

North Chicago Mitigation Site Assessment Addendum B

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Introduction

In 1966, the Illinois Department of Transportation (IDOT) acquired approximately 160 acres south of IL 137 and west of US 41 for a proposed relocation of US 41 (legal location T. 44 N., R. 12 E., W/4 Sect. 7, NW/4 NW/4 Sect. 18). This relocation project was not pursued. Aerial photography (from 1939, 1954 and 1967) shows that this area had been used for agriculture. The northernmost two 16th Sections were cropped through the 1950's. The 16th Section below that appears to have been used for hay production. The southernmost 16th Section was in pasture, has never been cropped and is the least disturbed part of the site. About 2 acres at the northwest corner is now a fire station. The remaining 158 acres have been allowed to revert to a natural state for the past 43 years. In 1991, Illinois Natural History Survey (INHS) scientists notified the IDOT that this parcel contained a diverse mixture of shrubland, prairie, sedge meadow and marsh including some plant communities of high natural quality (Olson et al. 1992). Eventually, four State Threatened or Endangered plant species were found to occur on the site – *Elymus trachycaulus*, *Oenothera perennis*, *Veronica scutellata* and *Amelanchier sanguinea*. The State Threatened common moorhen has been observed on the site. For about the last thirty-five years, much of the prairie at this site is being replaced by *Rhamnus cathartica* – *Cornus racemosa* shrubland and *Typha angustifolia* encroachment is occurring in much of the marsh and sedge meadow. By 2006 *Lythrum salicaria* had also become a marsh dominant but at that time we observed that conservationists in the housing area to the south had introduced loosestrife beetles. By 2009, *Lythrum salicaria*, although still common, now only occupies about 4% cover in the marshes.

In June 1995, INHS scientists conducted quantitative vegetation sampling and plant communities were mapped on aerial photography in September (Plocher et al. 1996). At that time we estimated 28.2 acres of marsh, sedge meadow and wet meadow, plus an additional acre of wet shrubland and forested wetland that were not sampled (total = 29.2 acres). There were 112.9 acres of shrubland and 8.6 acres of prairie. In May and August 2006, we GPS'd all the wetlands we could locate, estimated dominant species and compiled species lists (Plocher and Ketzner 2006a, Plocher and Ketzner 2006b). In September 2008, INHS and U.S. Army Corps of Engineers (ACOE) scientists conducted on-site wetland determinations and located an additional 1.33 acres of wet shrubland. The total wetland area is 29 acres, which is in agreement with the 1995 estimate.

Methods

In July and August 2009, INHS scientists repeated the 1995 quantitative vegetation sampling in order to document changes in vegetation over the fourteen-year period. Ten parallel transects were established on a bearing of due east, with a 500 ft (152.4 m) spacing. The first transect is 250 ft (76.2 m) from the north edge of the site. Sample points were established at 250 ft (76.2 m) intervals on each transect, with the first point 125 ft (38.1 m) from the edge. There are 49 sample points - 12 wetland points and 37

upland points. Because of the low number of wetland and prairie points, five additional wetland points and eight additional prairie points were established. At each point, a 25 m² shrub quadrat is established. For wetland points, herb layer vegetation is sampled in two 1 m² quadrats, in the lower left and upper right corners of the 25 m² shrub plot. For upland points, herb layer vegetation is sampled in three 1 m² quadrats in the lower left, upper right and center of the shrub plot. Herb layer vegetation is tallied by species and percent cover by plot. Shrub/sapling layer vegetation is tallied by species and density by plot. In the one forest plot, overstory vegetation (≥ 10 cm DBH) is tallied by species, density and basal area in a 200 m² plot. For understory, Importance Value (IV) is calculated as (relative frequency + relative cover)/2, while shrub layer IV is calculated as (relative frequency + relative density)/2. For overstory, IV is calculated as (relative density + relative basal area)/2. For each shrub layer plot with shrub cover, total percent shrub cover is estimated. Nomenclature is according to Mohlenbrock (1986).

Results

Wetlands

In 1995, this site supported 13.2 acres of marsh, 12.5 acres of sedge meadow, 2.5 acres of wet meadow, 0.75 acre of wet shrubland and 0.3 acre of forested wetland (29.25 acres). In 2006, there were 15.3 acres of marsh, 8.3 acres of sedge meadow, 0.6 acre of wet meadow, 3.7 acres of wet shrubland and 1.1 acres of forested wetland (29.0 acres). So sedge meadow and wet meadow decreased while marsh, wet shrubland and forested wetland increased. Sedge meadows are dominated by *Carex stricta*, *Calamagrostis canadensis*, *Carex sartwellii* and *Spartina pectinata* (Table 1). The marshes are dominated by *Typha angustifolia*, *Phalaris arundinacea*, *Lythrum salicaria* and *Polygonum punctatum* (Table 2). The one wet shrubland sampled was dominated by *Salix exigua*, *Typha angustifolia* and *Carex stricta* (Tables 3, 4). In the wet shrubland, there were 56 shrub stems per 100 m² that occupied about 40% cover. In the marshes, there were 4 shrub stems per 100 m² that occupied about 2% cover. The sedge meadows support 7.0 species per m², while the marshes and wet shrubland support 4.5 and 4.7 species per m². In the sedge meadows, relative cover of weedy species is 2.3%. In the marshes and wet shrubland, relative cover of weedy species is 76.9% and 84.6%. The sedge meadows averaged 21.4% weedy or nonnative species. The marshes averaged 32.9% weedy species and the wet shrubland had 27.5% weedy species. The 29 acres of wetland at North Chicago support 25 conservative plant species (C \geq 6): *Galium trifidum* (C=10), *Veronica scutellata* (C=9), *Epilobium leptophyllum* (C=9), *Lycopus rubellus* (C=8), *Lysimachia quadriflora* (C=8), *Salix eriocephala* (C=8), *Salix glaucophylloides* (C=8), *Aster puniceus* (C=7), *Oxypolis rigidior* (C=7), *Liatris spicata* (C=7), *Solidago ridellii* (C=7), *Allium cernuum* (C=7), *Lathyrus palustris* (C=7), *Spirea alba* (C=6), *Carex lacustris* (C=6), *Carex trichocarpa* (C=6), *Ranunculus flabellaris* (C=6), *Glyceria septentrionalis* (C=6), *Rubus strigosus* (C=6), *Galium tinctorium* (C=6), *Phlox glaberrima* (C=6), *Salix petiolaris* (C=6), *Scutellaria galericulata* (C=6), *Scirpus acutus* (C=6) and *Juncus nodosus* (C=6). Ten of the fourteen wetlands sampled had Floristic Quality Indices above twenty (Taft et al. 1997).

Uplands

Although acreage of shrubland was not recalculated, there is certainly now a greater area of shrubland than the 112.9 acres measured in 1995. Although the same two species dominate the shrub/sapling layer (*Rhamnus cathartica* and *Cornus racemosa*), shrub density has increased 2.24 fold (from 99 stems/100 m² to 222 stems/100 m²) and canopy cover was measured at 87% (Table 8). Since understory plant cover other than *Rhamnus cathartica* is sparse, there are eight understory dominants – *Rhamnus cathartica*, *Cornus racemosa*, *Allium canadense*, *Lonicera X bella*, *Aster drummondii*, *Fragaria virginiana*, *Vitis riparia* and *Potentilla simplex* (Table 6). Even after 35 years of increasing shrub dominance, this community remains diverse with a total of 174 species and 17.6 species/m². Many prairie species remain, resulting in a very high FQI of 43.7 and a mean C of 3.63 (Taft et al. 1997). However, in the understory, relative weedy cover is 49.6% and 27.6% of the species present are nonnative or weedy natives. The following 23 conservative species (C ≥ 6) were observed in 2009: *Gentiana alba* C=9, *Viola peditifida* C=9, *Zizia aptera* C=9, *Anemone cylindrica* C=8, *Amelanchier cf laevis* C=7, *Asclepias purpurascens* C=7, *Cornus alternifolia* C=7, *Gentianella quinquefolia* C=7, *Liatris spicata* C=7, *Lycopus uniflorus* C=7, *Oxipolis rigidior* C=7, *Phlox pilosa* C=7, *Apocynum androsaemifolium* C=6, *Carex umbellata* C=6, *Geum aleppicum* C=6, *Helianthus rigidus* C=6, *Hypoxis hirsuta* C=6, *Lillium michiganense* C=6, *Phlox glaberrima* C=6, *Sisyrinchium campestre* C=6, *Spirea alba* C=6, *Veronicastrum virginicum* C=6, *Zizia aurea* C=6.

Aerial extent of prairie/old field has decreased from 8.6 acres in 1995 to 6.2 acres. In the prairie/old field community, the same two species dominate the shrub layer as in 1995 (*Rhamnus cathartica* and *Cornus racemosa*). Here, shrub density has apparently increased 6.92 fold (from 35 stems/100 m² to 241 stems/100 m²) although in the 1995 study plots with 50 shrub stems/100 m² would probably have been called shrubland regardless of the abundance of prairie species in the understory (Table 9). Due to the lower stature of shrubs in the prairie community, canopy cover was 56% even though stem density was greater than that in the shrubland. Even though prairie occupies much less area (6.2 acres) than shrubland, it remains very diverse with a total of 154 species and 29.9 species/m². Due to the high diversity per plot, there are eight understory dominants here as well – *Rhamnus cathartica*, *Solidago juncea*, *Cornus racemosa*, *Schizachyrium scoparium*, *Andropogon gerardii*, *Sorghastrum nutans*, *Silphium terebinthinaceum* and *Parthenium integrifolium* (Table 7). The prairie community also has a very high FQI of 46.4 and a mean C of 4.07 (Taft et al. 1997). Of the species present 26.6% are nonnative or weedy natives and relative weedy cover is 23.2%. The following 28 conservative species (C ≥ 6) were observed in 2009: *Amelanchier sanguinea* C=10, *Bromus kalmii* C=10, *Cacalia plantaginea* C=10, *Potentilla arguta* C=10, *Carex buxbaumii* C=9, *Gentiana alba* C=9, *Viola peditifida* C=9, *Zizia aptera* C=9, *Agrostis alba palustris* C=8, *Castilleja coccinea* C=8, *Elymus trachycaulus* C=8, *Oenothera perennis* C=8, *Prenanthes racemosa* C=8, *Allium cernuum* C=7, *Aster azureus* C=7, *Gentiana andrewsii* C=7, *Gentianella quinquefolia* C=7, *Liatris aspera* C=7, *Liatris spicata* C=7, *Phlox pilosa* C=7, *Comandra umbellata* C=6, *Geum aleppicum* C=6, *Helianthus rigidus* C=6, *Hypoxis hirsuta* C=6, *Liatris pycnostachya* C=6, *Lithospermum canescens* C=6, *Vicia americana* C=6, *Zizia aurea* C=6.

Summary

Sedge meadow, wet meadow and prairie have decreased in area since 1995, while marsh, wet shrubland, forested wetland and shrubland have increased. Ten of fourteen wetlands sampled have good natural quality ($FQI \geq 20$) and the shrubland and prairie have very good natural quality ($FQI \geq 35$). Diversity has remained surprisingly high in spite of thirty-five years of shrub invasion in the prairie and narrowleaf cattail invasion in the sedge meadows. However, shrub density has approximately tripled in the last 14 years. In the marsh and wet shrubland, weedy species cover is 86% and 77%. In the shrubland and prairie, weedy species cover in the understory is 50% and 27%. In all communities, percent weedy or nonnative species ranges from 21% to 33%. Although this site still supports a surprising number of conservative plant species (at least 59 species with $C \geq 6$), including four state Threatened or Endangered species and at least one state listed bird, the time is right for shrub and narrowleaf cattail removal and establishing a prescribed fire regime.

