

Ecological Assessment of the 91st Street and College Avenue Property

For Schmidt Associates



By

Kevin Tungesvick

Senior Ecologist

Eco Logic LLC



Ecological Assessment of the 91st and College Property

Background

This approximately 52 acre property is located at the southwest corner of 91st Street and College Ave on the north side of Indianapolis, Indiana. Approximately 28 of these acres are mowed turf containing soccer fields with an accompanying parking lot. The remaining acreage is occupied by unmanaged woodlands and a detention basin. This report is an assessment of current ecological condition of these unmanaged areas.

Soils and Geology

This property is located on the Tipton Till Plain of central Indiana, a region covered by Wisconsin age glacial till. All of the soils on the site are derived from this till. The three soil types that occur on this property are Miami silt loam, 2 to 6 percent slopes (MmB2), Crosby silt loam, 0 to 2 percent slopes (CrA), and Treat silty clay, 0 to 1 percent slopes (ThrA). Of these soils, the Miami is considered moderately well drained, the Crosby is considered somewhat poorly drained, and the Treaty is considered poorly drained. Treaty soils are considered hydric soils and harbor most of the probable wetlands on the site. A map showing the locations of these soil types is attached to this report and labeled with the above abbreviations for each soil type.

Heritage Trees

Heritage Trees are defined below:

Heritage Tree: A tree over 18 inches Diameter at Breast Height (DBH) and one of the Heritage tree species. Heritage tree species include: Sugar Maple (*Acer saccharum*), Shagbark Hickory (*Carya ovata*), Hackberry (*Celtis occidentalis*), Yellowwood (*Cladrastus kentukea*), American Beech (*Fagus grandifolia*), Kentucky Coffeetree (*Gymnocladus dioica*), Walnut or Butternut (*Juglans*), Tulip Poplar (*Liriodendron tulipifera*), Sweet Gum (*Liquidambar styraciflua*), Black Gum (*Nyssa sylvatica*), American Sycamore (*Platanus occidentalis*), Eastern Cottonwood (*Populus deltoides*), American Elm (*Ulmus americana*), Red Elm (*Ulmus rubra*) and any oak species (*Quercus*, all spp.)

The majority of the woodlands on this property are in an early successional state, mostly containing trees less than 75 year old and in many cases, less than 50 years old. However, the fertile soil and high moisture availability enable rapid tree growth. A small area of remnant woodland does occur in the north central portion of the property and contains some older trees. All together, 137 trees on the property qualified as heritage trees. These trees were primarily concentrated in the north central part of the property where the remnant woodland exists and in the southeastern corner of the property where a grove of black walnuts is present. The numbered list of the heritage trees that is attached to this report corresponds with the numbered markers contained on the regional heritage tree maps that are also attached.

Wetlands and Streams

While this report does not include a formal wetland delineation or mapping of the streams for section 401 and 404 permitting via the Clean Water Act, I have indicated probable and possible wetland areas on an attached map. Other wetland areas may exist, particularly in the areas of Treaty soils.

A perennial stream exits a culvert on the west property boundary, flowing southeast through the property and exiting south of the detention basin as shown on the map. Other small channels that convey water during periods of wet weather are also indicated on the map.

Invasive Plant Species

Typical for urban areas, the understories of the woodlands of this property are heavily infested with invasive woody species. By far the most abundant invasive plant species on the property is Amur honeysuckle (*Lonicera maackii*). It is abundant in all except the wettest portions of the woodlands. The second most troubling invasive plant on the property is the wintercreeper (*Euonymus fortunei*). It is abundant in most of the northern woodlands on the property where it forms a creeping groundcover as well as climbing the trees as a clinging vine. Other invasive shrubs and vines that have invaded the woodlands and woodland edges include Japanese honeysuckle (*Lonicera japonica*), common buckthorn (*Rhamnus cathartica*), and multiflora rose (*Rosa multiflora*).

The sunny condition of the detention basin has allowed establishment of species largely absent from the shaded woodland areas. These include callery pear (*Pyrus calleryana*), European black alder (*Alnus glutinosa*), and autumn olive (*Elaeagnus umbellata*). A map showing the locations and densities of the invasive plants on the property is attached to the report.

Plant Communities

The unmanaged areas of the property were divided into several plant communities based on their location on the property as well as, their stage of succession and their component tree species. These communities are delineated on an attached map.

Mid-Successional North Central Woodlands

These woodlands contain the most mature trees and the greatest species diversity on the property. The southern extension of this community contains an old fencerow that harbors the largest and oldest trees on the property including large specimens of white oak (*Quercus alba*), black walnut (*Juglans nigra*), hackberry (*Celtis occidentalis*), and shagbark hickory (*Carya ovata*). Also of note is a colony of American hazelnut (*Corylus americana*) near the south end of this extension.

North of the gravel drive, this area broadens into a larger woodlot that contains a variety of trees including northern red oak (*Quercus rubra*), hackberry, black walnut, American basswood (*Tilia americana*), American beech (*Fagus grandifolia*), and bitternut hickory (*Carya cordiformis*). Numerous dead ash trees, victims of the emerald ash borer are also present. An eastward extension of this area contains a fine grove of young white oaks mixed with black walnuts and young sugar maples (*Acer*

saccharum). Invasive Amur honeysuckle is present throughout this area and is most abundant in the southern extension. Wintercreeper occurs in scattered patches.

Natural Area Value – 3 (out of 5)

Buffer Value – 3 (out of 5)

Habitat Value – 3 (out of 5)

Northeastern Early Successional Woodlands

This young woodland is the most degraded on the property. The dominant tree species is black locust (*Robinia pseudoacacia*), a weedy species introduced from further south. Other trees found in this area include hackberry, black walnut, silver maple (*Acer saccharinum*), and hawthorns (*Crataegus spp*). A wetland area is located here as indicated on the wetland map. It is fed and drained by a seasonal stream.

