wildlife Resources

Land use within the build alternatives is agricultural interspersed with tree lines, forested areas, wetlands, grasslands, prairie, streams and associated riparian corridors, and urbanized, developed land.

Agricultural lands provide minimal habitat opportunities but can provide seasonal cover and forage for species such as white-tailed deer (*Odocoileus virginianus*), common raccoon (*Procyon lotor*), Canada geese (*Branta Canadensis*), Virginia opossums (*Didelphis virginiana*), and coyote (*Canis latrans*). Agricultural land can also provide short term habitat for amphibians and migratory avian species.

Urbanized areas are generally considered habitat for species tolerant of human disturbance and activities. Additional species may be present within these lands and within streams and their associated riparian areas, wetlands, forested areas, shrubland, savannas, and prairies.

Areas with the highest quality wildlife habitat within or immediately adjacent to the build alternatives occur within four conservation areas: MNTP, the DSFWA, the Hitts Siding Prairie Nature Preserve, and the Joliet Army Ammunition Plant INAI site.

The Eastern Tallgrass Prairie and Big River (ETBR) Landscape Conservation Cooperative (LCC) of the USFWS Midwest Region has identified surrogate species which serve as 'umbrella' and 'environmental indicator' species for the ETBR landscape (USFWS, 2013). Based on INHS, MNTP, and USFWS records, the following species from the USFWS surrogate species list are known to occur within or immediately adjacent to the build alternatives: Henslow's sparrow (*Ammodramus henslowii*), grasshopper sparrow (*Ammodramus savannarum*), bobolink (*Dolichonyx orizivorus*), upland sandpiper (*Bartramia longicauda*), green-winged teal (*Anas crecca*), mallard (*Anas platyrhynchos*), marsh wren (*Cistothorus palustris*), Virginia rail (*Rallus limicola*), and blackside darter (*Percina maculata*).

The surrogate species provide the foundation for Strategic Habitat Conservation (SHC) as outlined by the LCC and will be utilized to evaluate the effectiveness in achieving USFWS conservation goals. Populations of surrogate species are influenced by at least one of three dominant limiting factors on the ETBR landscape: loss of free-flowing and connected rivers, streams, and associated wetlands; water pollution related to agricultural fertilizers; and loss of grasslands.

Mammals

Known mammal species within the project area include bats, mice, rabbits, shrews, meadow voles (*Microtus pennsylvanicus*), ground squirrels and chipmunks, groundhogs (*Marmota monax*), muskrats (*Ondatra zibethicus*), beaver (*Castor canadensis*), pocket gophers (*Geomys bursarius*), eastern moles (*Scalopus aquaticus*), Virginia opossum, common raccoon, red fox (*Vulpes vulpes*), coyote, river otter (*Lontra canadensis*), striped skunk (*Mephitis mephitis*), bobcat (*Lynx rufus*), and white-tailed deer (University of Illinois, 2014). Specific surveys for mammal species were not conducted.

Reptiles and Amphibians

Known reptile and amphibian species within Illinois include various species of salamander, frogs, toads, turtles, lizards, snakes (Illinois Natural History Survey, 2012).

Specific surveys for protected reptile and amphibian species were conducted within the build alternatives for the Blanding's turtle (state endangered, *Emydoidea blandingii*), eastern massasauga rattlesnake (federal candidate and state endangered, *Sistrurus catenatus*), and ornate box turtle (state threatened, *Terrapene ornata*). The results of these surveys are discussed in Section 1.5.

Birds

The build alternatives are within the eastern half of the Mississippi flyway, which is used by migratory birds in the U.S. and Canada. Migratory birds use a diverse range of habitat types including those habitats within the build alternatives. The predominant migratory bird habitat types within the build alternatives are grasslands, forests, and wetlands.

Some bird species, including migratory birds, rely on large stands of mature forests for breeding. Since the build alternatives contain forested areas, available literature on area requirements of forest interior avian species was reviewed to determine which were most likely to be used by these species. Area requirements of forest interior migratory species indicated that many species, including the most sensitive and those declining in population require areas larger than 370 acres of contiguous habitat (Robbins *et al.*, 1989). Robbins *et al.* (1989) found that forest area influences breeding abundance of forest interior species. They found the highest probability of breeding by most forest interior species in forests greater than 7,400 acres in size. Estimated minimum areas needed to support breeding populations ranged from 2.5 acres for wood thrush (*Hylocichla mustelina*) to 2,500 acres for black-throated blue warbler (*Setophaga caerulescens*), with half the species needing 370 acres or more. There are few forest interior species for which forests less than 25 acres appeared to provide adequate habitat for breeding.

Specific surveys for the following protected bird species were conducted within the build alternatives: the loggerhead shrike (state endangered, *Lanius ludovicianus*) and the upland sandpiper (state endangered, *Bartramia longicauda*). Additional listed bird species are known to occur at MNTP. A grassland bird memo was prepared to document sightings of grassland birds within MNTP – see Appendix D3 attachments.

D2.3. Waters of the US

The USEPA and the USACE interpret the term "waters of the United States" to encompass: The territorial seas and traditional navigable waters; perennial and intermittent tributaries that contribute surface water flow to such waters; certain lakes, ponds, and impoundments of jurisdictional waters; and wetlands adjacent to other jurisdictional waters.

Wetlands are defined by the USACE and the USEPA as:

> "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Title 33 Code of Federal Regulations Section 328.3 (b) and Section 404 of the Clean Water Act).