Literature Cited

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Table 1. North Chicago Sedge Meadow vegetation. Frequency, Rel. Freq., Cover, Rel. Cover, Importance Value. N = 9. Wetlands 8, 19, 24, 31, 36

Species	Freq.	Rel. Freq.	Cover	Rel. Cov.	I.V.
* <i>Carex stricta</i>	0.8889	13.116	0.4111	42.663	27.889
* <i>Calamagrostis canadensis</i>	0.6667	9.837	0.1111	11.530	10.684
* <i>Carex sartwellii</i>	0.1111	1.639	0.0889	9.226	5.433
* <i>Spartina pectinata</i>	0.1111	1.639	0.0667	6.922	4.281
<i>Helianthus grosseserratus</i>	0.3333	4.918	0.0256	2.657	3.788
<i>Eupatorium maculatum</i>	0.3333	4.918	0.0256	2.657	3.788
<i>Lycopus americanus</i>	0.4444	6.557	0.0078	0.809	3.683
<i>Solidago gigantea</i>	0.3333	4.918	0.0222	2.304	3.611
<i>Polygonum amphibium</i>	0.3333	4.918	0.0100	1.038	2.978
<i>Lythrum salicaria</i>	0.3333	4.918	0.0100	1.038	2.978
<i>Verbena hastata</i>	0.2222	3.279	0.0189	1.961	2.620
<i>Aster puniceus</i>	0.2222	3.279	0.0144	1.494	2.386
<i>Galium tinctorium</i>	0.2222	3.279	0.0078	0.809	2.044
<i>Leersia oryzoides</i>	0.1111	1.639	0.0222	2.304	1.972
<i>Calystegia sepium</i>	0.2222	3.279	0.0044	0.457	1.868
<i>Apocynum sibiricum</i>	0.1111	1.639	0.0167	1.733	1.686
<i>Iris shrevei</i>	0.1111	1.639	0.0167	1.733	1.686
<i>Eupatorium perfoliatum</i>	0.1111	1.639	0.0133	1.380	1.509
<i>Cicuta maculata</i>	0.1111	1.639	0.0078	0.809	1.224
<i>Lycopus rubellus</i>	0.1111	1.639	0.0078	0.809	1.224
<i>Sagittaria latifolia</i>	0.1111	1.639	0.0078	0.809	1.224
<i>Carex pellita</i>	0.1111	1.639	0.0056	0.581	1.110
<i>Eleocharis erythropoda</i>	0.1111	1.639	0.0056	0.581	1.110
<i>Glyceria striata</i>	0.1111	1.639	0.0056	0.581	1.110
<i>Carex cristatella</i>	0.1111	1.639	0.0056	0.581	1.110
<i>Juncus dudleyi</i>	0.1111	1.639	0.0056	0.581	1.110
<i>Scirpus fluviatilis</i>	0.1111	1.639	0.0056	0.581	1.110
<i>Bidens aristosa</i>	0.1111	1.639	0.0033	0.342	0.990
<i>Mentha arvensis</i>	0.1111	1.639	0.0033	0.342	0.990
<i>Agrostis alba</i>	0.1111	1.639	0.0033	0.342	0.990
<i>Scutellaria lateriflora</i>	0.1111	1.639	0.0022	0.228	0.934
<i>Melilotus alba</i>	0.1111	1.639	0.0011	0.114	0.876
Total	6.7773	99.996	0.9636	99.996	99.996

* Dominant species
mean = 7.0 species per m²

Table 2. North Chicago Marsh vegetation. Frequency, Rel. Freq., Cover, Rel. Cover, Importance Value. N=23. Wetlands 3, 5, 6, 8, 18, 22, 23, 25, 44.

Species	Freq.	Rel. Freq.	Cover	Rel. Cov.	I.V.
* <i>Typha angustifolia</i>	0.9130	19.623	0.5848	61.223	40.423
* <i>Phalaris arundinacea</i>	0.2609	5.607	0.0830	8.694	7.151
* <i>Lythrum salicaria</i>	0.4348	9.345	0.0430	4.506	6.925
* <i>Polygonum punctatum</i>	0.3913	8.410	0.0339	3.550	5.980
<i>Impatiens capensis</i>	0.2609	5.607	0.0291	3.050	4.328
<i>Pilea pumila</i>	0.2174	4.672	0.0274	2.868	3.770
<i>Leersia oryzoides</i>	0.1304	2.803	0.0326	3.414	3.109
<i>Bidens frondosa</i>	0.1739	3.738	0.0074	0.774	2.256
<i>Alisma plantago aquatica</i>	0.1739	3.738	0.0057	0.591	2.164
<i>Iris shrevei</i>	0.1304	2.803	0.0117	1.229	2.016
<i>Calamagrostis canadensis</i>	0.0870	1.870	0.0144	1.502	1.686
<i>Carex</i> sp.	0.1304	2.803	0.0039	0.409	1.606
<i>Myosoton aquaticum</i>	0.0870	1.870	0.0074	0.774	1.322
<i>Solanum dulcamara</i>	0.0870	1.870	0.0070	0.729	1.300
<i>Epilobium coloratum</i>	0.0870	1.870	0.0044	0.455	1.162
<i>Polygonum amphibium</i>	0.0870	1.870	0.0035	0.364	1.117
<i>Mentha arvensis</i>	0.0870	1.870	0.0035	0.364	1.117
<i>Eupatorium maculatum</i>	0.0870	1.870	0.0026	0.273	1.072
<i>Lycopus americanus</i>	0.0870	1.870	0.0022	0.227	1.049
<i>Bidens connata</i>	0.0435	0.935	0.0065	0.683	0.809
<i>Boehmeria cylindrica</i>	0.0435	0.935	0.0065	0.683	0.809
<i>Cicuta maculata</i>	0.0435	0.935	0.0044	0.455	0.695
<i>Salix petiolaris</i>	0.0435	0.935	0.0044	0.455	0.695
<i>Scirpus fluviatilis</i>	0.0435	0.935	0.0044	0.455	0.695
<i>Sagittaria latifolia</i>	0.0435	0.935	0.0044	0.455	0.695
<i>Sium suave</i>	0.0435	0.935	0.0030	0.318	0.627
<i>Verbena hastata</i>	0.0435	0.935	0.0022	0.227	0.581
<i>Polygonum persicaria</i>	0.0435	0.935	0.0022	0.227	0.581
<i>Helianthus grosseserratus</i>	0.0435	0.935	0.0022	0.227	0.581
<i>Asclepias incarnata</i>	0.0435	0.935	0.0022	0.227	0.581
<i>Rorippa islandica</i>	0.0435	0.935	0.0013	0.136	0.535
<i>Eleocharis erythropoda</i>	0.0435	0.935	0.0013	0.136	0.535
<i>Juncus torreyi</i>	0.0435	0.935	0.0013	0.136	0.535
<i>Viola</i> sp.	0.0435	0.935	0.0009	0.091	0.513
<i>Geum laciniatum</i>	0.0435	0.935	0.0004	0.045	0.490
<i>Galium tinctorium</i>	0.0435	0.935	0.0004	0.045	0.490
Total	4.6528	100.004	0.9552	99.997	100.000

* Dominant species
mean = 4.7 species per m²

Table 3. North Chicago Wet Shrubland understory vegetation. Frequency, Rel. Freq., Cover, Rel. Cover, Importance Value. N=2. Wetland 34.

Species	Freq.	Rel. Freq.	Cover	Rel. Cov.	I.V.
* <i>Typha angustifolia</i>	1.00	22.22	0.500	76.92	49.57
* <i>Carex stricta</i>	0.50	11.11	0.050	7.69	9.40
<i>Calamagrostis canadensis</i>	0.50	11.11	0.035	5.38	8.24
<i>Salix exigua</i>	0.50	11.11	0.025	3.85	7.48
<i>Lythrum salicaria</i>	0.50	11.11	0.015	2.31	6.71
<i>Galium tinctorium</i>	0.50	11.11	0.015	2.31	6.71
<i>Phalaris arundinacea</i>	0.50	11.11	0.005	0.77	5.94
<i>Helianthus grosseserratus</i>	0.50	11.11	0.005	0.77	5.94
Total	4.50	99.99	65.000	100.00	99.99

* Dominant species
 mean = 4.5 species per m²

Table 4. North Chicago Wet Shrubland shrub layer vegetation. Density, Rel. Density, Importance Value. N=1. Wetland 34.

Species	Density/100 m ²	Rel.Density.	I.V.
* <i>Salix exigua</i>	36	64.30	64.30
<i>Cornus obliqua</i>	16	28.60	28.60
<i>Populus deltoides</i>	4	7.10	7.10
Total	56	100.00	100.00

* Dominant species
 Density = 56.0 stems per 100 m²
 shrub cover = 40%

Table 5. North Chicago Marsh shrub layer vegetation. Frequency, Rel. Freq., Density, Rel. Density, IV. n=12. Wetlands 3, 5, 6, 8, 18, 22, 23, 25, 44.

Species	Freq.	Rel. Freq.	Density/100 m ²	Rel.Density.	I.V.
* <i>Rhamnus frangula</i>	0.1667	66.68	3.6668	84.61	75.64
<i>Viburnum lentago</i>	0.0833	33.32	0.6668	15.39	24.36
Total	0.2500	100.00	4.3336	100.00	100.00

* Dominant species
 mean = 4.33 stems per 100 m²
 shrub cover = 2.08%

Table 6. North Chicago Shrubland understory vegetation. Frequency, Rel. Freq., Cover, Rel. Cover, Importance Value. N= 87. There are 130 species with IV < 0.60

Species	Freq.	Rel. Freq.	Cover	Rel. Cov.	I.V.
* <i>Rhamnus cathartica</i>	1.000	3.01	0.6073	39.10	21.055
* <i>Cornus racemosa</i>	0.931	2.80	0.1103	7.10	4.950
* <i>Allium canadense</i>	0.517	1.56	0.1070	6.89	4.225
* <i>Lonicera X bella</i>	0.759	2.28	0.0568	3.66	2.970
* <i>Aster drummondii</i>	0.724	2.18	0.0331	2.13	2.155
* <i>Fragaria virginiana</i>	0.828	2.49	0.0268	1.73	2.110
* <i>Vitis riparia</i>	0.931	2.80	0.0196	1.26	2.030
* <i>Potentilla simplex</i>	0.586	1.76	0.0328	2.11	1.935
<i>Aster lateriflorus</i>	0.586	1.76	0.0285	1.83	1.795
<i>Viburnum lentago</i>	0.517	1.56	0.0289	1.86	1.710
<i>Poa compressa</i>	0.552	1.66	0.0263	1.70	1.680
<i>Anemone virginiana</i>	0.724	2.18	0.0180	1.16	1.670
<i>Rhamnus frangula</i>	0.552	1.66	0.0224	1.44	1.550
<i>Solidago juncea</i>	0.379	1.14	0.0288	1.85	1.495
<i>Solidago canadensis</i>	0.670	2.08	0.0127	0.82	1.450
<i>Carex granularis</i>	0.690	2.08	0.0114	0.74	1.410
<i>Viola pratincola</i>	0.621	1.87	0.0116	0.74	1.305
<i>Circaea lutetiana</i>	0.379	1.14	0.0225	1.45	1.295
<i>Poa pratensis</i>	0.448	1.35	0.0175	1.13	1.240
<i>Parthenocissus quinquefolia</i>	0.310	0.93	0.0207	1.33	1.130
<i>Rubus pensylvanicus</i>	0.483	1.45	0.0121	0.78	1.115
<i>Carex stricta</i>	0.172	0.52	0.0241	1.55	1.035
<i>Prunella vulgaris elongata</i>	0.552	1.66	0.0064	0.41	1.035
<i>Dichanthelium villosissimum</i>	0.517	1.56	0.0074	0.48	1.020
<i>Taraxacum officinale</i>	0.552	1.66	0.0051	0.33	0.995
<i>Oxalis stricta</i>	0.552	1.66	0.0042	0.27	0.965
<i>Rudbeckia hirta</i>	0.483	1.45	0.0061	0.39	0.920
<i>Sanicula canadensis</i>	0.448	1.35	0.0068	0.44	0.895
<i>Hypericum punctatum</i>	0.483	1.45	0.0024	0.15	0.800
<i>Geum allepicum</i>	0.448	1.35	0.0037	0.24	0.795
<i>Crateagus sp.</i>	0.483	1.45	0.0018	0.12	0.785
<i>Rosa carolina</i>	0.379	1.14	0.0058	0.37	0.755
<i>Aster simplex</i>	0.414	1.25	0.0036	0.23	0.740
<i>Agrostis alba</i>	0.345	1.04	0.0061	0.39	0.715
<i>Daucus carota</i>	0.345	1.04	0.0049	0.31	0.675
<i>Ratibida pinnata</i>	0.310	0.93	0.0063	0.40	0.665
<i>Equisetum arvense</i>	0.207	0.62	0.0109	0.70	0.660
<i>Leucanthemum vulgare</i>	0.345	1.04	0.0032	0.20	0.620
<i>Monarda fistulosa</i>	0.276	0.83	0.0061	0.39	0.610
Total	20.498	61.74	1.3700	88.18	74.960

* Dominant species
mean = 17.6 species per m²

Table 7. North Chicago Prairie/Old Field understory vegetation. Frequency, Rel. Freq., Cover, Rel. Cover, Importance Value. N = 48. There are 105 species with IV < 0.60.