Wintercreeper is an abundant invasive species in this area as is Amur honeysuckle.

Natural Area Value – 1 (out of 5)

Buffer Value – 3 (out of 5)

Habitat Value – 1 (out of 5)

Southeastern Walnut Grove

As the name indicates, this community is dominated by a grove of black walnuts. Although approximately 15 of them currently qualify as heritage trees, there are at least 10 more approaching this designation. Other trees present in this area include American elm (*Ulmus americana*) and hackberry. Spicebush (*Lindera benzoin*) is a common native shrub in this area. Invasive plant pressure is relatively light in this area due to the wet soils.

Natural Area Value – 3 (out of 5)

Buffer Value – 3 (out of 5)

Habitat Value – 2 (out of 5)

Early Successional Southern Woodlands

These young woodlands along the southern property boundary are dominated by silver maples. Other trees that occur here include hackberry, black walnut, cottonwood (*Populus deltoides*), American elm, bitternut hickory, American basswood and sycamore (*Platanus occidentalis*). The understory is dominated by dense stands of Amur honeysuckle except in the wetter eastern portion where invasive common buckthorn occurs.

Natural Area Value – 2 (out of 5)

Buffer Value – 2 (out of 5)

Habitat Value – 2 (out of 5)

Detention Basin and Buffer

This constructed basin for stormwater management no longer functions as intended since the outfall has blown out. It contains the only open unmanaged area on the property. A mixture of native grasses and sedges as well as naturalized herbaceous plants occur in the ground layer. It is being invaded by both native and invasive woody plants. Roughleaf dogwood (*Cornus drummondii*), a native clonal shrub or small tree, is common along the edges. The wettest areas contain dense stands of saplings of ash and sandbar willow (*Salix interior*) adjacent to the stream. Noteworthy is a grove of young pin oaks (*Quercus palustris*) and black walnuts at the northwestern edge of this area where it borders the Mid-Successional North Central Woods.

The better drained berm around the wetland is infested with Amur honeysuckle and some autumn olive. Invasive callery pear and European black alder occur in the open meadows of the basin along with native eastern red cedars (*Juniperus virginiana*).

Natural Area Value – 1 (out of 5)

Buffer Value – 3 (out of 5)

Habitat Value – 2 (out of 5)

Early Successional Western Woodlands

This the largest contiguous area of woodland on the property. It serves as an important buffer for the perennial stream that bisects it. It is generally a very young woodland dominated by silver maple, cottonwood, American elm, boxelder (*Acer negundo*) red maple (*Acer rubrum*), pin oak, and sycamore. Black walnut and sugar maple are common in the northeast corner and also occur in the southeastern portion. The southeastern section is better drained and contains young tulip trees (*Liriodendron tulipifera*) and sweet gum (*Liquidamber styraciflua*). Two of the tulip trees have reached heritage tree status with several more approaching that size.

Amur honeysuckle is abundant in all but the wettest areas of this section. Multiflora rose is common along the eastern edge while wintercreeper is present in the northeastern corner.

Natural Area Value – 2 (out of 5)

Buffer Value – 4 (out of 5)

Habitat Value – 2 (out of 5)

Definitions

1. Natural areas value – Does the parcel represent a remnant natural area with intact soil profiles, intact plant communities and conservative species with a high fidelity for remnants?
2. Buffer value – Does the parcel serves as a buffer for an areas deemed as a remnant natural area in question 1? Does it buffer a stream or body of water to filter runoff and absorb nutrients.
3. Habitat value – Does the parcel have value as habitat for indigenous fauna, particularly declining groups such as amphibians, native pollinators, grassland birds, or forest interior birds?

Summary

In summary, this property contains approximately 25 acres of unmanaged habitat. While much of the habitat contains relatively low plant diversity and is heavily infested with invasive plant species, it still serves as valuable urban green space and important habitat for urban wildlife including squirrels, deer, rabbits, woodpeckers and other resident woodland birds. The heritage tree data is quite effective in outlining the highest quality plant communities to determine which areas should be avoided as development of the property is considered.