Executive Order 11990, "Protection of Wetlands", requires federal agencies to avoid, to the extent practicable, short and long-term impacts associated with the destruction or modification of wetlands. More specifically, it directs federal agencies to avoid new

construction in wetlands unless there is no practical alternative. In addition, it states that where wetlands cannot be avoided, the proposed action must include all practical measures to minimize harm to the wetlands.

Section 404 of the CWA (Title 33 USC Section 1344) requires permits for placement of structures, dredged, or fill material into the WOUS. The Illinois Wetland Policy Act of 1989 (Chapter 415 ILCS Section 5) requires State agencies to preserve wetlands and compensate for adverse wetland impacts from their projects. The act covers wetlands subject to the USACE jurisdiction under the CWA as well as isolated wetlands not protected under the CWA.

Under Section 401 of the CWA , federal agencies are not allowed to issue permits for activities that may result in a discharge to WOUS without water quality certification.

Under Section 303(d) of the CWA, the Illinois EPA has identified waters that don't meet water quality standards. Two waters within the project limits are listed on the 303(d) list (IEPA, 2024) – Prairie Creek (IL_FA-01) and Grant Creek (IL_GA-01). Both creeks are listed as impaired for aquatic life, with cause unknown.

Delineations of waters of the US were conducted on October 3, 4, 5, and 6, 2011, October 18, 30 and 31, 2012, October 28 and 29, 2013, and July 7 and 8, 2014 (Olsson Associates, 2014). Delineations of waters of the US were conducted between September 9th and September 17th, 2020 to identify any potential environmental changes that could have occurred and verify previously collected data (Jacobs, 2021). Delineations were completed using USACE standards (Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual; Midwest Region (Version 2.0) (USACE, 2010). These delineations will be submitted to the USACE Chicago District for jurisdictional determinations prior to completing Section 404 permitting for this project. In addition, the delineation will be updated prior to construction to document additional changes.

Based on the results of the 2020 delineation, 39 areas met the three criteria for wetlands (hydrophytic vegetation, hydrology, and hydric soils) in the Project Study Area; twenty-nine of which are potentially jurisdictional wetlands. If an area identified in the 2014 delineation no longer met wetland hydrology, vegetation, or soil criteria, the previous documented wetland was not documented in the 2020 delineation. The delineated features are depicted in Appendix A, and Tables D2-5 through D2-8 summarize the characteristics of these features.

Each wetland and ditch was assessed for its potential to be considered a high quality aquatic resource (HQAR). HQAR are aquatic areas considered to be regionally critical due to their uniqueness, scarcity, and/or value, and other wetlands considered to perform functions important to the public interest. None of the delineated wetlands had the characteristics of an HQAR.

Observed plant species were noted to obtain the Floristic Quality Index (FQI) and mean C-value (coefficient of conservatism). Generally, an FQI of 20 or higher or a mean C-

value of 4.0 or higher indicates high vegetative quality with native characteristics. None of the delinated wetlands had the characteristics of high vegetative quality with native characteristics.

Additionally, there are new wetlands that have been recently restored within MNTP as mitigation for impacts elsewhere. MNTP provided the project team with a shapefile of the recently created wetland sites. Build Alternatives 1B will impact a small sliver of the newly created wetland (labeled "South Patrol Road" in the provided GIS shapefile) where it meets the UPRR ROW. The total permanent impact would be 0.2 acres. There are no temporary impacts to these wetland sites. Build Alternative 2A does not impact these newly created wetlands.

Table D2-5. Characteristics of Potentially Jurisdictional Wetlands within Build Alternative 1B

Mile Post	Side of Railroad	Site	Cowardin Classification[1]	Mean C	FQI	Total Area (Acres)	Permanent Impact (Acres)	Temporary Impact (Acres)	Mitigation Needed (Acres)
46.4	East	W007	PEM	2.7	6.6	0.09	0.07	0.00	0.11
46.4	West	W008	PFO	2.3	4	0.12	0.12	0.00	0.18
46.4	West	W009	PSS	1	2.4	0.01	0.00	0.01	0.00
46.5	West	W010	PEM	1.3	3.2	0.59	0.25	0.34	0.38
46.8	West	W011	PEM	1.8	5.4	0.11	0.05	0.06	0.08
46.8	East	W012	PEM	2.2	5.4	0.13	0.09	0.00	0.14
47.1	East	W014	PFO	2.7	9	0.88	0.36	0.52	0.54
46.5	East	W015	PEM	2.7	6.6	0.22	0.20	0.01	0.29
48.4	East	W016	PEM	2.1	6.6	0.11	0.11	0.00	0.16
47.7	East	W017	PEM	0.5	1.6	0.20	0.18	0.01	0.27
49.4	East	W019	PEM	2	4.9	0.00	0.00	0.00	0.00
49.3	East	W019b	PEM	2	4.9	0.01	0.00	0.00	0.00
49.3	West	W019c	PEM	2.5	8.1	0.04	0.04	0.00	0.06
48.7	East	W020a	PEM	1.4	3.1	0.07	0.03	0.00	0.04
48.7	West	W020b	PEM	0	0	0.22	0.17	0.05	0.25
48.5	East	W021	PEM	1.8	5.1	0.09	0.09	0.00	0.14
50.7	West	W022	PEM	2.1	5.9	1.85	1.82	0.03	2.73
49.9	West	W022b	PEM	2.5	3.5	0.70	0.67	0.00	1.00
51.1	East	W023	PEM	2.8	10.1	1.04	1.04	0.00	1.57
49.8	East	W024	PEM	2.7	4.7	0.16	0.16	0.00	0.25
51.3	West	W025	PEM	1.4	5.2	0.58	0.56	0.00	0.83
51.6	East	W026	PEM	1.8	5.4	0.48	0.48	0.00	0.73
54.7	West	W028	PEM	0	0	0.00	0.00	0.00	0.00
55.1	East	W030	PEM	1.1	4	1.21	1.21	0.00	1.81
54.6	West	W031	PEM	3.2	10.6	0.12	0.12	0.00	0.18