Species	Freq.	Rel. Freq.	Cover	Rel. Cov.	I.V.
* <i>Rhamnus cathartica</i>	0.9375	1.894	0.2311	10.295	6.094
* <i>Solidago juncea</i>	0.9375	1.894	0.1838	8.188	5.041
* <i>Cornus racemosa</i>	0.9375	1.894	0.1253	5.584	3.739
* <i>Schizachyrium scoparium</i>	0.4375	0.884	0.1346	5.996	3.440
* <i>Andropogon gerardii</i>	0.3750	0.758	0.1117	4.975	2.867
* <i>Sorghastrum nutans</i>	0.3750	0.758	0.0883	3.935	2.346
* <i>Silphium terebinthinaceum</i>	0.3125	0.631	0.0754	3.360	1.996
* <i>Parthenium integrifolium</i>	0.3750	0.758	0.0695	3.096	1.927
<i>Daucus carota</i>	0.6875	1.389	0.0519	2.313	1.851
<i>Carex pellita</i>	0.2500	0.505	0.0683	3.044	1.775
<i>Agrostis alba</i>	0.7500	1.515	0.0444	1.977	1.746
<i>Ratibida pinnata</i>	0.9375	1.894	0.0326	1.452	1.673
<i>Fragaria virginiana</i>	0.8125	1.641	0.0381	1.699	1.670
<i>Poa pratensis</i>	0.6250	1.263	0.0450	2.003	1.633
<i>Antennaria neglecta</i>	0.6250	1.263	0.0423	1.884	1.574
<i>Solidago canadensis</i>	0.7500	1.515	0.0331	1.473	1.494
<i>Aster ericoides</i>	0.9375	1.894	0.0210	0.936	1.415
<i>Rubus pensylvanicus</i>	0.6875	1.389	0.0311	1.387	1.388
<i>Achillea millefolium</i>	0.8750	1.768	0.0161	0.717	1.243
<i>Monarda fistulosa</i>	0.9375	1.894	0.0127	0.564	1.229
<i>Solidago nemoralis</i>	0.8125	1.641	0.0170	0.759	1.200
<i>Rosa carolina</i>	0.6250	1.263	0.0254	1.133	1.198
<i>Potentilla simplex</i>	0.6250	1.263	0.0244	1.086	1.174
<i>Carex granularis</i>	0.6875	1.389	0.0210	0.937	1.163
<i>Hieracium caespitosum</i>	0.6250	1.263	0.0228	1.016	1.140
<i>Solidago rigida</i>	0.5000	1.010	0.0280	1.248	1.129
<i>Allium cernuum</i>	0.4375	0.884	0.0303	1.350	1.117
<i>Rudbeckia hirta</i>	0.8750	1.768	0.0104	0.464	1.116
<i>Aster drummondii</i>	0.6250	1.263	0.0209	0.933	1.098
<i>Anemone virginiana</i>	0.8125	1.641	0.0096	0.426	1.034

* Dominant species

Continued on following page

Table 7 (Continued). North Chicago Prairie/Old Field understory vegetation. Frequency, Rel. Freq., Cover, Rel. Cover, Importance Value. N = 48.

Species	Freq.	Rel. Freq.	Cover	Rel. Cov.	I.V.
<i>Poa compressa</i>	0.7500	1.515	0.0103	0.458	0.987
<i>Prunella vulgaris elongata</i>	0.8125	1.641	0.0067	0.297	0.969
<i>Leucanthemum vulgare</i>	0.8125	1.641	0.0060	0.267	0.954
<i>Helianthus grosseserratus</i>	0.4375	0.884	0.0248	1.012	0.948
<i>Helianthus rigidus</i>	0.4375	0.884	0.0227	1.012	0.948
<i>Vitis riparia</i>	0.8125	1.641	0.0051	0.229	0.935
<i>Viola pratincola</i>	0.7500	1.515	0.0076	0.338	0.927
<i>Erigeron strigosus</i>	0.6875	1.389	0.0088	0.393	0.891
<i>Dichanthelelium villosissimum</i>	0.7500	1.515	0.0054	0.241	0.878
<i>Lonicera X bella</i>	0.5625	1.136	0.0104	0.462	0.799
<i>Rhamnus frangula</i>	0.6250	1.263	0.0066	0.294	0.779
<i>Taraxacum officinale</i>	0.6875	1.389	0.0038	0.168	0.778
<i>Lobelia spicata</i>	0.6875	1.389	0.0034	0.151	0.770
<i>Cerastium vulgatum</i>	0.6875	1.389	0.0030	0.133	0.761
<i>Liatris spicata</i>	0.5000	1.010	0.0113	0.501	0.756
<i>Aster azureus</i>	0.3750	0.758	0.0158	0.705	0.732
<i>Zizia aptera</i>	0.4375	0.884	0.0130	0.578	0.731
<i>Crateagus sp.</i>	0.5625	1.136	0.0057	0.255	0.695
<i>Zizia aurea</i>	0.1250	0.253	0.0244	1.086	0.669
<i>Carex buxbaumii</i>	0.0625	0.126	0.0263	1.170	0.648
<i>Viburnum lentago</i>	0.4375	0.884	0.0084	0.376	0.630
Total	32.1875	65.028	1.8956	84.356	74.6956

* Dominant species
 mean = 29.9 species per m²

Table 8. North Chicago Shrubland shrub layer vegetation. Frequency, Rel. Freq., Density, Rel. Density, Importance Value. N=29.

Species	Freq.	Rel. Freq.	Density/100 m ²	Rel. Dens.	I.V.
* <i>Rhamnus cathartica</i>	1.000	22.31	116.83	52.58	37.44
* <i>Cornus racemosa</i>	0.724	16.15	54.76	24.64	20.40
<i>Lonicera X bella</i>	0.621	13.85	17.65	7.95	10.90
<i>Viburnum lentago</i>	0.483	10.77	16.41	7.39	9.08
<i>Rhamnus frangula</i>	0.345	7.69	2.48	1.12	4.40
<i>Crateagus pruinosa</i>	0.310	6.92	4.14	1.86	4.39
<i>Prunus virginiana</i>	0.138	3.08	1.10	0.50	1.79
<i>Cornus stolonifera</i>	0.103	2.31	2.62	1.18	1.74
<i>Crateagus sp.</i>	0.103	2.31	0.69	0.31	1.31
<i>Malus ioensis</i>	0.103	2.31	0.55	0.25	1.28
<i>Vitis riparia</i>	0.103	2.31	0.41	0.19	1.25
<i>Crateagus calpodendron</i>	0.069	1.54	0.83	0.37	0.96
<i>Viburnum opulus</i>	0.069	1.54	0.41	0.19	0.86
<i>Crateagus punctata</i>	0.069	1.54	0.28	0.12	0.83
<i>Populus tremuloides</i>	0.034	0.77	1.79	0.81	0.79
<i>Cornus obliqua</i>	0.034	0.77	0.41	0.19	0.48
<i>Rhus glabra</i>	0.034	0.77	0.28	0.12	0.45
<i>Crateagus mollis</i>	0.034	0.77	0.14	0.06	0.41
<i>Fraxinus pennsylvanica</i>	0.034	0.77	0.14	0.06	0.41
<i>Malus pumila</i>	0.034	0.77	0.14	0.06	0.41
<i>Prunus americana</i>	0.034	0.77	0.14	0.06	0.41
Total	4.483	100.02	222.19	100.01	99.99

* Dominant species, 2009 density=222/100 m², 1995 density=99/100 m², percent cover=87%

Table 9. North Chicago Prairie/Old Field shrub layer vegetation. Frequency, Rel. Freq., Density, Rel. Density, Importance Value. N=12.

Species	Freq.	Rel. Freq.	Density/100 m ²	Rel. Dens.	I.V.
* <i>Rhamnus cathartica</i>	1.000	30.19	128.00	53.06	41.62
* <i>Cornus racemosa</i>	0.563	16.98	84.75	35.13	26.06
<i>Lonicera X bella</i>	0.625	18.87	9.00	3.73	11.30
<i>Viburnum lentago</i>	0.250	7.55	4.50	1.87	4.71
<i>Rhamnus frangula</i>	0.250	7.55	1.75	0.72	4.14
<i>Zanthoxylum americanum</i>	0.063	1.89	9.75	4.04	2.96
<i>Vitis riparia</i>	0.125	3.77	1.00	0.41	2.09
<i>Crateagus pruinosa</i>	0.125	3.77	0.50	0.21	1.99
<i>Amelanchier sanguinea</i>	0.063	1.89	0.75	0.31	1.10
<i>Cornus obliqua</i>	0.063	1.89	0.50	0.21	1.05
<i>Prunus virginiana</i>	0.063	1.89	0.25	0.10	1.00
<i>Cornus stolonifera</i>	0.063	1.89	0.25	0.10	1.00
<i>Viburnum recognitum</i>	0.063	1.89	0.25	0.10	1.00
Total	3.313	100.02	241.25	99.99	100.02

* Dominant species, 2009 density=241/100 m², 1995 density=35/100 m², percent cover=56%

Sedge Meadow/Marsh
SPECIES LIST – Site 8 (Plot 14) (dominants –*Carex stricta*, *Typha angustifolia*)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster puniceus</i>	swamp aster	herb	OBL	7
<i>Calamagrostis canadensis</i>	bluejoint grass	herb	OBL	3
<i>Calystegia sepium</i>	hedge bindweed	herb	FAC	1
<i>Carex</i> sp.	sedge	herb	----	--
<i>Carex stricta</i>	tussock sedge	herb	OBL	5
<i>Cornus obliqua</i>	pale dogwood	shrub	FACW+	4
<i>Eleocharis erythropoda</i>	spikerush	herb	OBL	3
<i>Erechtites hieracifolia</i>	fire weed	herb	FACU	2
<i>Eupatorium maculatum</i>	spotted Joe Pye weed	herb	OBL	5
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
<i>Euthamia graminifolia</i>	grassleaf goldenrod	herb	FACW-	3
<i>Iris shrevei</i>	blue flag iris	herb	OBL	5
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
<i>Lycopus virginicus</i>	bugle weed	herb	OBL	5
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Mentha arvensis villosa</i>	field mint	herb	FACW	4
<i>Mimulus ringens</i>	monkey flower	herb	OBL	5
<i>Onoclea sensibilis</i>	sensitive fern	herb	FACW	5
<i>Oxypolis rigidior</i>	cowbane	herb	OBL	7
<i>Parthenocissus quinquefolia</i>	Virginia creeper	herb	FAC-	2
<i>Polygonum amphibium</i>	water smartweed	herb	OBL	3
<i>Populus deltoides</i>	eastern cottonwood	shrub, herb	FAC+	2
<i>Rhamnus cathartica</i>	common buckthorn	shrub	FACU	*
<i>Rhamnus frangula</i>	glossy buckthorn	shrub	FAC+	*
<i>Sagittaria latifolia</i>	arrowhead	herb	OBL	4
<i>Salix discolor</i>	pussy willow	shrub	FACW	4
<i>Salix nigra</i>	black willow	shrub	OBL	3
<i>Scirpus fluviatilis</i>	river bulrush	herb	OBL	3
<i>Scutellaria lateriflora</i>	mad-dog skullcap	herb	OBL	4
<i>Solanum dulcamara</i>	false bitterweet	herb	FAC	*
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Spartina pectinata</i>	freshwater cord grass	herb	FACW+	4
<i>Spiraea alba</i>	meadow-sweet	shrub	FACW+	6
<i>Typha angustifolia</i>	narrowleaf cattail	herb	OBL	*
<i>Typha latifolia</i>	cattail	herb	OBL	1
<i>Verbena stricta</i>	hoary vervain	herb	UPL	2
<i>Viburnum lentago</i>	nannyberry	shrub	FAC+	4
<i>Vitis riparia</i>	riverbank grape	vine, herb	FACW-	2