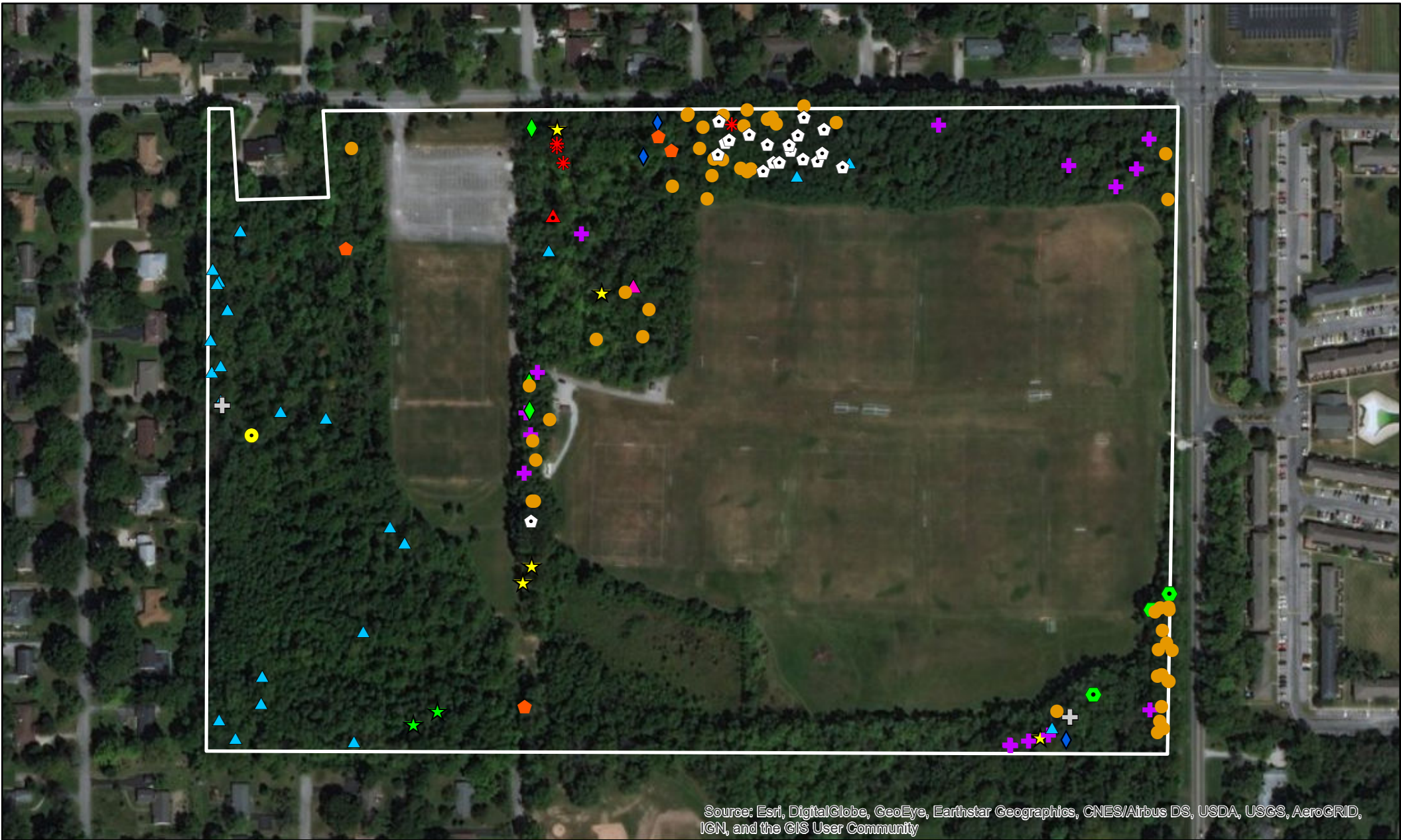
Heritage Tree Data

Number	Species	DBH
1	Shagbark Hickory	20
2	Northern Red Oak	19
3	Northern Red Oak	25
4	American Basswood	19
5	Northern Red Oak	31
6	Shumard Oak	25
7	Eastern Cottonwood	20
8	Hackberry	28
9	American Basswood	27
10	Black Walnut	20
11	Black Walnut	25
12	Red Elm	22
13	Black Walnut	24
14	Bitternut Hickory	25
15	Sugar Maple	19
16	Bitternut Hickory	19
17	Sugar Maple	19
18	Black Walnut	23
19	Black Walnut	32
20	Black Walnut	20
21	Black Walnut	19
22	Black Walnut	22
23	White Oak	19
24	Black Walnut	24
25	Black Walnut	27
26	Black Walnut	23
27	Black Walnut	20
28	White Oak	18
29	White Oak	27
30	White Oak	18
31	Black Walnut	19
32	Northern Red Oak	20
33	Black Walnut	19
34	Black Walnut	18
35	Black Walnut	20
36	White Oak	18
37	Black Walnut	20
38	Black Walnut	19
39	Black Walnut	21
40	White Oak	31
41	White Oak	25
42	White Oak	28
43	White Oak	27

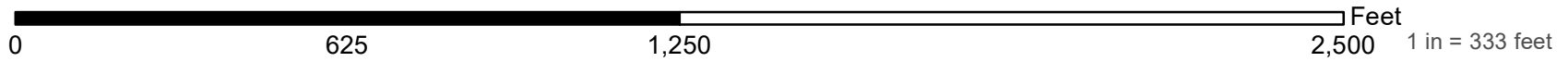
44	Black Walnut	21
45	Black Walnut	18
46	White Oak	28
47	Black Walnut	24
48	White Oak	18
49	White Oak	19
50	White Oak	20
51	White Oak	20
52	Cottonwood	31
53	White Oak	18
54	White Oak	18
55	White Oak	21
56	White Oak	18
57	Cottonwood	19
58	Hackberry	18
59	Hackberry	23
60	Hackberry	24
61	Hackberry	21
62	Hackberry	21
63	Black Walnut	19
64	Black Walnut	18
65	American Elm	23
66	Black Walnut	21
67	Black Walnut	21
68	American Elm	22
69	Black Walnut	22
70	Black Walnut	19
71	Black Walnut	24
72	Black Walnut	20
73	Black Walnut	18
74	Black Walnut	19
75	Black Walnut	19
76	Black Walnut	23
77	Black Walnut	20
78	Black Walnut	19
79	Black Walnut	20
80	Black Walnut	19
81	Black Walnut	24
82	Black Walnut	23
83	Black Walnut	25
84	Hackberry	18
85	American Elm	18
86	Black Walnut	18
87	Sycamore	38
88	Cottonwood	27
89	Bitternut Hickory	19
90	Hackberry	24
