Mile Post	Side of Railroad	Site	Cowardin Classification[1]	Mean C	FQI	Total Area (Acres)	Permanent Impact (Acres)	Temporary Impact (Acres)	Mitigation Needed (Acres)
54.4	East	W032	PEM	1.9	9.7	4.94	4.87	0.07	7.31
54.3	West	W033	PEM	1.2	2.9	0.26	0.26	0.00	0.39
54.2	West	W034	PEM	2.1	9.6	3.12	3.12	0.00	4.68
53.1	West	W035	PEM	3	11.6	0.60	0.60	0.00	0.90
52.9	East	W036	PEM	0	0	0.25	0.25	0.00	0.38
52.9	East	W037	PEM	0	0	0.06	0.06	0.00	0.08
51.9	East	W039	PEM	1.5	5	0.12	0.12	0.00	0.17
Total						18.39	17.12	1.10	25.68

[1] *Cowardin et al. (1979)* - PFO - Palustrine, forested/palustrine, emergent, seasonally flooded; PEM – Palustrine, emergent, temporarily flooded; PSS – Palustrine, scrub-shrub, temporarily flooded

Table D2-6. Characteristics of Likely Non-Jurisdictional Wetlands within Build Alternative 1B

Mile Post	Side of Railroad	Site	Cowardin Classification[1]	Mean C	FQI	Total Area (Acres)	Permanent Impact (Acres)	Temporary Impact (Acres)	Mitigation Needed (Acres)
44.9	East	W001	PEM	1	3.5	0.09	0.09	0.00	0.14
45.2	East	W002	PSS	1.2	2.9	0.39	0.39	0.00	0.58
45.1	West	W003	PEM	1.8	4.4	0.10	0.10	0.00	0.15
45.5	West	W004	PEM	1	1.7	0.04	0.04	0.00	0.07
46.2	West	W005	PFO	1.7	4.2	0.03	0.03	0.00	0.05
46.2	East	W006	PEM	2.2	5.4	0.00	0.00	0.00	0.00
47.6	West	W018	PEM	0	0	0.01	0.01	0.00	0.02
51.5	West	W027	PEM	1.7	4.5	0.13	0.13	0.00	0.19
55.3	East	W029	PFO	1.5	5.4	0.16	0.16	0.00	0.24

Mile Post	Side of Railroad	Site	Cowardin Classification[1]	Mean C	FQI	Total Area (Acres)	Permanent Impact (Acres)	Temporary Impact (Acres)	Mitigation Needed (Acres)
52.1	West	W038	PEM	2.3	7.6	0.01	0.02	0.00	0.02
45.1	West	W003	PEM	1.8	4.4	0.10	0.10	0.00	0.15
Total						0.97	0.97	0.00	1.46

[1] *Cowardin et al. (1979)* - PFO - Palustrine, forested/palustrine, emergent, seasonally flooded; PEM – Palustrine, emergent, temporarily flooded; PSS – Palustrine, scrub-shrub, temporarily flooded

Table D2-7. Characteristics of Potentially Jurisdictional Wetlands within Build Alternative 2A

Mile Post	Side of Railroad	Site	Cowardin Classification[1]	Mean C	FQI	Total Area (Acres)	Permanent Impact (Acres)	Temporary Impact (Acres)	Mitigation Needed (Acres) [2]
46.4	East	W007	PEM	2.7	6.6	0.09	0.07	0.01	0.11
46.4	West	W008	PFO	2.3	4	0.12	0.12	0.00	0.18
46.4	West	W009	PSS	1	2.4	0.01	0.00	0.01	0.00
46.5	West	W010	PEM	1.3	3.2	0.59	0.26	0.17	0.39
46.8	West	W011	PEM	1.8	5.4	0.11	0.05	0.03	0.08
46.8	East	W012	PEM	2.2	5.4	0.13	0.09	0.04	0.14
47.2	West	W013	PEM	0.2	0.4	0.04	0.00	0.04	0.00
47.1	East	W014	PFO	2.7	9	0.88	0.31	0.33	0.46
46.5	East	W015	PEM	2.7	6.6	0.22	0.20	0.02	0.29
48.4	East	W016	PEM	2.1	6.6	0.11	0.11	0.00	0.16
47.7	East	W017	PEM	0.5	1.6	0.20	0.18	0.02	0.27
49.4	East	W019	PEM	2	4.9	0.00	0.00	0.00	0.01
49.3	East	W019b	PEM	2	4.9	0.01	0.01	0.00	0.01
49.3	West	W019c	PEM	2.5	8.1	0.04	0.03	0.01	0.04
48.7	East	W020a	PEM	1.4	3.1	0.07	0.03	0.04	0.04
48.7	West	W020b	PEM	0	0	0.22	0.00	0.12	0.00