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

$$mCv = \sum C/N = 123/35 = 3.51$$

$$FQI = \sum C/\sqrt{N} = 123/\sqrt{35} = 20.8$$

Quality = high

Sedge Meadow
SPECIES LIST – Site 19 (plot 12) (dominants – *Carex stricta*)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Achillea millefolium</i>	common milfoil	herb	FACU	*
<i>Alisma plantago-aquatica</i>	water-plantain	herb	OBL	2
<i>Apocynum sibiricum</i>	Indian hemp	herb	FAC+	2
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster puniceus</i>	swamp aster	herb	OBL	7
<i>Calamagrostis canadensis</i>	bluejoint grass	herb	OBL	3
<i>Carex sartwellii</i>	sedge	herb	OBL	5
<i>Carex stricta</i>	tussock sedge	herb	OBL	5
<i>Cicuta maculata</i>	water hemlock	herb	OBL	4
<i>Cornus obliqua</i>	pale dogwood	shrub	FACW+	4
<i>Eupatorium maculatum</i>	spotted Joe Pye weed	herb	OBL	5
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
<i>Euthamia graminifolia</i>	grassleaf goldenrod	herb	FACW-	3
<i>Helianthus grosseserratus</i>	sawtooth sunflower	herb	FACW-	2
<i>Iris shrevei</i>	blue flag iris	herb	OBL	5
<i>Liatris spicata</i>	blazing star	herb	FAC	7
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
<i>Lycopus rubellus</i>	stalked water horehound	herb	OBL	8
<i>Lythrum alatum</i>	winged loosestrife	herb	OBL	5
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Mentha arvensis villosa</i>	field mint	herb	FACW	4
<i>Onoclea sensibilis</i>	sensitive fern	herb	FACW	5
<i>Parthenocissus quinquefolia</i>	Virginia creeper	herb	FAC-	2
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Pycnanthemum virginianum</i>	mountain mint	herb	FACW+	5
<i>Ranunculus flabellaris</i>	yellow water buttercup	herb	OBL	6
<i>Rhamnus cathartica</i>	common buckthorn	shrub, herb	FACU	*
<i>Rhamnus frangula</i>	glossy buckthorn	shrub, herb	FAC+	*
<i>Salix amygdaloides</i>	peach-leaved willow	tree	FACW	4
<i>Scirpus atrovirens</i>	dark green rush	herb	OBL	4
<i>Scutellaria lateriflora</i>	mad-dog skullcap	herb	OBL	4
<i>Sium suave</i>	water parsnip	herb	OBL	5
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago riddellii</i>	Riddell's goldenrod	herb	OBL	7
<i>Spartina pectinata</i>	freshwater cord grass	herb	FACW+	4
<i>Typha angustifolia</i>	narrow-leaved cattail	herb	OBL	*
<i>Typha latifolia</i>	cattail	herb	OBL	1
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Vitis riparia</i>	riverbank grape	herb	FACW-	2

= Coefficient of Conservatism (Taft et al. 1997)

$$mCv = \sum C/N = 138/34 = 4.06$$

* Non-native species

$$FQI = \sum C/\sqrt{N} = 138/\sqrt{34} = 23.7$$

Quality = high

Sedge Meadow

SPECIES LIST – Site 24 (plot 5) (dominants – *Carex stricta*, *Spartina pectinata*, *Eleocharis erythropoda*)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Achillea millifolium</i>	yarrow	herb	FACU	*
<i>Agrostis alba</i>	redtop	herb	FACW	0
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster novae angliae</i>	New England aster	herb	FACW	4
<i>Aster prealtus</i>	willow aster	herb	FACW	4
<i>Aster puniceus</i>	swamp aster	herb	OBL	7
<i>Calamagrostis canadensis</i>	blue joint grass	herb	OBL	3
<i>Carex cristatella</i>	sedge	herb	FACW+	3
<i>Carex pellita</i>	sedge	herb	OBL	4
<i>Carex stricta</i>	tussock sedge	herb	OBL	5
<i>Cornus racemosa</i>	grey dogwood	shrub	FACW-	2
<i>Eleocharis erythropoda</i>	spikerush	herb	OBL	3
<i>Epilobium coloratum</i>	cinnamon willow herb	herb	OBL	3
<i>Eupatorium maculatum</i>	Joe Pye weed	herb	OBL	5
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
<i>Euthamia graminifolia</i>	grass leaf goldenrod	herb	FACW-	3
<i>Fragaria virginiana</i>	wild strawberry	herb	FAC-	2
<i>Geum laciniatum</i>	rough avens	herb	FACW	2
<i>Glyceria septentriolalis</i>	floating manna grass	herb	OBL	6
<i>Glyceria striata</i>	fowl manna grass	herb	OBL	4
<i>Helianthus grosseserratus</i>	sawtooth sunflower	herb	FACW-	2
<i>Iris shrevei</i>	blue flag iris	herb	OBL	5
<i>Juncus dudleyi</i>	Dudley's rush	herb	FAC	4
<i>Juncus torreyi</i>	Torrey's rush	herb	FACW	3
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Lemna minor</i>	duckweed	herb	OBL	3
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
<i>Lycopus virginicus</i>	bugleweed	herb	OBL	5
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Monarda fistulosa</i>	bergamot	herb	FACU	4
<i>Penthorum sedoides</i>	ditch stonecrop	herb	OBL	2
<i>Pycnanthemum virginianum</i>	mountain mint	herb	FACW+	5
<i>Ranunculus sceleratus</i>	cursed crowfoot	herb	OBL	3
<i>Rhamnus frangula</i>	glossy buckthorn	sapl	FAC+	*
<i>Rhus glabra</i>	smooth sumac	sapl	UPL	1
<i>Rosa multiflora</i>	multiflora rose	shrub	FACU	*
<i>Rubus strigosus</i>	red raspberry	shrub	FACW-	6
<i>Scirpus validus</i>	great bulrush	herb	OBL	4
<i>Scutellaria lateriflora</i>	mad dog skullcap	herb	OBL	4
<i>Sium suave</i>	water parsnip	herb	OBL	5
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Spartina pectinata</i>	prairie cordgrass	herb	FACW+	4
<i>Typha latifolia</i>	common cattail	herb	OBL	1
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Vitis riparia</i>	riverbank grape	herb	FACW-	2

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

$$mCv = \sum C/N = 144/42 = 3.43$$

$$FQI = \sum C/\sqrt{N} = 144/\sqrt{42} = 22.2$$

Quality = high

Sedge Meadow
SPECIES LIST – Site 31 (plot 4) (dominants – *Carex stricta*)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Alisma plantago aquatica</i>	water-plantain	herb	OBL	2
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	2
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster novae angliae</i>	New England aster	herb	FACW	4
<i>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Bidens frondosa</i>	beggar-ticks	herb	FACW	1
<i>Calamagrostis canadensis</i>	blue joint grass	herb	OBL	3
<i>Carex cristatella</i>	sedge	herb	FACW+	3
<i>Carex stricta</i>	tussock sedge	herb	OBL	5
<i>Cicuta maculata</i>	water hemlock	herb	OBL	4
<i>Cornus racemosa</i>	gray dogwood	shrub	FACW-	2
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eleocharis erythropoda</i>	spikerush	herb	OBL	3
<i>Epilobium coloratum</i>	cinnamon willow herb	herb	OBL	3
<i>Epilobium leptophyllum</i>	bog willow herb	herb	OBL	9
<i>Erechtites hieracifolia</i>	fireweed	herb	FACU	2
<i>Eupatorium maculatum</i>	Joe Pye weed	herb	OBL	5
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
<i>Euthamia graminifolia</i>	grassleaf goldenrod	herb	FACW-	3
<i>Geum laciniatum</i>	rough avens	herb	FACW	2
<i>Helianthus grosseserratus</i>	sawtooth sunflower	herb	FACW-	2
<i>Hypericum perforatum</i>	common St. John's wort	herb	UPL	*
<i>Hypericum punctatum</i>	spotted St. John's wort	herb	FAC+	3
<i>Iris shrevei</i>	blue flag iris	herb	OBL	5
<i>Juncus dudleyi</i>	Dudley's rush	herb	FAC	4
<i>Juncus torreyi</i>	Torrey's rush	herb	FACW	3
<i>Lactuca serriola</i>	prickly lettuce	herb	FAC	*
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
<i>Lycopus virginicus</i>	bugleweed	herb	OBL	5

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

Continued on following page

Sedge Meadow
SPECIES LIST – Site 31 (plot 4) (Continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Lythrum alatum</i>	winged loosestrife	herb	OBL	5
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Mimulus ringens</i>	winged monkey flower	herb	OBL	5
<i>Onoclea sensibilis</i>	sensitive fern	herb	FACW	5
<i>Parthenocissus quinquefolia</i>	Virginia creeper	herb	FAC-	2
<i>Penstemon digitalis</i>	beard tongue	herb	FAC-	4
<i>Penthorum sedoides</i>	ditch stonecrop	herb	OBL	2
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Polygonum amphibium</i>	water smartweed	herb	OBL	3
<i>Rhamnus frangula</i>	glossy buckthorn	sapl	FAC+	*
<i>Salix exigua</i>	sandbar willow	shrub	OBL	1
<i>Scirpus pendulus</i>	red bulrush	herb	OBL	3
<i>Scutellaria lateriflora</i>	mad dog skullcap	herb	OBL	4
<i>Sium suave</i>	water parsnip	herb	OBL	5
<i>Solanum dulcamara</i>	false bitterweet	herb	FAC	*
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Spartina pectinata</i>	freshwater cord grass	herb	FACW+	4
<i>Valeriana officinalis</i>	garden heliotrope	herb	FACW+	*
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Vitis riparia</i>	riverbank grape	vine, herb	FACW-	2

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

$$mCv = \sum C/N = 139/44 = 3.16$$

$$FQI = \sum C/\sqrt{N} = 139/\sqrt{44} = 21.0$$

Quality = high

Sedge Meadow

SPECIES LIST – Site 36 (plot 3) (dominants –*Carex stricta*, *Solidago gigantea*, *Helianthus grosseserratus*)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Agrimonia gryposepala</i>	tall agrimony	herb	FACU+	2
<i>Allium cernuum</i>	nodding onion	herb	UPL	7
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	2
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Bidens frondosa</i>	beggar's ticks	herb	FACW	1
<i>Calamagrostis canadensis</i>	blue joint grass	herb	OBL	3
<i>Calystegia sepium</i>	hedge bindweed	herb	FAC	1
<i>Carex cristatella</i>	sedge	herb	FACW+	3
<i>Carex stricta</i>	tussock sedge	herb	OBL	5
<i>Centaureum pulchellum</i>	centaury	herb	FACU-	*
<i>Cirsium arvense</i>	Canada thistle	herb	FACU	*
<i>Cornus racemosa</i>	grey dogwood	shrub	FACW-	2
<i>Crateagus mollis</i>	red haw	sapl	FACW-	2
<i>Erechtites hieracifolia</i>	fireweed	herb	FACU	2
<i>Eupatorium maculatum</i>	Joe Pye weed	herb	OBL	5
<i>Euthamia graminifolia</i>	grass leaf goldenrod	herb	FACW-	3
<i>Fragaria virginiana</i>	wild strawberry	herb	FAC-	2
<i>Galium tinctorium</i>	stiff bedstraw	herb	OBL	6
<i>Galium trifidum</i>	small bedstraw	herb	FACW+	10
<i>Geum laciniatum</i>	rough avens	herb	FACW	2
<i>Helianthus grosseserratus</i>	sawtooth sunflower	herb	FACW-	2
<i>Hypericum punctatum</i>	spotted St. John's wort	herb	FAC+	3
<i>Iris shrevei</i>	blue flag iris	herb	OBL	5
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
<i>Lythrum alatum</i>	winged loosestrife	herb	OBL	5
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Melilotus alba</i>	white sweet clover	herb	FACU	*
<i>Parthenocissus quinquefolia</i>	Virginia creeper	herb	FAC-	2
<i>Phlox glaberrima</i>	smooth phlox	herb	FACW	6
<i>Polygonum amphibium</i>	water smartweed	herb	OBL	3
<i>Prunella vulgaris elongata</i>	self heal	herb	FAC	1
<i>Pycnanthemum virginianum</i>	mountain mint	herb	FACW+	5
<i>Rhamnus frangula</i>	glossy buckthorn	sapl	FAC+	*
<i>Rorippa islandica</i>	marsh yellow cress	herb	OBL	4
<i>Sium suave</i>	water parsnip	herb	OBL	5
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Sonchus arvensis</i>	sow thistle	herb	FAC-	*
<i>Spartina pectinata</i>	prairie cordgrass	herb	FACW+	4
<i>Tradescantia ohiensis</i>	Ohio spiderwort	herb	FACU+	3
<i>Ulmus americana</i>	American elm	sapl	FACW-	5
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

$$mCv = \sum C/N = 125/36 = 3.47$$

$$FQI = \sum C/\sqrt{N} = 125/\sqrt{36} = 20.8$$

Quality = high

Marsh

SPECIES LIST – Site 3 (plot 15) (dominants –*Typha latifolia*, *Phalaris arundinacea*, *Lythrum salicaria*)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Alisma plantago-aquatica</i>	water-plantain	herb	OBL	2
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Barbarea vulgaris</i>	winter cress	herb	FAC	*
<i>Calystegia sepium</i>	hedge bindweed	herb	FAC	1
<i>Carex stricta</i>	tussock sedge	herb	OBL	5
<i>Eupatorium maculatum</i>	spotted Joe Pye weed	herb	OBL	5
<i>Fraxinus pennsylvanica</i>	green ash	tree, sapling, shrub	FACW	2
<i>Impatiens capensis</i>	jewelweed	herb	FACW	2
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Mentha arvensis villosa</i>	field mint	herb	FACW	4
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Polygonum hydropiper</i>	common smartweed	herb	OBL	*
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Rhamnus cathartica</i>	common buckthorn	sapl, shrub	FACU	*
<i>Rhamnus frangula</i>	glossy buckthorn	sapl, shrub	FAC+	*
<i>Rorippa sessiliflora</i>	sessile-flowered cress	herb	OBL	3
<i>Salix exigua</i>	sandbar willow	sapl, shrub	OBL	1
<i>Sambucus canadensis</i>	common elder	shrub, herb	FACW-	2
<i>Solanum dulcamara</i>	false bittersweet	herb	FAC	*
<i>Typha angustifolia</i>	narrow-leaved cattail	herb	OBL	*
<i>Typha latifolia</i>	cattail	herb	OBL	1