91	American Basswood	29
92	Hackberry	25
93	Hackberry	38
94	Hackberry	27
95	Sugar Maple	32
96	American Basswood	25
97	American Basswood	34
98	White Oak	56
99	Black Walnut	57
100	Black Walnut	27
101	Hackberry	21
102	Black Walnut	36
103	Hackberry	40
104	Black Walnut	18
105	Shagbark Hickory	20
106	Hackberry	18
107	Black Walnut	20
108	Black Walnut	25
109	Shagbark Hickory	18
110	Hackberry	23
111	Black Walnut	19
112	Black Walnut	18
113	Cottonwood	27
114	Cottonwood	27
115	Cottonwood	25
116	Cottonwood	27
117	Pin Oak	20
118	Cottonwood	27
119	Sycamore	27
120	Cottonwood	32
121	Cottonwood	26
122	Cottonwood	41
123	Cottonwood	33
124	Cottonwood	29
125	Cottonwood	34
126	Cottonwood	35
127	Cottonwood	27
128	Cottonwood	25
129	Cottonwood	23
130	Cottonwood	31
131	Cottonwood	24
132	Cottonwood	31
133	Cottonwood	21
134	Tulip Tree	18
135	Tulip Tree	18
136	Black Walnut	31
137	Sugar Maple	19

91st and College Property All Heritage Trees

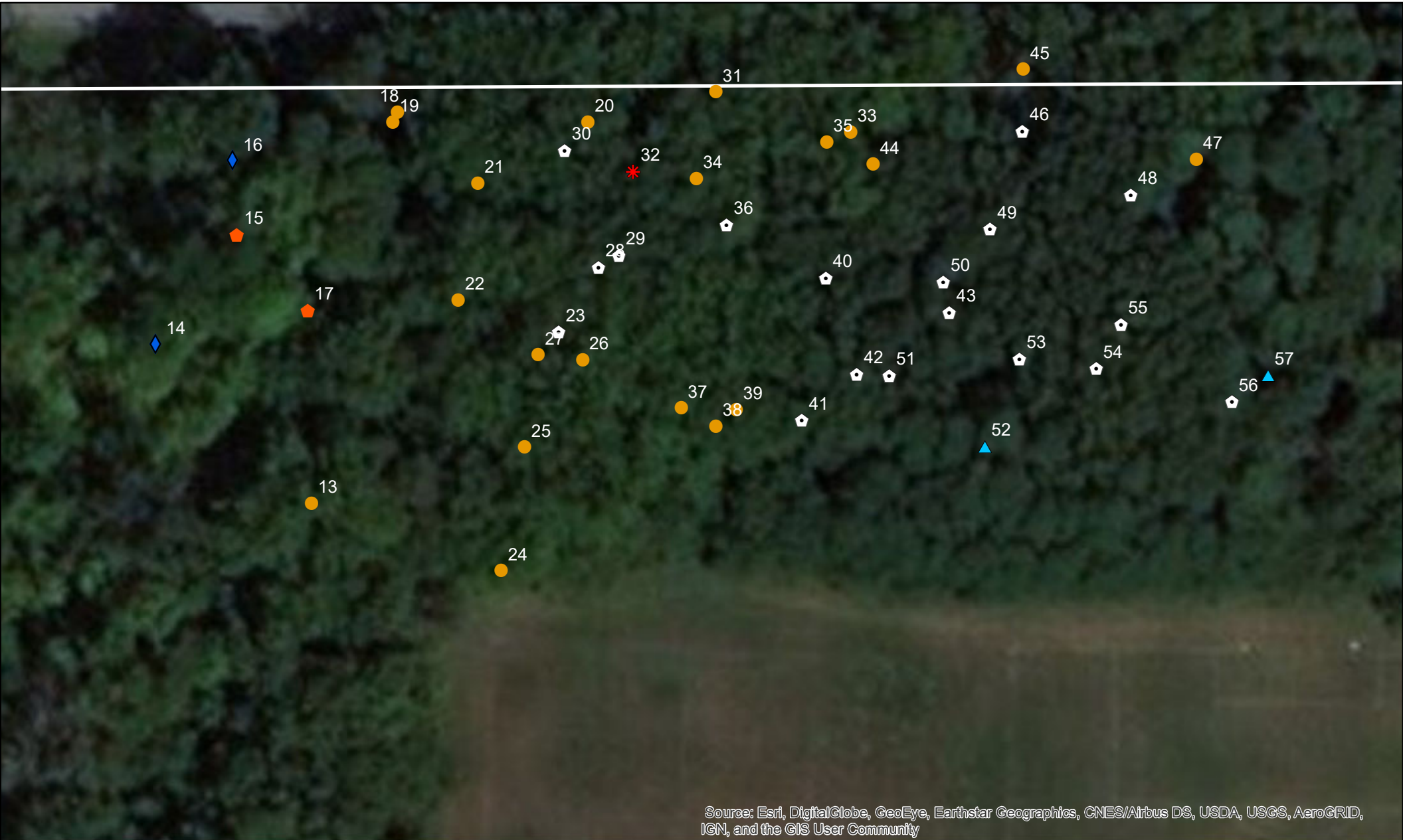


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



 White Oak	 American Sycamore	 Shagbark Hickory	 Eastern Cottonwood	 Bitternut Hickory
 Black Walnut	 Sugar Maple	 Northern Red Oak	 Pin Oak	 American Basswood
 Tulip Tree	 Shumard Oak	 Red Elm	 Hackberry	 American Elm

91st and College Property North Central Heritage Trees

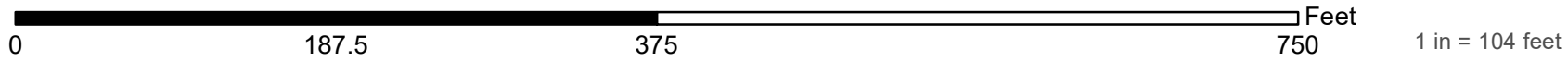


0					112.5					225					450					Feet	1 in = 62 feet				
	White Oak		American Sycamore		Shagbark Hickory		Eastern Cottonwood		Bitternut Hickory		Black Walnut		Pin Oak		American Basswood		Tulip Tree		Shumard Oak		Red Elm		Hackberry		American Elm