Mile Post	Side of Railroad	Site	Cowardin Classification[1]	Mean C	FQI	Total Area (Acres)	Permanent Impact (Acres)	Temporary Impact (Acres)	Mitigation Needed (Acres) [2]
48.5	East	W021	PEM	1.8	5.1	0.09	0.09	0.00	0.14
50.7	West	W022	PEM	2.1	5.9	1.85	1.82	0.03	2.73
49.9	West	W022b	PEM	2.5	3.5	0.70	0.49	0.00	0.73
51.1	East	W023	PEM	2.8	10.1	1.04	1.04	0.00	1.57
49.8	East	W024	PEM	2.7	4.7	0.16	0.16	0.00	0.25
51.3	West	W025	PEM	1.4	5.2	0.58	0.56	0.00	0.83
51.6	East	W026	PEM	1.8	5.4	0.48	0.48	0.00	0.73
54.7	West	W028	PEM	0	0	0.00	0.00	0.00	0.00
55.1	East	W030	PEM	1.1	4	1.21	1.21	0.00	1.81
54.6	West	W031	PEM	3.2	10.6	0.12	0.12	0.00	0.18
54.4	East	W032	PEM	1.9	9.7	4.94	4.87	0.07	7.31
54.3	West	W033	PEM	1.2	2.9	0.26	0.26	0.00	0.39
54.2	West	W034	PEM	2.1	9.6	3.12	3.12	0.00	4.68
53.1	West	W035	PEM	3	11.6	0.60	0.60	0.00	0.90
52.9	East	W036	PEM	0	0	0.25	0.25	0.00	0.38
52.9	East	W037	PEM	0	0	0.06	0.06	0.00	0.08
51.9	East	W039	PEM	1.5	5	0.12	0.12	0.00	0.17
Total						18.43	16.72	0.94	25.08

[1] *Cowardin et al. (1979)* - PFO - Palustrine, forested/palustrine, emergent, seasonally flooded; PEM – Palustrine, emergent, temporarily flooded; PSS – Palustrine, scrub-shrub, temporarily flooded

[2] Mitigation will be coordinated with the appropriate agencies during the permitting phase.

Table D2-8. Characteristics of Likely Non-Jurisdictional Wetlands within Build Alternative 2A

Mile Post	Side of Railroad	Site	Cowardin Classification[1]	Mean C	FQI	Total Area (Acres)	Permanent Impact (Acres)	Temporary Impact (Acres)	Mitigation Needed (Acres)
44.9	East	W001	PEM	1	3.5	0.09	0.09	0.00	0.14
45.2	East	W002	PSS	1.2	2.9	0.39	0.39	0.00	0.58
45.1	West	W003	PEM	1.8	4.4	0.10	0.10	0.00	0.15
45.5	West	W004	PEM	1	1.7	0.04	0.04	0.00	0.07
46.2	West	W005	PFO	1.7	4.2	0.03	0.03	0.00	0.05
46.2	East	W006	PEM	2.2	5.4	0.00	0.00	0.00	0.00
47.6	West	W018	PEM	0	0	0.01	0.01	0.00	0.02
51.5	West	W027	PEM	1.7	4.5	0.13	0.13	0.00	0.19
55.3	East	W029	PFO	1.5	5.4	0.16	0.16	0.00	0.24
52.1	West	W038	PEM	2.3	7.6	0.01	0.02	0.00	0.02
Total						0.97	0.97	0.00	1.46

[1] *Cowardin et al. (1979)* - PFO - Palustrine, forested/palustrine, emergent, seasonally flooded; PEM – Palustrine, emergent, temporarily flooded; PSS – Palustrine, scrub-shrub, temporarily flooded

Table D2-9. Characteristics of Likely Jurisdictional Surface Waters within Build Alternatives 1B and 2A

Mile Post	Site	Name (Assessment ID)	Cowardin Classification[1]	Designated Use Impairment/ Cause	HUC-8	Total Area (Acres)	Length within Study Area (lf)	Permanent Impact (Acres)	Temporary Impact (Acres)
46.7	S001	Unnamed	R4SBC	NA	07120004	0.05	558	0.05	0.00
47.3	S002	Grant Creek (IL_GA-01)	R4SBC	Aquatic life Cause unknown	07120004	0.07	259	0.07	0.00

Mile Post	Site	Name (Assessment ID)	Cowardin Classification[1]	Designated Use Impairment/ Cause	HUC-8	Total Area (Acres)	Length within Study Area (lf)	Permanent Impact (Acres)	Temporary Impact (Acres)
49.5	S003	Prairie Creek (IL_FA-01)	R4SBCF	Aquatic life Cause unknown	07120001	0.18	161	0.18	0.00
48.9	S004	Unnamed	R4SBC	NA	07120001	0.28	1,014	0.28	0.00
50.5	S005	Unnamed	R4SBC	NA	07120001	1.92	6,845	1.92	0.00
51.5	S006	Unnamed	R4SBC	NA	07120001	0.04	119	0.04	0.00

[1] *Cowardin et al. (1979)* – R4SBC – Riverine, intermittent, streambed, cobbles; R4SBCF –Riverine, intermittent, streambed, cobbles, semi-permanently flooded; R2UB1H – Riverine, lower perennial, unconsolidated bottom, cobble-gravel, permanently flooded

The USACE has established performance standards and criteria for the use of compensatory mitigation, mitigation banks, and in-lieu fee programs to improve the quality and success of compensatory mitigation projects for activities authorized by Department of the Army permits. Mitigation for wetland impacts would follow the Compensatory Mitigation Rule (33 CFR Part 332) requirements for impacts to waterways.