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

$$mCv = \sum C/N = 35/13 = 2.69$$

$$FQI = \sum C/\sqrt{N} = 35/\sqrt{13} = 9.7$$

Quality = low

Marsh

SPECIES LIST – Site 5 (plot 16) (dominants - *Typha angustifolia*, *Phalaris arundinacea*, *Lythrum salicaria*)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Calystegia sepium</i>	hedge bindweed	herb	FAC	1
<i>Carex stricta</i>	tussock sedge	herb	OBL	5
<i>Carex trichocarpa</i>	sedge	herb	OBL	6
<i>Carex</i> sp.	sedge	herb	-----	--
<i>Cornus obliqua</i>	pale dogwood	shrub	FACW+	4
<i>Eleocharis erythropoda</i>	spikerush	herb	OBL	3
<i>Eupatorium maculatum</i>	spotted Joe Pye weed	herb	OBL	5
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
<i>Fragaria virginiana</i>	wild strawberry	herb	FAC-	2
<i>Fraxinus pennsylvanica</i>	green ash	tree	FACW	2
<i>Helianthus grosseserratus</i>	sawtooth sunflower	herb	FACW-	2
<i>Impatiens capensis</i>	jewelweed	herb	FACW	2
<i>Juncus torreyi</i>	Torrey rush	herb	FACW	3
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Lycopus americanus</i>	common water horehound	herb	OBL	3
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Mentha arvensis villosa</i>	field mint	herb	FACW	4
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Pycnanthemum virginianum</i>	mountain mint	herb	FACW+	5
<i>Rhamnus cathartica</i>	common buckthorn	shrub	FACU	*
<i>Rhamnus frangula</i>	glossy buckthorn	shrub	FAC+	*
<i>Rosa setigera</i>	Illinois rose	shrub	FACU+	5
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Scutellaria lateriflora</i>	mad-dog skullcap	herb	OBL	4
<i>Sium suave</i>	water parsnip	herb	OBL	5
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Typha angustifolia</i>	narrow-leaved cattail	herb	OBL	*
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

$$mCv = \sum C/N = 86/23 = 3.74$$

$$FQI = \sum C/\sqrt{N} = 86/\sqrt{23} = 17.9$$

Quality = fair

Marsh/Sedge Meadow
SPECIES LIST – Site 6 (plot 17) (dominants –*Carex stricta*, *Typha angustifolia*)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Apocynum sibiricum</i>	Indian hemp	herb	FAC+	2
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster praealtus</i>	willow-leaved aster	herb	FACW	4
<i>Aster puniceus</i>	swamp aster	herb	OBL	7
<i>Calamagrostis canadensis</i>	bluejoint grass	herb	OBL	3
<i>Carex stricta</i>	tussock sedge	herb	OBL	5
<i>Carex</i> sp.	sedge	herb	-----	--
<i>Cirsium arvense</i>	Canada thistle	herb	FACU	*
<i>Cirsium vulgare</i>	bull thistle	herb	FACU-	*
<i>Cornus obliqua</i>	pale dogwood	shrub	FACW+	4
<i>Epilobium leptophyllum</i>	bog willow herb	herb	OBL	9
<i>Eupatorium maculatum</i>	spotted Joe Pye weed	herb	OBL	5
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
<i>Euthamia graminifolia</i>	grassleaf goldenrod	herb	FACW-	3
<i>Fraxinus pennsylvanica</i>	green ash	tree	FACW	2
<i>Galium tinctorium</i>	stiff bedstraw	herb	OBL	6
<i>Helianthus grosseserratus</i>	sawtooth sunflower	herb	FACW-	2
<i>Impatiens capensis</i>	jewelweed	herb	FACW	2
<i>Lycopus americanus</i>	common water horehound	herb	OBL	3
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Mentha arvensis villosa</i>	field mint	herb	FACW	4
<i>Parthenocissus quinquefolia</i>	Virginia creeper	herb	FAC-	2
<i>Polygonum amphibium</i>	water smartweed	herb	OBL	3
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Pycnanthemum virginianum</i>	mountain mint	herb	FACW+	5
<i>Rhamnus cathartica</i>	common buckthorn	shrub	FACU	*
<i>Rhamnus frangula</i>	glossy buckthorn	shrub	FAC+	*
<i>Salix amygdaloides</i>	peach-leaved willow	herb	FACW	4
<i>Salix discolor</i>	pussy willow	shrub	FACW	4
<i>Salix fragilis</i>	brittle willow	shrub	FAC+	*
<i>Salix petiolaris</i>	meadow willow	shrub	OBL	6
<i>Scutellaria lateriflora</i>	mad-dog skullcap	herb	OBL	4
<i>Solanum dulcamara</i>	false bittersweet	herb	FAC	*
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Typha angustifolia</i>	narrow-leaved cattail	herb	OBL	*
<i>Typha latifolia</i>	cattail	herb	OBL	1
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Vernonia fasciculata</i>	ironweed	herb	FACW	5
<i>Viburnum lentago</i>	nannyberry	shrub	FAC+	4
<i>Viola</i> sp.	violet	herb	-----	--

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

$$mCv = \sum C/N = 116/32 = 3.62$$

$$FQI = \sum C/\sqrt{N} = 116/\sqrt{32} = 20.5$$

Quality = high

Marsh/Sedge Meadow
SPECIES LIST – Site 18 (plot 13) (dominants – *Carex stricta*, *Typha angustifolia*, *Lythrum salicaria*)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Allium cernuum</i>	nodding wild onion	herb	UPL	7
<i>Andropogon gerardii</i>	big bluestem	herb	FAC-	5
<i>Apocynum sibiricum</i>	Indian hemp	herb	FAC+	2
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Asclepias syriaca</i>	common milkweed	herb	UPL	0
<i>Aster praealtus</i>	willow-leaved aster	herb	FACW	4
<i>Aster puniceus</i>	swamp aster	herb	OBL	7
<i>Calystegia sepium</i>	hedge bindweed	herb	FAC	1
<i>Carex stricta</i>	tussock sedge	herb	OBL	5
<i>Carex trichocarpa</i>	sedge	herb	OBL	6
<i>Cornus obliqua</i>	pale dogwood	shrub	FACW+	4
<i>Eleocharis erythropoda</i>	spikerush	herb	OBL	3
<i>Eupatorium maculatum</i>	spotted Joe Pye weed	herb	OBL	5
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
<i>Euthamia graminifolia</i>	grassleaf goldenrod	herb	FACW-	3
<i>Fragaria virginiana</i>	wild strawberry	herb	FAC-	2
<i>Fraxinus pennsylvanica</i>	green ash	shrub	FACW	2
<i>Galium tinctorium</i>	stiff bedstraw	herb	OBL	6
<i>Geum canadense</i>	white avens	herb	FAC	2
<i>Glyceria striata</i>	fowl manna grass	herb	OBL	4
<i>Helianthus grosseserratus</i>	sawtooth sunflower	herb	FACW-	2
<i>Iris shrevei</i>	blue flag iris	herb	OBL	5
<i>Juncus dudleyi</i>	Dudley rush	herb	FAC	4

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

Continued on following page

Marsh/Sedge Meadow
SPECIES LIST – Site 18 (plot 13) (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Juncus nodosus</i>	jointed rush	herb	OBL	6
<i>Liatris spicata</i>	blazing star	herb	FAC	7
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
<i>Lythrum alatum</i>	winged loosestrife	herb	OBL	5
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Mentha arvensis villosa</i>	field mint	herb	FACW	4
<i>Oxypolis rigidior</i>	cowbane	herb	OBL	7
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Polygonum amphibium</i>	water smartweed	herb	OBL	3
<i>Pycnanthemum virginianum</i>	mountain mint	herb	FACW+	5
<i>Rhamnus cathartica</i>	common buckthorn	shrub, herb	FACU	*
<i>Rhamnus frangula</i>	glossy buckthorn	shrub, herb	FAC+	*
<i>Rosa blanda</i>	meadow rose	shrub	FACU	4
<i>Scirpus atrovirens</i>	dark green rush	herb	OBL	4
<i>Scutellaria lateriflora</i>	mad-dog skullcap	herb	OBL	4
<i>Senecio pauperculus</i>	balsam groundsel	herb	FAC+	4
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Solidago riddellii</i>	Riddell's goldenrod	herb	OBL	7
<i>Typha angustifolia</i>	narrow-leaved cattail	herb	OBL	*
<i>Typha latifolia</i>	cattail	herb	OBL	1
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Viburnum lentago</i>	nannyberry	shrub	FAC+	4
<i>Vitis riparia</i>	riverbank grape	vine, herb	FACW-	2

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

$$mCv = \sum C/N = 164/43 = 3.81$$

$$FQI = \sum C/\sqrt{N} = 164/\sqrt{43} = 25.0$$

Quality = high

Marsh
SPECIES LIST – Site 22 (plot 11) (dominants – *Typha latifolia*, *Typha angustifolia*)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Alisma plantago-aquatica</i>	water-plantain	herb	OBL	2
<i>Alnus glutinosa</i>	black alder	shrub	FACW-	*
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster puniceus</i>	swamp aster	herb	OBL	7
<i>Calamagrostis canadensis</i>	bluejoint grass	herb	OBL	3
<i>Carex stricta</i>	tussock sedge	herb	OBL	5
<i>Epilobium leptophyllum</i>	bog willow herb	herb	OBL	9
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
<i>Fraxinus pennsylvanica</i>	green ash	sapling	FACW	2
<i>Galium tinctorium</i>	stiff bedstraw	herb	OBL	6
<i>Geum laciniatum</i>	rough avens	herb	FACW	2
<i>Helianthus grosseserratus</i>	sawtooth sunflower	herb	FACW-	2
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Mentha arvensis villosa</i>	field mint	herb	FACW	4
<i>Parthenocissus quinquefolia</i>	Virginia creeper	herb	FAC-	2
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Pycnanthemum virginianum</i>	mountain mint	herb	FACW+	5
<i>Ranunculus flabellaris</i>	yellow water buttercup	herb	OBL	6
<i>Rhamnus frangula</i>	glossy buckthorn	shrub	FAC+	*
<i>Sagittaria latifolia</i>	arrowhead	herb	OBL	4
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Typha angustifolia</i>	narrowleaf cattail	herb	OBL	*
<i>Typha latifolia</i>	cattail	herb	OBL	1
<i>Valeriana officinalis</i>	garden heliotrope	herb	FACW+	*
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Vitis riparia</i>	riverbank grape	herb	FACW-	2

= Coefficient of Conservatism (Taft et al. 1997)

$$mCv = \sum C/N = 83/23 = 3.61$$

* Non-native species

$$FQI = \sum C/\sqrt{N} = 83/\sqrt{23} = 17.3$$

Quality = fair

Marsh
SPECIES LIST – Site 23 (plots 6, 8, 9, 10) (dominants – *Typha angustifolia*, *Typha latifolia*, *Lythrum salicaria*)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Alisma plantago-aquatica</i>	water-plantain	herb	OBL	2
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	2
<i>Asclepias syriaca</i>	common milkweed	herb	UPL	0
<i>Aster lateriflorus</i>	side-flowered aster	herb	FACW-	2
<i>Bidens connata</i>	beggar-ticks	herb	OBL	2
<i>Bidens frondosa</i>	common beggar-ticks	herb	FACW	1
<i>Boehmeria cylindrica</i>	false nettle	herb	OBL	3
<i>Calystegia sepium</i>	hedge bindweed	herb	FAC	1
<i>Carex</i> sp.	sedge	herb	----	--
<i>Cicuta maculata</i>	water hemlock	herb	OBL	4
<i>Cirsium arvense</i>	Canada thistle	herb	FACU	*
<i>Cirsium vulgare</i>	bull thistle	herb	FACU-	*
<i>Cornus obliqua</i>	pale dogwood	shrub	FACW+	4
<i>Cornus racemosa</i>	gray dogwood	shrub	FACW-	2
<i>Cyperus esculentus</i>	chufa	herb	FACW	0
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eleocharis erythropoda</i>	spikerush	herb	OBL	3
<i>Epilobium coloratum</i>	cinnamon willow herb	herb	OBL	3
<i>Epilobium leptophyllum</i>	bog willow herb	herb	OBL	9
<i>Equisetum arvense</i>	common horsetail	herb	FAC	0
<i>Eupatorium maculatum</i>	spotted Joe Pye weed	herb	OBL	5
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
<i>Euthamia graminifolia</i>	grassleaf goldenrod	herb	FACW-	3
<i>Fraxinus pennsylvanica</i>	green ash	tree	FACW	2
<i>Galium triflorum</i>	sweet-scented bedstraw	herb	FACU+	4
<i>Geum laciniatum</i>	rough avens	herb	FACW	2
<i>Glechoma hederacea</i>	ground ivy	herb	FACU	*
<i>Glyceria striata</i>	fowl manna grass	herb	OBL	4
<i>Helianthus grosseserratus</i>	sawtooth sunflower	herb	FACW-	2
<i>Impatiens capensis</i>	jewelweed	herb	FACW	2
<i>Iris shrevei</i>	blue flag iris	herb	OBL	5
<i>Juncus dudleyi</i>	Dudley rush	herb	FAC	4
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Lemna minor</i>	duckweed	herb	OBL	3
<i>Ludwigia palustris</i>	marsh purslane	herb	OBL	4
<i>Lycopus americanus</i>	water horehound	herb	OBL	3