91st and College Property Northeast Heritage Trees

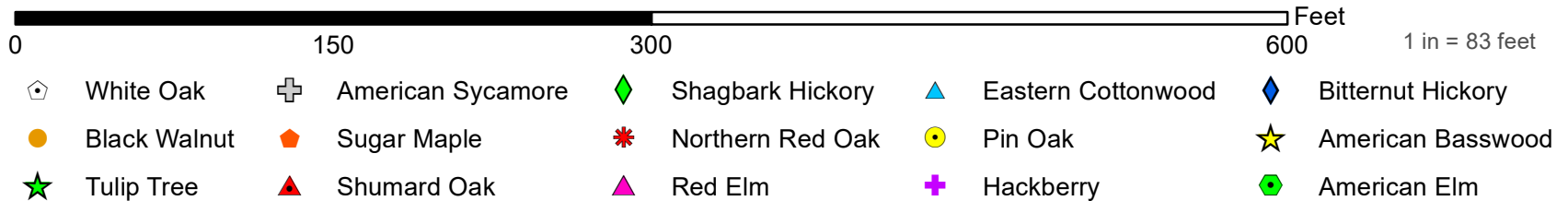


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

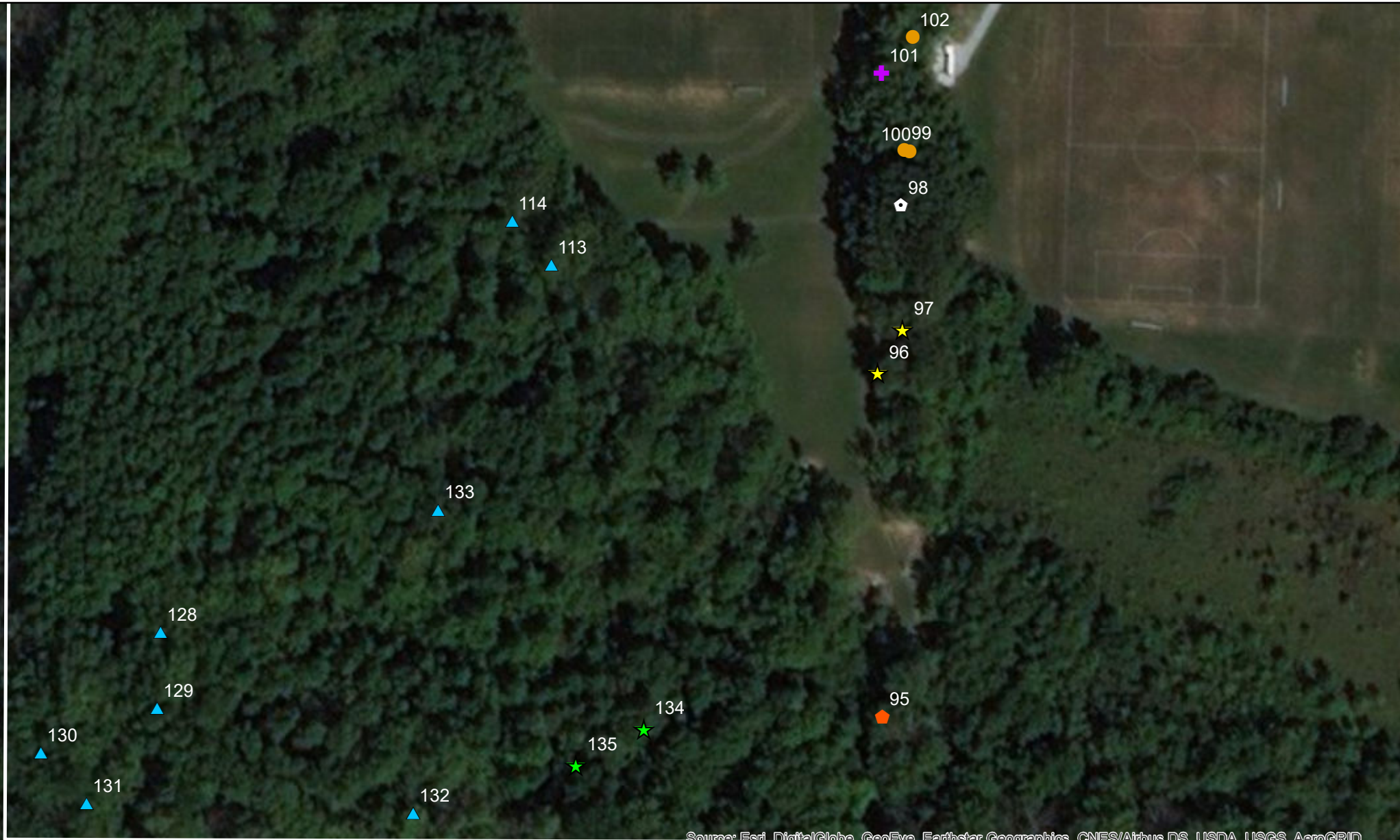


	White Oak		American Sycamore		Shagbark Hickory		Eastern Cottonwood		Bitternut Hickory
	Black Walnut		Sugar Maple		Northern Red Oak		Pin Oak		American Basswood
	Tulip Tree		Shumard Oak		Red Elm		Hackberry		American Elm