In Illinois, the IWPA requires there to be no overall net loss of wetlands or their functional values resulting from state supported activities. Under the IWPA, mitigation of all wetland impacts, regardless of size, is required for state supported actions that impact wetlands. Additionally, the IWPA recognizes all wetlands, including isolated wetlands that are not regulated by USACE under current policy.

Unavoidable adverse wetland impacts would be subject to the applicable replacement ratios specified in 17 IAC Part 1090.50 (c)(8). The replacement ratio for unavoidable adverse impacts to wetlands with an FQI of 20 or above or a Mean C value of 3.5 or above would be 5.5:1.0. Impacts to wetlands with an FQI of less than two or a Mean C-Value of less than 3.5 would be determined based upon the location of the wetland compensation site. A bank site to be determined is proposed as the compensation site. Since no wetlands were identified as having the characteristics of high vegetative quality with native characteristics or HQAR, all wetlands are anticipated to have a mitigation ratio of 1.5:1.0.

Loss of waterways may be subject to mitigation measures based on regulations under the Clean Water Act. Mitigation for stream impacts will be coordinated with the appropriate agencies during the permitting process.

D2.4. Threatened and Endangered Species

Federal threatened and endangered species are protected under the ESA (16 U.S.C. 1531-1544, 1973). The ESA provides a program for the identification and conservation of threatened and endangered plants and animals and their habitats. Endangered is defined by the ESA as the classification provided to an animal or plant in danger of extinction within the foreseeable future throughout all or a significant portion of its range. The term "threatened species" means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range as defined in the ESA. Critical habitat is defined as specific geographic areas, whether occupied by listed species or not, that are determined to be essential for the conservation and management of listed species, and that have been formally described in the Federal Register.

The federal action agency for ESA Section 7 consultation is FRA. FRA is consulting with USFWS on the listed species that may be impacted within the Project Study Area. The ESA requires federal agencies, in consultation with the USFWS via the Section 7 consultation, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species.

The Illinois ESA established the Illinois Endangered Species Protection Board to determine which plant and animal species are threatened or endangered in the state and to advise the IDNR on means of conserving those species. Endangered and threatened species coordination is initiated through the IDNR. The process for the incidental taking of a listed species in Illinois is completed through the Incidental Take Authorization (ITA) process which is coordinated through the IDNR.

Federally Listed Species

The federally listed species found in the project area can be found in the Biological Assessment (BA).

State Listed Species

The Illinois List of Endangered and Threatened Species for Will County as of April 2023 (IDNR, 2023) is presented in Table D2-10.

Table D2-10. State Threatened and Endangered Species in Will County, Illinois

Type	Number of Species
Plant	56
Mammal	2
Reptile or Amphibian	7
Bird	11
Insect	4
Fish	11
Mollusk	6
TOTAL	**97**

Source: IDNR Illinois Natural Heritage Database, 2024

The species that the Illinois Natural Heritage Database (2024) has recorded within the project study area are listed below. Species denoted with an asterisk are also federally-listed species. This species list was refined to include those that may be present in the Project Study Area using the Ecological Compliance Assessment Tool (EcoCAT) from IDNR (2024). The state-listed species listed in bold text were identified through the as potentially occurring in the Project Study Area.

<u>Mussels</u>

- **Monkeyface (*Quadrula metanevra*)**
- **Purple wartyback (*Cyclonaias tuberculata*)**
- **Salamander (*Simpsonaias ambigua*)**
- **Sheepnose (*Plethobasus cyphyus*)***
- Snuffbox (*Epioblasma triquetra)*
- Spike (*Eurynia dilatata*)

<u>Mammals</u>

- Franklin's ground squirrel (*Poliocitellus franklinii*)
- **Northern long-eared bat (*Myotis septentrionalis*)***

Birds

- Black-crowned night-heron (*Nycticorax nycticorax*)
- Cerulean warbler (*Setophaga cerulea*)
- Common gallinule (*Gallinula galeata*)
- King rail (*Rallus elegans*)
- Least bittern (*Ixobrychus exilis*)
- **Loggerhead shrike (*Lanius ludovicianus)***
- **Northern harrier (*Circus hudsonius*)**
- Osprey (*Pandion haliaetus*)
- **Short-eared owl (*Asio flammeus*)**
- **Upland sandpiper (*Bartramia longicauda)***
- Yellow-headed blackbird (*Xanthocephalus xanthocephalus*)

Insects

- **Eryngium stem borer moth (*Papaipema eryngii*)**
- Hine's emerald dragonfly (*Somatochlora hineana*)*
- Rusty patched bumble bee (*Bombus affinis*)*
- Redveined prairie leafhopper (Aflexia rubranura)

Fish

- Bigeye shiner (*Notropis boops*)
- Blackchin shiner (*Notropis heterodon*)
- Blacknose shiner (*Notropis heterolepis)*
- Ironcolor shiner *(Notropis chalybaeus*)
- **Mottled Sculpin (*Cottus bairdii)***
- **Pallid shiner (*Hybopsis amnis*)**
- River cooter (*Pseudemys concinna*)
- **River redhorse (*Moxostoma carinatum*)**
- Starhead topminnow (*Fundulus dispar)*
- Weed shiner (*Notropis texanus*)
- Western sand darter (*Ammocrypta clara*)

Reptiles and amphibians

- **Blanding's turtle (*Emydoidea blandingii*)***
- Eastern massasauga (*Sistrurus catenatus*)*
- Four-toed salamander (*Hemidactylium scutatum*)
- Kirtland's snake (*Clonophis kirtlandii*)
- Mudpuppy (*Necturus maculosus*)
- **Ornate box turtle (*Terrapene ornata*)**
- Spotted turtle (*Clemmys guttata*)