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

Continued on following page

Marsh
SPECIES LIST – Site 23 (plots 6, 8, 9, 10) (Continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Lycopus virginicus</i>	bugle weed	herb	OBL	5
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Mentha arvensis villosa</i>	field mint	herb	FACW	4
<i>Myosoton aquaticum</i>	giant chickweed	herb	FAC+	*
<i>Oxalis stricta</i>	yellow wood sorrel	herb	FACU	0
<i>Penthorum sedoides</i>	ditch stonecrop	herb	OBL	2
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Phragmites australis</i>	common reed	herb	FACW+	1
<i>Pilea pumila</i>	Canada clearweed	herb	FACW	3
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum persicaria</i>	spotted lady's thumb	herb	FACW	*
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Polygonum lapathifolium</i>	curttop lady's thumb	herb	FACW+	0
<i>Populus deltoides</i>	cottonwood	tree	FAC+	2
<i>Populus tremuloides</i>	quaking aspen	tree	FAC	3
<i>Pycnanthemum virginianum</i>	mountain mint	herb	FACW+	5
<i>Rhamnus cathartica</i>	common buckthorn	shrub, herb	FACU	*
<i>Rhamnus frangula</i>	glossy buckthorn	shrub	FAC+	*
<i>Rorippa islandica</i>	marsh yellow cress	herb	OBL	4
<i>Rosa multiflora</i>	multiflora rose	shrub	FACU	*
<i>Sagittaria latifolia</i>	arrowhead	herb	OBL	4
<i>Salix alba vitellina</i>	weeping willow	tree	FACW+	*
<i>Salix amygdaloides</i>	peach-leaved willow	tree	FACW	4
<i>Salix discolor</i>	pussy willow	shrub	FACW	4
<i>Salix exigua</i>	sandbar willow	shrub	OBL	1
<i>Sambucus canadensis</i>	elderberry	shrub, herb	FACW-	2
<i>Scirpus validus</i>	great bulrush	herb	OBL	4
<i>Sium suave</i>	water parsnip	herb	OBL	5
<i>Solanum dulcamara</i>	false bitterweet	herb	FAC	*
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Spartina pectinata</i>	freshwater cord grass	herb	FACW+	4
<i>Typha angustifolia</i>	narrow-leaved cattail	herb	OBL	*
<i>Typha latifolia</i>	cattail	herb	OBL	1
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Viburnum lentago</i>	nannyberry	shrub	FAC+	4
<i>Viburnum opulus</i>	European high-bush cranberry	shrub	FAC	*
<i>Vitis riparia</i>	riverbank grape	vine, herb	FACW-	2

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

$$mCv = \sum C/N = 162/59 = 2.75$$

$$FQI = \sum C/\sqrt{N} = 162/\sqrt{59} = 21.1$$

Quality = high

Marsh
SPECIES LIST – Site 25 (plot 7) (dominants –*Typha angustifolia*, *Typha latifolia*)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Agrostis alba</i>	redtop	herb	FACW	0
<i>Agrimonia gryposepala</i>	tall agrimony	herb	FACU+	2
<i>Alisma plantago aquatica</i>	water plantain	herb	OBL	2
<i>Allium cernuum</i>	nodding onion	herb	UPL	7
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster simplex</i>	panicked aster	herb	FACW	3
<i>Bidens frondosa</i>	beggar's ticks	herb	FACW	1
<i>Calystegia sepium</i>	hedge bindweed	herb	FAC	1
<i>Carex stricta</i>	tussock sedge	herb	OBL	5
<i>Cicuta maculata</i>	water hemlock	herb	OBL	4
<i>Cirsium arvense</i>	Canada thistle	herb	FACU	*
<i>Cornus obliqua</i>	pale dogwood	shrub	FACW+	4
<i>Epilobium coloratum</i>	cinnamon willow herb	herb	OBL	3
<i>Equisetum arvense</i>	horsetail	herb	FAC	0
<i>Erechtites hieracifolia</i>	fireweed	herb	FACU	2
<i>Eupatorium maculatum</i>	Joe Pye weed	herb	OBL	5
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
<i>Euthamia graminifolia</i>	grass leaf goldenrod	herb	FACW-	3
<i>Fraxinus pennsylvanica</i>	green ash	shrub	FACW	2
<i>Galium triflorum</i>	sweet scented bedstraw	herb	FACU+	4
<i>Geum laciniatum</i>	rough avens	herb	FACW	2
<i>Glyceria striata</i>	fowl manna grass	herb	OBL	4
<i>Iris shrevei</i>	blue flag iris	herb	OBL	5
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
<i>Lycopus virginicus</i>	bugleweed	herb	OBL	5
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

Continued on following page

Marsh
SPECIES LIST – Site 25 (plot 7) (Continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Mentha arvensis</i>	field mint	herb	FACW	4
<i>Onoclea sensibilis</i>	sensitive fern	herb	FACW	5
<i>Parthenocissus quinquefolia</i>	Virginia creeper	herb	FAC-	2
<i>Penthorum sedoides</i>	ditch stonecrop	herb	OBL	2
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Pilea pumila</i>	clearweed	herb	FACW	3
<i>Polygonum hydropiperoides</i>	water pepper	herb	OBL	4
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Prunella vulgaris elongata</i>	self heal	herb	FAC	1
<i>Pycnanthemum virginianum</i>	mountain mint	herb	FACW+	5
<i>Rhamnus cathartica</i>	common buckthorn	sapl	FACU	*
<i>Rhamnus frangula</i>	glossy buckthorn	sapl	FAC+	*
<i>Rosa multiflora</i>	multiflora rose	shrub	FACU	*
<i>Salix discolor</i>	pussy willow	sapl	FACW	4
<i>Sambucus canadensis</i>	elderberry	shrub	FACW-	2
<i>Scirpus validus</i>	great bulrush	herb	OBL	4
<i>Sium suave</i>	water parsnip	herb	OBL	5
<i>Solanum dulcamara</i>	false bittersweet	herb	FAC	*
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Sonchus arvensis</i>	sow thistle	herb	FAC-	*
<i>Spatina pectinata</i>	prairie cordgrass	herb	FACW+	4
<i>Tradescantia ohiensis</i>	Ohio spiderwort	herb	FACU+	3
<i>Typha angustifolia</i>	narrow leaf cattail	herb	OBL	*
<i>Typha latifolia</i>	common cattail	herb	OBL	1
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Vernonia fasciculata</i>	ironweed	herb	FACW	5
<i>Vitis riparia</i>	riverbank grape	herb	FACW-	2

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

$$mCv = \sum C/N = 143/45 = 3.18$$

$$FQI = \sum C/\sqrt{N} = 143/\sqrt{45} = 21.3$$

Quality = high

Marsh
SPECIES LIST – Site 44 (plot 1) (dominants - *Typha angustifolia*, *Phalaris arundinacea*)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Bidens frondosa</i>	beggar's ticks	herb	FACW	1
<i>Calystegia sepium</i>	hedge bindweed	herb	FAC	1
<i>Carex cristatella</i>	sedge	herb	FACW+	3
<i>Carex stricta</i>	tussock sedge	herb	OBL	5
<i>Cirsium arvense</i>	Canada thistle	herb	FACU	*
<i>Conyza canadensis</i>	horseweed	herb	FAC-	0
<i>Daucus carota</i>	Queen Anne's lace	herb	UPL	*
<i>Dipsacus laciniatus</i>	cutleaf teasel	herb	UPL	*
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eleocharis erythropoda</i>	spikerush	herb	OBL	3
<i>Erechtites hieracifolia</i>	fireweed	herb	FACU	2
<i>Euthamia graminifolia</i>	grass leaf goldenrod	herb	FACW-	3
<i>Geum laciniatum</i>	rough avens	herb	FACW	2
<i>Helianthus grosseserratus</i>	sawtooth sunflower	herb	FACW-	2
<i>Juncus torreyi</i>	Torrey's rush	herb	FACW	3
<i>Leucanthemum vulgare</i>	common tansy	herb	UPL	*
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
<i>Lythrum alatum</i>	winged loosestrife	herb	OBL	5
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Polygonum amphibium</i>	water smartweed	herb	OBL	3
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Populus deltoides</i>	cottonwood	seedl	FAC+	2
<i>Potentilla norvegica</i>	rough cinquefoil	herb	FAC	0
<i>Rhamnus cathartica</i>	common buckthorn	sapl	FACU	*
<i>Rorippa islandica</i>	marsh yellow cress	herb	OBL	4
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Scirpus americanus</i>	American bulrush	herb	OBL	3
<i>Scirpus fluviatilis</i>	river bulrush	herb	OBL	3
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Typha angustifolia</i>	narrow leaf cattail	herb	OBL	*
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

$$mCv = \sum C/N = 60/28 = 2.14$$

$$FQI = \sum C/\sqrt{N} = 60/\sqrt{28} = 11.3$$

Quality = fair

Wet Shrubland

SPECIES LIST – Site 34 (plot 2) (dominants - *Salix exigua*, *Phalaris arundinacea*, *Typha angustifolia*)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Calamagrostis canadensis</i>	blue joint grass	herb	OBL	3
<i>Carex cristatella</i>	sedge	herb	FACW+	3
<i>Carex stricta</i>	tussock sedge	herb	OBL	5
<i>Cornus obliqua</i>	pale dogwood	shrub	FACW+	4
<i>Cornus racemosa</i>	grey dogwood	shrub	FACW-	2
<i>Epilobium coloratum</i>	cinnamon willow herb	herb	OBL	3
<i>Equisetum arvensis</i>	horsetail	herb	FAC	0
<i>Eupatorium maculatum</i>	Joe Pye weed	herb	OBL	5
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
<i>Euthamia graminifolia</i>	grass leaf goldenrod	herb	FACW-	3
<i>Galium tinctorium</i>	stiff bedstraw	herb	OBL	6
<i>Geum laciniatum</i>	rough avens	herb	FACW	2
<i>Iris shrevei</i>	blue flag iris	herb	OBL	5
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
<i>Lycopus virginicus</i>	bugleweed	herb	OBL	5
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Mentha arvensis</i>	field mint	herb	FACW	4
<i>Onoclea sensibilis</i>	sensitive fern	herb	FACW	5
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Parthenocissus quinquefolia</i>	Virginia creeper	herb	FAC-	2
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Phragmites australis</i>	common reed	herb	FACW+	1
<i>Populus deltoides</i>	cottonwood	sapling	FAC+	2
<i>Rhamnus cathartica</i>	common buckthorn	sapl	FACU	*
<i>Rhamnus frangula</i>	glossy buckthorn	sapl	FAC+	*
<i>Ribes americanum</i>	wild black currant	shrub	FACW	5
<i>Rubus strigosus</i>	red raspberry	herb	FACW-	6
<i>Salix exigua</i>	sand bar willow	sapl	OBL	1
<i>Scirpus fluviatilis</i>	river bulrush	herb	OBL	3
<i>Scirpus validus</i>	great bulrush	herb	OBL	5
<i>Scutellaria lateriflora</i>	mad dog skullcap	herb	OBL	4
<i>Sium suave</i>	water parsnip	herb	OBL	5
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Typha angustifolia</i>	narrow leaf cattail	herb	OBL	*
<i>Typha latifolia</i>	common cattail	herb	OBL	1
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Veronica scutellata</i>	marsh speedwell	herb	OBL	9
<i>Viburnum lentago</i>	nannyberry	shrub	FAC+	4
<i>Vitis riparia</i>	riverbank grape	herb	FACW-	2