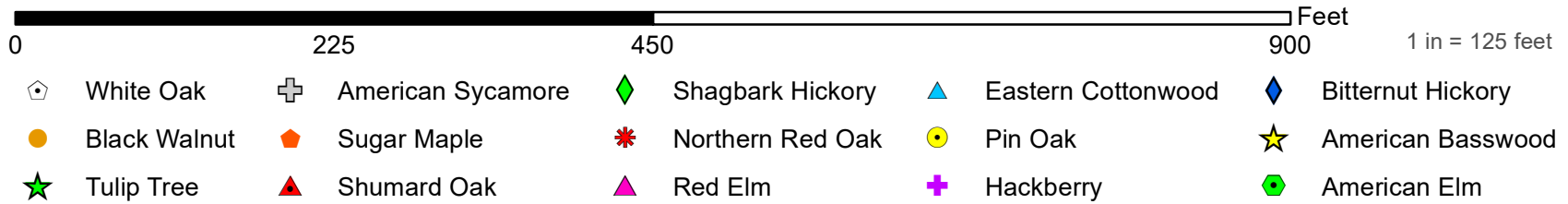
91st and College Property Southeast Heritage Trees



91st and College Property Southwest Heritage Trees



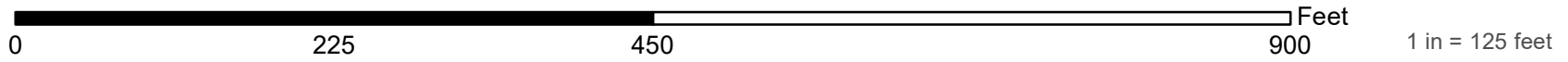
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



91st and College Property West Central Heritage Trees



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

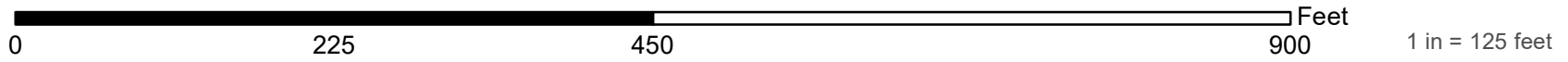

















	White Oak		American Sycamore		Shagbark Hickory		Eastern Cottonwood		Bitternut Hickory
	Black Walnut		Sugar Maple		Northern Red Oak		Pin Oak		American Basswood
	Tulip Tree		Shumard Oak		Red Elm		Hackberry		American Elm