Prairies and Botanical Resources

- American brooklime (*Veronica americana*)
- American burnet (*Sanguisorba canadensis*)
- American slough grass (*Beckmannia syzigachne*)
- Beaked spike rush (*Eleocharis rostellata*)
- Blue sage (*Salvia azurea*)
- Bristly blackberry (*Rubus schneideri)*
- **Buffalo clover (*Trifolium reflexum*)**
- **Bulrush (*Scirpus hattorianus*)**
- Butternut (*Juglans cinereal*)
- Canada violet (*Viola canadensis*)
- Carolina whipgrass (*Scleria pauciflora)*
- Cluster fescue (*Festuca paradoxa*)
- Common bog arrow grass (*Triglochin maritima*)
- Corn salad (*Valerianella umbilicate* and *Valerianella chenopodifolia*)
- **Decurrent false aster (*Boltonia decurrens*)***
- Downy willow herb (*Epilobium strictum*)

- Eastern prairie fringed orchid (*Platanthera leucophaea*)*
- **Eastern straw sedge (*Carex straminea*)**
- False mallow (*Malvastrum hispidum*)
- Flat-leaved bladderwort (*Utricularia intermedia*)
- Forked aster (*Aster furcatus*)
- Golden corydalis (*Corydalis aurea*)
- Grass-leaved pondweed (*Potamogeton gramineus*)
- Grass pink orchid (*Calopogon tuberosus*)
- Hairy umbrella-wort (*Mirabilis hirsute*)
- Hairy woodrush (*Luzula acuminate)*
- Heart-leaved plantain (*Plantago cordata*)
- **Hedge hyssop (*Gratiola quartermaniae*)**
- Kankakee mallow (*Iliamna remota*)
- Jack pine (*Pinus banksiana*)
- Lakeside daisy (*Tetraneuris herbacea*)*
- Large cranberry (*Vaccinium macrocarpon*
- Large-flowered beard tongue(*Penstemon grandifloras*)
- **Leafy prairie clover (*Dalea foliosa*)***
- Little green sedge (*Carex viridula*)
- Marsh speedwell (*Veronica scutellate*)
- Mead's milkweed (*Asclepias meadii*)*
- Narrow-leaved sundew (*Drosera intermedia*)
- Northern cranesbill (*Geranium bicknellii*)
- Northern panic grass (*Dichanthelium boreale*)
- **Oklahoma grass pink orchid (*Calopogon oklahomensis)***
- Primrose violet (*Viola primulifolia*)
- **Queen-of-the-prairie (*Filipendula rubra)***
- **Quillwort (*Isoetes butleri*)**
- Richardson's rush (*Juncus alpinoarticulatus*)
- **Royal catchfly (*Silene regia*)**
- Running pine (*Lycopodium clavatum*)
- Shore St. John's wort (*Hypericum adpressum*)
- Showy lady's slipper (*Cypripedium reginae*)
- Slender bog arrow grass (*Triglochin palustris)*
- Slender sandwort (*Minuartia patula*)
- Spotted coral-root orchid (*Corallorhiza maculata*)
- **Tubercled orchid (*Platanthera flava*)**
- Wood orchid (*Platanthera clavellate*)
- Yellow-lipped ladies' tresses (*Spiranthes lucida*)

*denotes the state-listed species is also federally listed.
Bold text denotes species that may occur in the Project Study Area (per EcoCAT (IDNR))

Plants

Of the state-listed plants known to occur in Will County, nine plants may have potential to occur in the Project Study Area based on the IDNR EcoCAT, 2024. Surveys to identify the presence/absence of the state-endangered grass pink orchid (*Calopogon tuberosus*), state-endangered Oklahoma grass pink orchid (*Calopogon oklahomensis*), state-threatened tubercled orchid (*Platanthera flava* var. *herbiola*), state-endangered large cranberry (*Vaccinium macrocarpa*), state-threatened buffalo clover (*Trifolium reflexum*), state-endangered bulrush (*Scirpus hattorianus*), state-threatened decurrent false aster (*Boltonia decurrens*; also federally-listed), state-endangered hedge hyssop (*Gratiola quartermaniae*),

state-endangered leafy prairie clover (*Dalea foliosa;* also federally-listed), state-endangered northern panic grass (*Dichanthelium boreale*), state-threatened queen-of-the-prairie (*Filipendula rubra),* state-endangered quillwort (*Isoetes butleri*), and state-endangered royal catchfly (*Silene regia*) were conducted in 2020, with prior surveys completed in 2011, 2013, and 2014. In 2024, surveys were completed for additional species, including Eastern straw sedge (*Carex straminea*) and hedge hyssop (*Gratiola quartermaniae*).

- The surveys identified four of these plant species within or adjacent to the Project Study Area, the decurrent false aster, queen of the prairie, royal catchfly, and Eastern straw sedge. The Eastern straw sedge is expected to be impacted.
- The surveys did not identify the presence of any populations of the remaining plant species surveyed. These species are assumed to be absent from the Project Study Area.