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

$$mCv = \sum C/N = 119/34 = 3.50$$

$$FQI = \sum C/\sqrt{N} = 119/\sqrt{34} = 20.4$$

Quality = high

Shrubland

SPECIES LIST – (dominants –*Rhamnus cathartica*, *Cornus racemosa*, *Allium canadense*, *Lonicera X bella*, *Fragaria virginiana*, *Aster drummondii*, *Vitis riparia*, *Potentilla simplex*)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Acer negundo</i>	box elder	shrub/herb	FACW-	1
<i>Acer saccharinum</i>	silver maple	shrub/herb	FACW	1
<i>Achillea millefolium</i>	yarrow	herb	FACU	*
<i>Agrimonia gryposepala</i>	tall agrimony	herb	FACU+	3
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Alliaria petiolata</i>	garlic mustard	herb	FAC	*
<i>Allium canadense</i>	wild garlic	herb	FACU	2
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Amelanchier cf. leavis</i>	shadbush	herb	UPL	7
<i>Andropogon gerardii</i>	big bluestem	herb	FAC-	5
<i>Anemone cylindrica</i>	candle anemone	herb	UPL	8
<i>Anemone virginiana</i>	tall anemone	herb	UPL	4
<i>Antennaria neglecta</i>	pussy toes	herb	UPL	4
<i>Apocynum androsaemifolium</i>	spreading dogbane	herb	UPL	6
<i>Arisaema triphyllum</i>	Jack in the pulpit	herb	FACW-	4
<i>Asclepias purpurascens</i>	purple milkweed	herb	FACU	7
<i>Aster drummondii</i>	Drummond's aster	herb	FACU	3
<i>Aster ericoides</i>	heath aster	herb	FACU-	4
<i>Aster lateriflorus</i>	side flowered aster	herb	FACW-	2
<i>Aster novae angliae</i>	New England aster	herb	FACW	4
<i>Aster pilosus</i>	hairy aster	herb	FACU+	0
<i>Aster prealtus</i>	willow leaf aster	herb	FACW	4
<i>Aster sagittifolius</i>	arrow aster	herb	UPL	4
<i>Aster simplex</i>	panicked aster	herb	FACW	3
<i>Barbarea vulgaris</i>	winter cress	herb	FAC	*
<i>Botrychium dissectum obliquum</i>	bronze fern	herb	FAC	4
<i>Calamagrostis canadensis</i>	blue joint grass	herb	OBL	3
<i>Carex blanda</i>	woodland sedge	herb	FAC	2
<i>Carex cristatella</i>	sedge	herb	FACW+	3
<i>Carex granularis</i>	meadow sedge	herb	FACW+	2
<i>Carex hirsutella</i>	sedge	herb	UPL	5
<i>Carex pellita</i>	wooly sedge	herb	OBL	4
<i>Carex stricta</i>	tussock sedge	herb	OBL	5
<i>Carex tenera</i>	sedge	herb	FAC+	5
<i>Carex umbellata</i>	sedge	herb	UPL	6
<i>Cerastium vulgatum</i>	mouse ear chickweed	herb	FACU	*
<i>Cicuta maculata</i>	water hemlock	herb	OBL	4
<i>Circaea lutetiana</i>	enchanter's nightshade	herb	FACU	2
<i>Cirsium arvense</i>	Canada thistle	herb	FACU	*
<i>Cornus alternifolia</i>	alternate leaf dogwood	herb	UPL	7
<i>Cornus obliqua</i>	pale dogwood	shrub/herb	FACW+	4
<i>Cornus racemosa</i>	grey dogwood	shrub/herb	FACW-	2
<i>Cornus stolonifera</i>	red osier dogwood	shrub/herb	FACW	4
<i>Crateagus calpodendron</i>	urn shaped hawthorn	shrub/herb	UPL	5

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

Continued on following page

Shrubland
SPECIES LIST (Continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Crateagus coccinea</i>	hawthorn	shrub/herb	UPL	5
<i>Crateagus crus galli</i>	cock spur hawthorn	herb	FAC	2
<i>Crateagus mollis</i>	red haw	shrub/herb	FACW-	2
<i>Crateagus pruinosa</i>	hawthorn	shrub/herb	UPL	3
<i>Crateagus punctata</i>	dotted hawthorn	shrub/herb	UPL	2
<i>Crateagus</i> sp.	hawthorn	herb	----	--
<i>Danthonia spicata</i>	curly grass	herb	UPL	3
<i>Daucus carota</i>	Queen Ann's lace	herb	UPL	*
<i>Dichanthelium implicatum</i>	panic grass	herb	FAC	2
<i>Dichanthelium oligosanthes</i>	panic grass	herb	FACU	5
<i>Dichanthelium villosissimum</i>	hairy panic grass	herb	UPL	5
<i>Dipsacus laciniatus</i>	cut leaf teasel	herb	UPL	*
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Equisetum arvense</i>	common horsetail	herb	FAC	0
<i>Erigeron annuus</i>	annual fleabane	herb	FAC-	1
<i>Erigeron philadelphicus</i>	marsh fleabane	herb	FACW	3
<i>Erigeron strigosus</i>	daisy fleabane	herb	FAC-	2
<i>Eupatorium altissimum</i>	tall boneset	herb	FACU	1
<i>Eupatorium rugosum</i>	white snakeroot	herb	FACU	2
<i>Euthamia graminifolia</i>	grass leaf goldenrod	herb	FACW-	3
<i>Fragaria virginiana</i>	wild strawberry	herb	FAC-	2
<i>Fraxinus pennsylvanica</i>	green ash	shrub/herb	FACW	2
<i>Galium obtusum</i>	wild madder	herb	FACW+	5
<i>Galium triflorum</i>	sweet scented bedstraw	herb	FACU+	4
<i>Gentiana alba</i>	pale gentian	herb	FACU	9
<i>Gentianella quinquefolia</i>	stiff gentian	herb	FAC	7
<i>Geum aleppicum</i>	yellow avens	herb	FAC+	6
<i>Geum canadense</i>	white avens	tree	FAC	2
<i>Glyceria striata</i>	fowl manna grass	herb	OBL	4
<i>Hackelia virginiana</i>	stickseed	herb	FAC-	1
<i>Helianthus grosseserratus</i>	sawtooth sunflower	herb	FACW-	2
<i>Helianthus rigidus</i>	prairie sunflower	herb	UPL	6
<i>Helianthus strumosus</i>	pale leaf sunflower	herb	UPL	4
<i>Hieracium caespitosum</i>	king devil	herb	UPL	*
<i>Hypericum perforatum</i>	common St. John's wort	herb	UPL	*
<i>Hypericum punctatum</i>	spotted St. John's wort	herb	FAC+	3
<i>Hypoxis hirsuta</i>	yellow stargrass	herb	FAC	6
<i>Juncus dudleyi</i>	Dudley's rush	herb	FAC	4
<i>Juncus interior</i>	inland rush	herb	FAC+	3
<i>Juncus tenuis</i>	path rush	herb	FAC	0
<i>Juniperus virginiana</i>	eastern red cedar	herb	FACU	1
<i>Lespedeza capitata</i>	bush clover	herb	FACU	4
<i>Leucanthemum vulgare</i>	common tansy	herb	UPL	*
<i>Liatris spicata</i>	marsh blazing star	herb	FAC	7

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

Continued on following page

Shrubland
SPECIES LIST (Continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Lilium michiganense</i>	Michigan lilly	herb	FAC+	6
<i>Lobelia spicata</i>	spiked lobelia	herb	FAC	4
<i>Lonicera X bella</i>	honeysuckle	shrub/herb	FACU	*
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
<i>Lycopus uniflorus</i>	northern bugleweed	herb	OBL	7
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Malus ioensis</i>	Iowa crab apple	shrub	UPL	3
<i>Melilotus alba</i>	white sweet clover	herb	FACU	*
<i>Monarda fistulosa</i>	bergamot	herb	FACU	4
<i>Oenothera biennis</i>	evening primrose	herb	FACU	1
<i>Osmorhiza claytonii</i>	sweet cicely	herb	FACU-	3
<i>Oxalis stricta</i>	yellow wood sorrel	herb	FACU	0
<i>Oxypolis rigidior</i>	cowbane	herb	OBL	7
<i>Parthenocissus quinquefolia</i>	Virginia creeper	woody vine/herb	FAC-	2
<i>Penstemon digitalis</i>	foxglove beardtongue	herb	FAC-	4
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Phlox glaberrima</i>	smooth phlox	herb	FACW	6
<i>Phlox pilosa</i>	downy phlox	herb	FAC-	7
<i>Phryma leptostachya</i>	lopseed	herb	UPL	4
<i>Plantago rugelii</i>	red stalked plantain	herb	FAC	0
<i>Poa bulbosa</i>	bulbous bluegrass	herb	UPL	*
<i>Poa compressa</i>	Canadian bluegrass	herb	FACU+	*
<i>Poa pratensis</i>	Kentucky bluegrass	herb	FAC-	*
<i>Polygonatum commutatum</i>	great Solomon's seal	herb	FACU	4
<i>Populus deltoides</i>	cottonwood	tree/herb	FAC+	2
<i>Populus tremuloides</i>	quaking aspen	shrub/herb	FAC	3
<i>Potentilla recta</i>	sulfur cinquefoil	herb	UPL	*
<i>Potentilla simplex</i>	common cinquefoil	herb	FACU-	3
<i>Prunella vulgaris elongata</i>	self heal	herb	FAC	1
<i>Prunus americana</i>	American plum	herb	UPL	3
<i>Prunus serotina</i>	black cherry	shrub/herb	FACU	1
<i>Prunus virginiana</i>	choke cherry	shrub/herb	FAC-	3
<i>Pycnanthemum virginianum</i>	common mountain mint	herb	FACW+	5
<i>Quercus ellipsoidalis</i>	Hill's oak	herb	UPL	5
<i>Quercus macrocarpa</i>	burr oak	herb	FAC-	5
<i>Ranunculus abortivus</i>	kidney leaf buttercup	herb	FACW-	1
<i>Ranunculus recurvatus</i>	hooked buttercup	herb	FACW	5
<i>Ratibida pinnata</i>	drooping coneflower	herb	UPL	4
<i>Rhamnus cathartica</i>	common buckthorn	shrubherb	FACU	*
<i>Rhamnus frangula</i>	glossy buckthorn	shrub/herb	FAC+	*
<i>Rhus glabra</i>	smooth sumac	herb	UPL	1
<i>Rosa blanda</i>	meadow rose	herb	FACU	4
<i>Rosa carolina</i>	pasture rose	herb	FACU-	4
<i>Rosa multiflora</i>	multiflora rose	herb	FACU	*
<i>Rubus flagellaris</i>	dewberry	herb	FACU-	2

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

Continued on following page

Shrubland
SPECIES LIST (Continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Rubus occidentalis</i>	black raspberry	shrub/herb	UPL	2
<i>Rubus pensylvanicus</i>	blackberry	herb	FAC-	2
<i>Rudbeckia hirta</i>	black eyed Susan	herb	FACU	2
<i>Sanicula canadensis</i>	Canadian black snakeroot	herb	FACU+	4
<i>Schizachyrium scoparium</i>	little bluestem	herb	FACU-	5
<i>Scirpus pendulus</i>	red bulrush	herb	OBL	3
<i>Scutellaria leonardii</i>	small skullcap	herb	FACU	5
<i>Senecio pauperculus</i>	balsam groundsel	herb	FAC+	4
<i>Silphium integrifolium</i>	rosinweed	herb	UPL	5
<i>Sisyrinchium albidum</i>	blue eyed grass	herb	FACU	4
<i>Sisyrinchium campestre</i>	prairie blue eyed grass	herb	UPL	6
<i>Smilax ecirrhata</i>	upright carrion flower	herb	UPL	5
<i>Solanum dulcamara</i>	climbing nightshade	herb	FAC	*
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Solidago juncea</i>	early goldenrod	herb	UPL	4
<i>Solidago missouriensis</i>	Missouri goldenrod	herb	UPL	4
<i>Solidago nemoralis</i>	dyersweed goldenrod	herb	UPL	3
<i>Solidago rigida</i>	rigid goldenrod	herb	FACU-	4
<i>Spartina pectinata</i>	prairie cord grass	herb	FACW+	4
<i>Sphenopholis obtusata major</i>	wedge grass	herb	FAC	5
<i>Spirea alba</i>	meadow sweet	shrub/herb	FACW+	6
<i>Taraxacum officinale</i>	dandelion	herb	FACU	*
<i>Thalictrum dasycarpum</i>	purple meadow rue	herb	FACW-	5
<i>Toxicodendron radicans</i>	poison ivy	woody vine/herb	FAC+	1
<i>Tradescantia ohiensis</i>	spiderwort	herb	FACU+	3
<i>Trifolium repens</i>	white clover	herb	FACU+	*
<i>Typha angustifolia</i>	narrowleaf cattail	herb	OBL	*
<i>Ulmus americana</i>	Amercian elm	shrub/herb	FACW-	5
<i>Veronicastrum virginicum</i>	Culver's root	herb	FAC	6
<i>Viburnum lentago</i>	nannyberry	shrub/herb	FAC+	4
<i>Viburnum opulus</i>	highbush cranberry	shrub/herb	UPL	*
<i>Viburnum prunifolium</i>	blackhaw	herb	FACU	4
<i>Viburnum recognitum</i>	smooth arrowwood	shrub/herb	FACW-	*
<i>Viola pedatifida</i>	prairie violet	herb	FACU-	9
<i>Viola pratincola</i>	common blue violet	herb	FAC	1
<i>Viola sororia</i>	wooly blue violet	herb	FAC-	3
<i>Vitis riparia</i>	riverbank grape	herb	FACW-	2
<i>Zizia aptera</i>	heart leaf meadow parsnip	herb	FACU	9
<i>Zizia aurea</i>	golden Alexanders	herb	FAC+	6