91st and College Property Northwest Heritage Trees

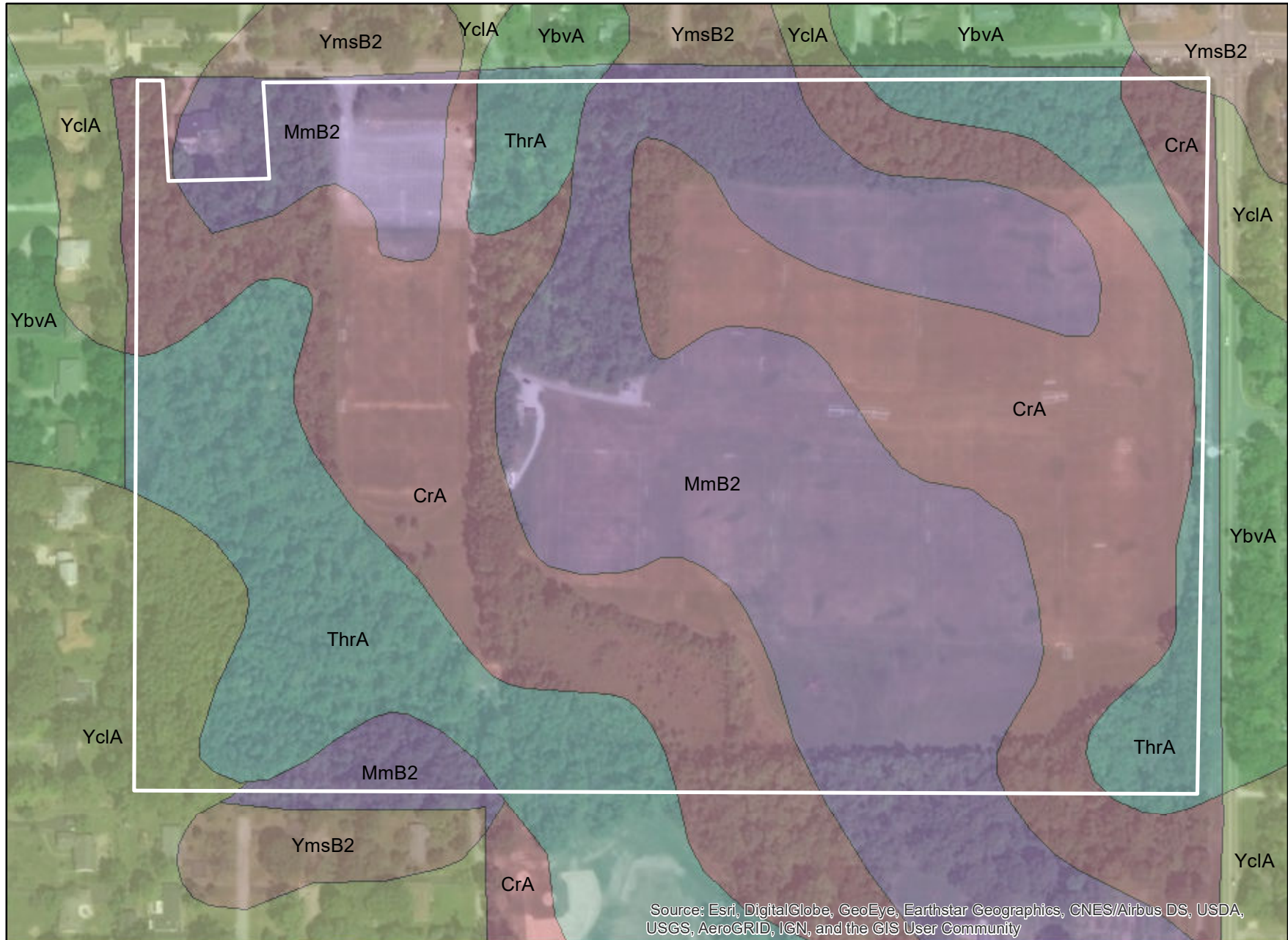


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



 White Oak	 American Sycamore	 Shagbark Hickory	 Eastern Cottonwood	 Bitternut Hickory
 Black Walnut	 Sugar Maple	 Northern Red Oak	 Pin Oak	 American Basswood
 Tulip Tree	 Shumard Oak	 Red Elm	 Hackberry	 American Elm

91st and College Property Soil Types



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

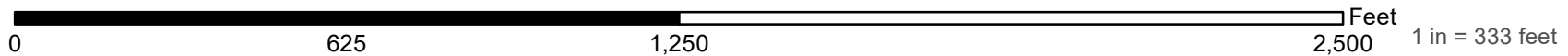
Soil Types

Munsell Symbol

<all other values>

MUSYM

- CrA
- MmB2
- ThrA
- YbvA
- YclA
- YmsB2

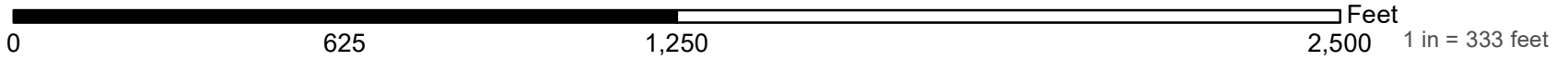


8685 W. Vernal Pk.
Bloomington, IN 47404
(812) - 876 - 7711

91st and College Property Wetlands and Streams



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Probable Wetlands



Perennial Stream



Possible Wetlands within Detention Basin

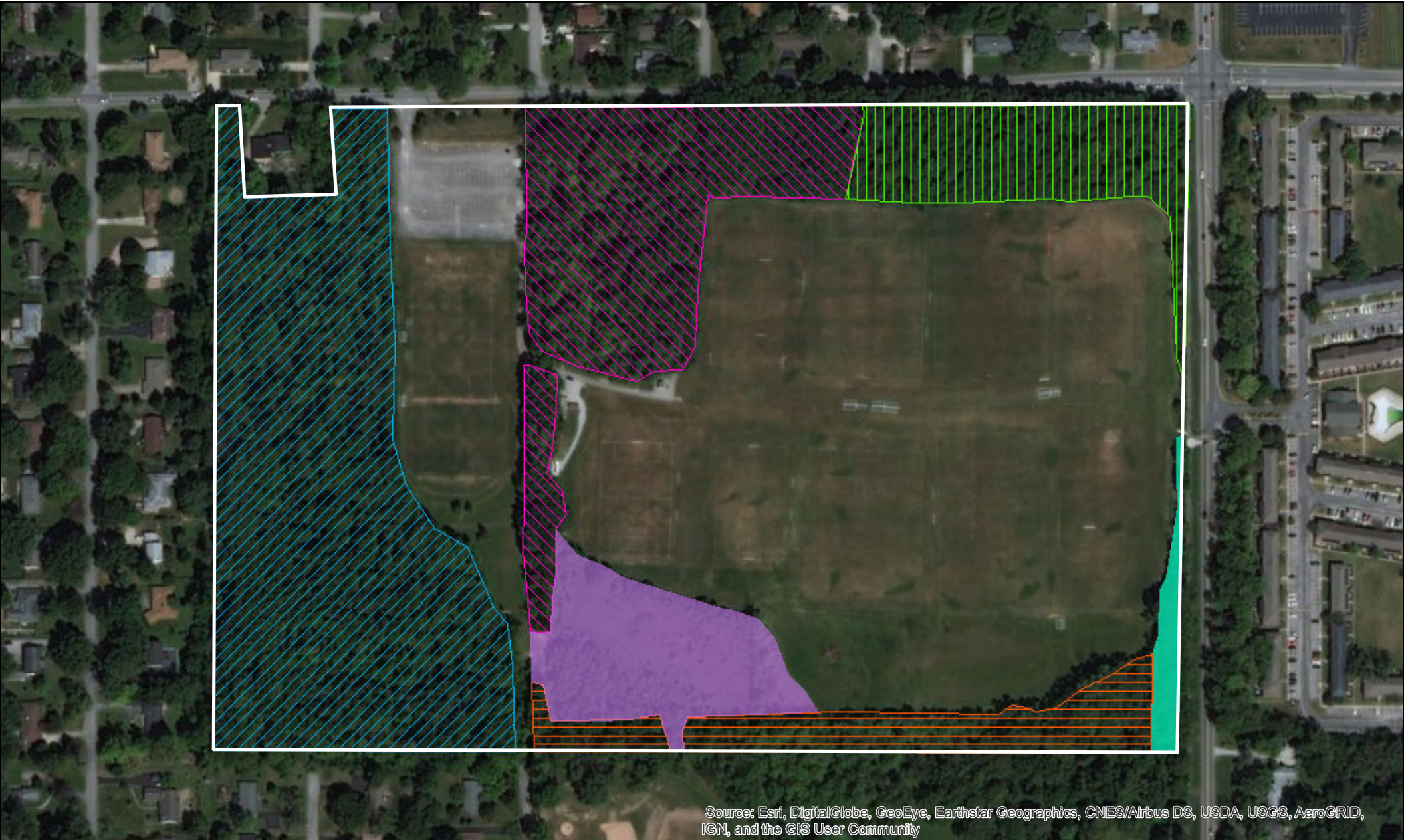


Wet Weather Drainage

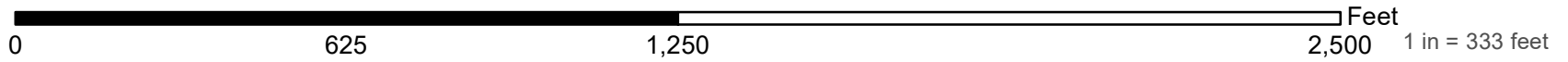


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91st and College Property Plant Communities





Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community




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 Detention Basin and Buffer

 Early Successional Southern Woodlands

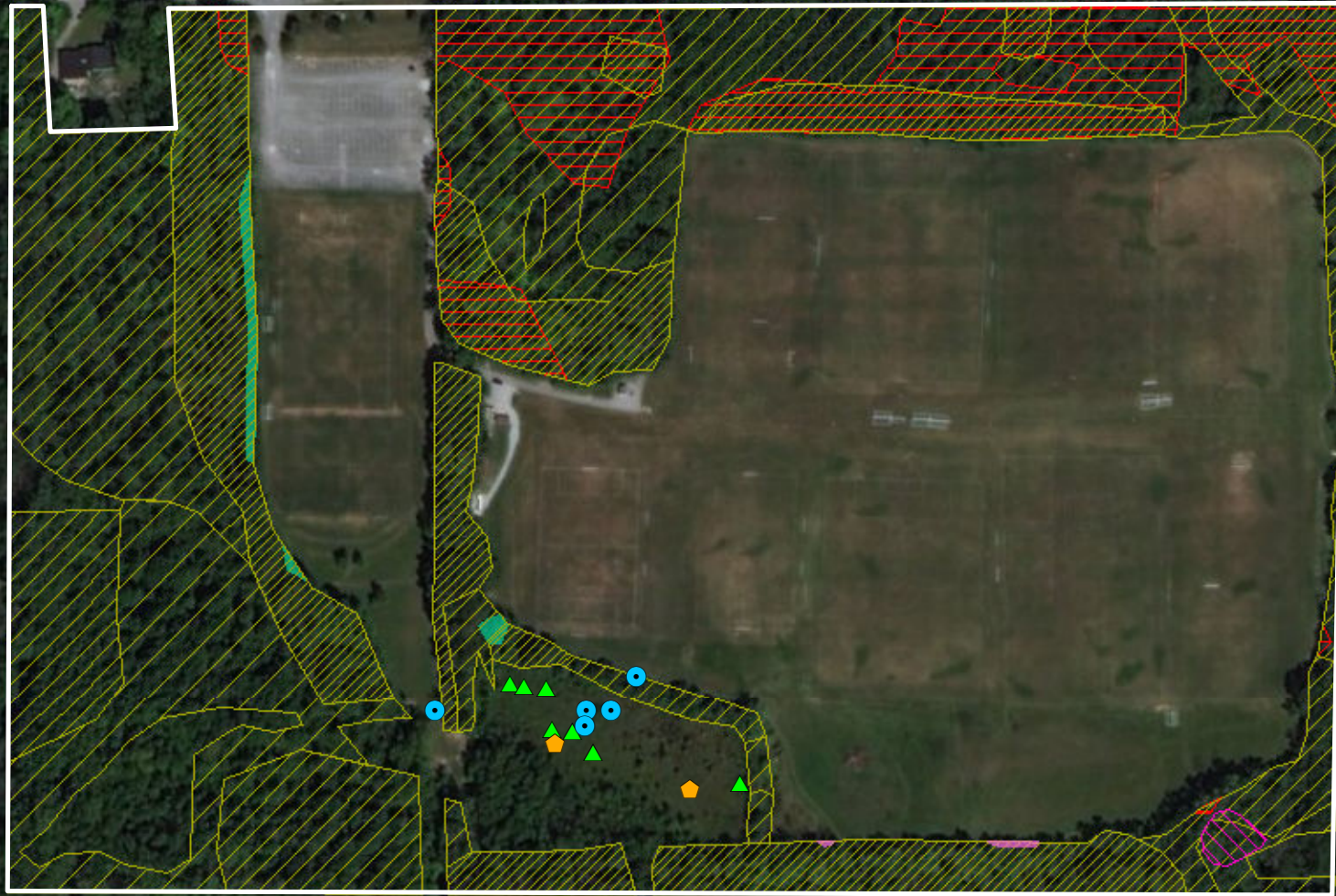
 Southeastern Walnut Grove

 Northeastern Early Successional Woodlands

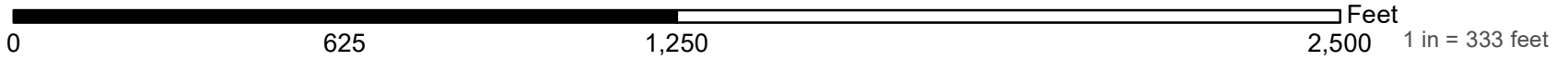
 Mid-Successional North Central Woods

 Early Successional Western Woodlands

91st and College Property Invasive Plants



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



- | | | | | | | | |
|--|--------------------------|--|----------------------------|--|---------------------------------|--|----------------------|
| | 10-40% Amur Honeysuckle | | 50 % Common Buckthorn | | Widespread Japanese Honeysuckle | | Autumn Olive |
| | 40-80% Amur Honeysuckle | | Widespread Wintercreeper | | Callery Pear | | European Black Alder |
| | 80-100% Amur Honeysuckle | | Widespread Multiflora Rose | | | | |



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