Reptiles

The state-endangered Blanding's turtle and the state-threatened ornate box turtle are known to occur within the build alternatives (IDNR EcoCAT, 2024). Suitable habitat for the Blanding's turtle includes eutrophic habitats such as ponds, marshes, and small lakes. Suitable habitat for the ornate box turtle includes open canopy habitat such as savanna, pasture, and grassland. Visual encounter surveys were conducted at three locations for the ornate box turtle and Blanding's turtle in the summers of 2014 and 2020 (Huff & Huff, Inc., 2014 and 2020). Trapping surveys were also conducted for the ornate box turtle and the Blanding's turtle at multiple locations in the Project Study Area (Huff & Huff, Inc., 2014 and 2020). Although the species were not observed during these surveys, suitable habitat of low to moderate quality is present in the MNTP and Hitts Siding Prairie.

Birds

State-listed avian species are known to occur in the vicinity of the Project Study Area (IDNR EcoCAT, 2024). Suitable foraging and nesting habitat for birds is found in and adjacent to the Project Study Area in the MNTP for the upland sandpiper and the loggerhead shrike. The state-threatened loggerhead shrike and state-endangered upland sandpiper are known to occur in the Project Study Area. Habitat for the loggerhead shrike includes open areas with shrubby hedgerows, and the upland sandpiper's habitat includes native prairie and other open grassy areas. In 2024, IDNR noted that the short-eared owl and northern harrier may also occur in the Project Study Area based on known records.

Avian surveys were conducted in 2011, 2012, and 2020 in the Project Study Area. Two loggerhead shrikes were observed on May 8, 2012 nearby, which were confirmed to be the same individual. One loggerhead shrike was observed on May 25, 2012, and one loggerhead shrike was observed on June 6, 2012 nearby. In addition to the loggerhead shrikes observed during the surveys, two individual loggerhead shrikes were observed west of the UPRR near Schweitzer Road when departing from the survey (Huff & Huff,

Inc., 2014). One was observed approximately 150 feet west of the UPRR immediately north of Schweitzer Road on May 8, 2012, and the other was observed approximately 500 feet west of the UPRR immediately south of Schweitzer Road on June 6, 2012. The upland sandpiper was not observed during these surveys. The loggerhead shrike, upland sandpiper, short-eared owl, and northern harrier were not observed in the 2020 surveys; however, one dead king rail was observed

Habitat surveys for the loggerhead shrike were conducted in 2013 to identify potential trees in the Project Study Area that the species could use for nesting and foraging. A total of 48 potential loggerhead shrike habitat trees were identified in the proposed rail corridor for Build Alternative 1B, and 43 were identified in the proposed rail corridor for Build Alternative 2A. Two species of habitat trees were identified, Osage orange (*Maclura pomifera*) and red haw (*Crataegus mollis*) (See Grassland Bird Memo in D3 attachments for additional information).

A bald eagle nest is located adjacent to the proposed project limits within MNTP. The nest was observed as active in 2024. Appropriate permits will be obtained through the Bald and Golden Eagle Protection Act during the permitting phase of the project.

Insects

The Eryngium stem borer moth is a state-listed species known to occur within the build alternatives. Eryngium stem borer moths are obligate residents of moderately disturbed and somewhat undisturbed mesic to wet prairies and woodland openings that support communities of the moth's requisite host species, rattlesnake master (*Eryngium yuccifolium*), where present in population sizes of 100 individuals or greater. Although common in remnant prairies, rattlesnake-master occurs in low densities; it is a conservative species and has been found to have relative frequencies in restored and relict prairies of less than 1 percent (USFWS, 2013).

A survey of rattlesnake master plants identified 485 individuals within the project limits. Of the five populations surveyed, within the project limits, seven plants possessed bore holes, indicating the potential presence of Eryngium stem borer moth.

A total of 0.15 acre of permanent impact to rattlesnake master populations would occur within Build Alternative 1B. A total of 0.21 acre of permanent impact to rattlesnake master populations would occur within Build Alternative 2A. Both alternatives would impact 0.15 acre of rattlesnake master populations in the utility property adjacent to Hitts Siding Prairie nature preserve and within the Hitts Siding Prairie INAI site (Sample Populations K, L, M, and N). A total of 0.008 acre of impacts to rattlesnake master populations (Sample Population E) would occur within the MNTP in both alternatives. All other impacts are proposed within UPRR ROW or other land. Tables D2-11 and D2-12 summarize the potential eryngium stem borer moth habitat impacts within the build alternatives.

Table D2-11. 2015 Rattlesnake Master Plant Survey of the Project Study Area

Sample Population	Location	Total Rattlesnake master popoulation[1]	Number of Rattlesnake Master Plants in Project Study Area[2]	Number of Rattlesnake Master Plants with Bore Holes Present[2]
E	UPRR, Other, and MNTP	153	150	6
G	MNTP	>5,000 plants	-	-
H	MNTP	>2,500 plants	-	-
I	MNTP	100-125 plants	-	-
K	UPRR	250 plants	9	9
L	UPRR	150 plants	56	56
M	UPRR	150 plants	141	141
N	UPRR	>2,000	129	129
Total	**-**	**-**	**485**	**341**

[1]Source: INHS, 2014

[2]Source: H&H, 2015

A 2020 updated survey of rattlesnake master plants found that of the ten populations surveyed within or adjacent to the project limits, only eight individual stems of rattlesnake master with bore holes present were identified (see Table D2-12).

Table D2-12. 2020 Rattlesnake Master Plant Survey of the Project Study Area

Sample Population	Location (Milepost)	Number of Rattlesnake Master Plants in Population	Number of Rattlesnake Master Plants with Bore Holes Present
H	46.8	70	0
G	47.1	100	0
F	47.1	<1,300	0
A	49.9 to 50.3	<5,000	0
B	49.9 to 50.3	<3,000	0
C3	53.9	150	0
C2	54.0	300	0
C1	54.15 to 54.25	<2,500	8
E	54.4	<100	0
D	55.1	75-100	0

Source: H&H, 2025

The red-veined leafhopper (*Aflexia rubranura*) is listed as threatened in Will County. Its requisite host plant is prairie dropseed (*Sporobolus heterolepis*). Multiple small stands of prairie dropseed were found within the build alternatives, at Prairie Sites 3, 4, 7, 8, 10, 11, 12, 13, 14, and 15 (INHS, 2014). Red-veined leafhopper insect sampling was not conducted. However, red-veined leafhoppers were not detected in the areas where its requisite host plant, prairie dropseed, was found.

Mussels

The following state listed mussel species are known to occur in Will County,: the slippershell (*Alasmidonta viridis*), the purple wartyback (*Cyclonaias tuberculata*), the spike (*Ellipotio dilatata*), the black sandshell (*Liguimia recta*), the sheepnose mussel (also federally listed), the monkeyface (*Quadrula metanevra*) and the salamander mussel (*Simpsonaias ambigua*). Surveys for mussels were not conducted for the three larger streams in the Project Study Area. The INHS Mollusk Collection Database does not indicate records for the state-listed purple wartyback, spike, black sandshell, sheepnose mussel, monkeyface, or the salamander mussel in Prairie Creek, Grant Creek, or Jackson Creek in the Project Study Area. The INHS Mollusk Collection Database indicates a 2010 record of the slippershell mussel in a portion of Prairie Creek in Will County. However, during on-going coordination with the IDNR, it was determined that listed mussels were not a concern in this section of Prairie Creek. All of the mussels are assumed to be absent from the Project Study Area.

Regional Forester Sensitive Species

Regional Forester Sensitive Animal and Plant Species for the Eastern Region were last updated on March 1, 2024. Table D2-14 below identifies the species of animals and plants within MNTP.

Table D2-14. Regional Forester Sensitive Species in MNTP

Species	Group
Big brown bat (*Eptesicus fuscus*)	Mammals
Little brown bat (*Myotis lucifugus*)	Mammals
Franklin's Ground Squirrel *(Spermophilus franklinii)*	Mammals
Short-eared Owl *(Asio flammeus)*	Birds
Upland Sandpiper *(Bartramia longicauda)*	Birds
American Bittern *(Botaurus lentiginosus)*	Birds
Northern Harrier *(Circus cyaneus)*	Birds
Black billed cuckoo (*Coccyzus erythropthalmus*)	Birds
Bobolink *(Dolichonyx oryzivorus)*	Birds
Bald Eagle *(Haliaeetus leucocephalus)*	Birds
Least Bittern *(Ixobrychus exillis)*	Birds
Migrant Loggerhead Shrike *(Lanius ludovicianus migrans)*	Birds

Red-headed Woodpecker *(Melanerpes erythrocephalus)*	Birds
King Rail *(Rallus elegans)*	Birds
Cerulean Warbler *(Setophaga cerulea)*	Birds
Blanding's Turtle *(Emydoidea blandingii)*	Reptiles
Plains Leopard Frog *(Rana blairi)*	Amphibians
Ellipse *(Venustaconcha ellipsiformis)*	Bivalves
Red-Tailed Leafhopper *(Aflexia rubranura)*	Insects
Monarch butterfly (*Danaus plexippus*)	Insects
A Mayfly *(Dannela lita)*	Insects
A Leafhopper *(Deltocephalus gnarum)*	Insects
A Noctuid Moth *(Dichagyris reliqua)*	Insects
A Leafhopper *(Macrosteles potorius)*	Insects
A Noctuid Moth (*Oncocnemis saundersiana*)	Insects
Blazing Star Stem Borer *(Paipaipema beeriana)*	Insects
Rattlesnake-master Borer Moth *(Paipaipema eryngii)*	Insects
White-streaked Looper Moth *(Plusia venusta)*	Insects
Clemen's Sphinx *(Sphinx luscitiosa)*	Insects
Wart Lichen *(Verrucaria marmorea)*	Non-Vascular Plants
Earleaf False Foxglove *(Agalinis auriculata)*	Plants
Hill's Thistle *(Cirsium hillii)*	Plants
Small White Lady's-slipper *(Cypripedium candidum*)	Plants
Cluster Fescue *(Festuca paradoxa)*	Plants
Quarterman's Hedge-hyssop *(Gratiola quartermaniae)*	Plants
Goldenseal *(Hydrastis canadensis)*	Plants
Butler's Quilwort *(Isoetes butleri)*	Plants
Hispid False Mallow *(Malvastrum hispidum)*	Plants
Pitcher's Stitchwort *(Minuartia patula)*	Plants
American Ginseng *(Panax quinquefolius)*	Plants
Canada burnet (*Sanguisorba canadensis*)	Plants
Royal catchfly (*Silene regia*)	Plants
Hairy Valerian *(Valeriana edulis var. ciliata)*	Plants
Naval corn salad *(Valerianella umbilicata)*	Plants

Surveys were conducted in 2024 for RFSS plant species that had not been previously surveyed. In addition, habitat is present for many of the remaining species that were not surveyed. Results of the surveys and a summary of habitat present on-site are included in the 2020 Report by Huff & Huff, Inc (revised 2025).

The surveys identified three of these plant species within or adjacent to the Project Study Area: the earleaf false foxglove, royal catchfly and naval corn salad. These populations were not within the impact areas of the build alternatives.