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

weedy or nonnative species = 48/174=27.59%

$mCv = \sum C/N = 526/145 = 3.63$

$FQI = \sum C/\sqrt{N} = 526/\sqrt{145} = 43.7$

Quality = very high

Prairie/Old Field

**SPECIES LIST – (dominants –*Rhamnus cathartica*, *Cornus racemosa*, *Solidago juncea*,
Schizachyrium scoparium, *Andropogon gerardii*, *Sorghastrum nutans*, *Silphium terebinthinaceum*,
Parthenium integrifolium)**

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Acer negundo</i>	box elder	herb	FACW-	1
<i>Acer saccharinum</i>	silver maple	herb	FACW	1
<i>Achillea millefolium</i>	yarrow	herb	FACU	*
<i>Agrimonia gryposepala</i>	tall agrimony	herb	FACU+	3
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Agrostis alba palustris</i>	creeping bent grass	herb	FACW	8
<i>Allium canadense</i>	wild garlic	herb	FACU	2
<i>Allium cernuum</i>	nodding onion	herb	UPL	7
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Amelanchier sanguinea</i>	round leaf serviceberry	shrub/herb	UPL	10
<i>Andropogon gerardii</i>	big bluestem	herb	FAC-	5
<i>Anemone virginiana</i>	tall anemone	herb	UPL	4
<i>Antennaria neglecta</i>	pussy toes	herb	UPL	4
<i>Apocynum sibiricum</i>	Indian hemp	herb	FAC+	2
<i>Aquilegia canadensis</i>	columbine	herb	FAC-	5
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Asclepias tuberosa interior</i>	butterfly weed	herb	UPL	5
<i>Aster azureus</i>	sky blue aster	herb	OBL	7
<i>Aster drummondii</i>	Drummond's aster	herb	FACU	3
<i>Aster ericoides</i>	heath aster	herb	FACU-	4
<i>Aster lateriflorus</i>	side flowered aster	herb	FACW-	2
<i>Aster novae angliae</i>	New England aster	herb	FACW	4
<i>Aster pilosus</i>	hairy aster	herb	FACU+	0
<i>Aster prealtus</i>	willow leaf aster	herb	FACW	4
<i>Aster simplex</i>	panicked aster	herb	FACW	3
<i>Bidens frondosa</i>	beggar's ticks	herb	FACW	1
<i>Bromus kalmii</i>	prairie brome	herb	FAC	10
<i>Cacalia plantaginea</i>	prairie Indian plantain	herb	FAC	10
<i>Carex blanda</i>	woodland sedge	herb	FAC	2
<i>Carex buxbaumii</i>	dark scaled sedge	herb	OBL	9
<i>Carex granularis</i>	meadow sedge	herb	FACW+	2
<i>Carex hirsutella</i>	sedge	herb	UPL	5
<i>Carex pellita</i>	wooly sedge	herb	OBL	4
<i>Castilleja coccinea</i>	Indian paintbrush	herb	FAC	8
<i>Cerastium vulgatum</i>	mouse ear chickweed	herb	FACU	*
<i>Cirsium discolor</i>	field thistle	herb	UPL	3
<i>Comandra umbellata</i>	bastard toad flax	herb	FACU	6
<i>Cornus obliqua</i>	pale dogwood	shrub	FACW+	4
<i>Cornus racemosa</i>	grey dogwood	shrub/herb	FACW-	2

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

Continued on following page

Prairie/Old Field
SPECIES LIST (Continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Cornus stolonifera</i>	red osier dogwood	shrub	FACW	4
<i>Corylus americana</i>	American filbert	herb	FACU-	4
<i>Crateagus crus galli</i>	cock spur hawthorn	herb	FAC	2
<i>Crateagus pruinosa</i>	hawthorn	shrub/herb	UPL	3
<i>Crateagus</i> sp.	hawthorn	herb	----	--
<i>Danthonia spicata</i>	curly grass	herb	UPL	3
<i>Daucus carota</i>	Queen Ann's lace	herb	UPL	*
<i>Dianthus armeria</i>	Deptford pink	herb	UPL	*
<i>Dichanthelium implicatum</i>	panic grass	herb	FAC	2
<i>Dichanthelium villosissimum</i>	hairy panic grass	herb	UPL	5
<i>Elymus trachycaulus</i>	bearded wheat grass	herb	FAC	8
<i>Equisetum arvense</i>	common horsetail	herb	FAC	0
<i>Erigeron annuus</i>	annual fleabane	herb	FAC-	1
<i>Erigeron strigosus</i>	daisy fleabane	herb	FAC-	2
<i>Eupatorium altissimum</i>	tall boneset	herb	FACU	1
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
<i>Euphorbia corollata</i>	flowering spurge	herb	UPL	3
<i>Euthamia graminifolia</i>	grass leaf goldenrod	herb	FACW-	3
<i>Fragaria virginiana</i>	wild strawberry	herb	FAC-	2
<i>Fraxinus pennsylvanica</i>	green ash	shrub/herb	FACW	2
<i>Galium obtusum</i>	wild madder	herb	FACW+	5
<i>Galium triflorum</i>	sweet scented bedstraw	herb	FACU+	4
<i>Gentiana alba</i>	pale gentian	herb	FACU	9
<i>Gentiana andrewsii</i>	closed gentian	herb	FACW	7
<i>Gentianella quinquefolia</i>	stiff gentian	herb	FAC	7
<i>Geum aleppicum</i>	yellow avens	herb	FAC+	6
<i>Geum canadense</i>	white avens	herb	FAC	2
<i>Glyceria striata</i>	fowl manna grass	herb	OBL	4
<i>Helianthus grosseserratus</i>	sawtooth sunflower	herb	FACW-	2
<i>Helianthus rigidus</i>	prairie sunflower	herb	UPL	6
<i>Helianthus strumosus</i>	pale leaf sunflower	herb	UPL	4
<i>Hieracium caespitosum</i>	field hawkweed	herb	UPL	*
<i>Hypericum punctatum</i>	spotted St. John's wort	herb	FAC+	3
<i>Hypoxis hirsuta</i>	yellow star grass	herb	FAC	6
<i>Juncus interior</i>	inland rush	herb	FAC+	3
<i>Juncus tenuis</i>	path rush	herb	FAC	0
<i>Juniperus virginiana</i>	eastern red cedar	herb	FACU	1
<i>Lespedeza capitata</i>	bush clover	herb	FACU	4
<i>Leucanthemum vulgare</i>	common tansy	herb	UPL	*
<i>Liatris aspera</i>	blazing star	herb	UPL	7
<i>Liatris pycnostachya</i>	prairie blazing star	herb	FAC-	6
<i>Liatris spicata</i>	marsh blazing star	herb	FAC	7

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

Continued on following page

Prairie/Old Field
SPECIES LIST (Continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Lithospermum canescens</i>	hoary puccoon	herb	UPL	6
<i>Lobelia spicata</i>	spiked lobelia	herb	FAC	4
<i>Lonicera X bella</i>	honeysuckle	shrub/herb	FACU	*
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Malus pumila</i>	apple	herb	UPL	*
<i>Medicago lupulina</i>	black medic	herb	FAC-	*
<i>Melilotus alba</i>	white sweet clover	herb	FACU	*
<i>Monarda fistulosa</i>	bergamot	herb	FACU	4
<i>Oenothera perennis</i>	small sundrops	herb	FAC	8
<i>Oxalis stricta</i>	yellow wood sorrel	herb	FACU	0
<i>Oxypolis rigidior</i>	cowbane	herb	OBL	7
<i>Parthenium integrifolium</i>	wild quinine	herb	UPL	8
<i>Parthenocissus quinquefolia</i>	Virginia creeper	wody vine/herb	FAC-	2
<i>Penstemon digitalis</i>	foxglove beardtongue	herb	FAC-	4
<i>Phleum pratense</i>	Timothy	herb	FACU	*
<i>Phlox pilosa</i>	downy phlox	herb	FAC-	7
<i>Plantago rugelii</i>	red stalked plantain	herb	FAC	0
<i>Poa compressa</i>	Canadian bluegrass	herb	FACU+	*
<i>Poa pratensis</i>	Kentucky bluegrass	herb	FAC-	*
<i>Polygala verticillata</i>	whorled milkwort	herb	UPL	5
<i>Polygonatum commutatum</i>	great Solomon's seal	herb	FACU	4
<i>Potentilla arguta</i>	prairie cinquefoil	herb	FACU-	10
<i>Potentilla recta</i>	sulfur cinquefoil	herb	UPL	*
<i>Potentilla simplex</i>	common cinquefoil	herb	FACU-	3
<i>Prenanthes racemosa</i>	glaucous white lettuce	herb	FACW	8
<i>Prunella vulgaris elongata</i>	self heal	herb	FAC	1
<i>Prunus americana</i>	American plum	shrub/herb	UPL	3
<i>Prunus serotina</i>	black cherry	shrub/herb	FACU	1
<i>Prunus virginiana</i>	choke cherry	shrub/herb	FAC-	3
<i>Pycnanthemum virginianum</i>	common mountain mint	herb	FACW+	5
<i>Ratibida pinnata</i>	drooping coneflower	herb	UPL	4
<i>Rhamnus cathartica</i>	common buckthorn	shrub/herb	FACU	*
<i>Rhamnus frangula</i>	glossy buckthorn	shrub/herb	FAC+	*
<i>Rosa blanda</i>	meadow rose	shrub/herb	FACU	4
<i>Rosa carolina</i>	pasture rose	herb	FACU-	4
<i>Rosa multiflora</i>	multiflora rose	shrub/herb	FACU	*
<i>Rubus flagellaris</i>	dewberry	herb	FACU-	2
<i>Rubus occidentalis</i>	black raspberry	shrub/herb	UPL	2
<i>Rubus pensylvanicus</i>	blackberry	shrub/herb	FAC-	2

= Coefficient of Conservatism (Taft et al. 1997)

* Non-native species

Continued on following page

Prairie/Old Field
SPECIES LIST (Continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C=
<i>Rudbeckia hirta</i>	black eyed Susan	herb	FACU	2
<i>Sanicula canadensis</i>	Canadian black snakeroot	herb	FACU+	4
<i>Schizachyrium scoparium</i>	little bluestem	herb	FACU-	5
<i>Scirpus pendulus</i>	red bulrush	herb	OBL	3
<i>Scutellaria leonardii</i>	small skullcap	herb	FACU	5
<i>Senecio pauperculus</i>	balsam groundsel	herb	FAC+	4
<i>Silphium terebinthinaceum</i>	prairie dock	herb	FAC-	4
<i>Sisyrinchium albidum</i>	blue eyed grass	herb	FACU	4
<i>Smilax ecirrhata</i>	upright carrion flower	herb	UPL	5
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Solidago juncea</i>	early goldenrod	herb	UPL	4
<i>Solidago missouriensis</i>	Missouri goldenrod	herb	UPL	4
<i>Solidago nemoralis</i>	dyersweed goldenrod	herb	UPL	3
<i>Solidago rigida</i>	rigid goldenrod	herb	FACU-	4
<i>Sorghastrum nutans</i>	Indian grass	herb	FACU+	4
<i>Spartina pectinata</i>	prairie cord grass	herb	FACW+	4
<i>Sphenopholis obtusata major</i>	wedge grass	herb	FAC	5
<i>Taraxacum officinale</i>	dandelion	herb	FACU	*
<i>Thalictrum dasycarpum</i>	purple meadow rue	herb	FACW-	5
<i>Tradescantia ohioensis</i>	spiderwort	herb	FACU+	3
<i>Trifolium hybridum</i>	alsike clover	herb	FAC-	*
<i>Trifolium pratense</i>	red clover	herb	FACU+	*
<i>Trifolium repens</i>	white clover	herb	FACU+	*
<i>Ulmus americana</i>	American elm	herb	FACW-	5
<i>Viburnum lentago</i>	nannyberry	shrub/herb	FAC+	4
<i>Viburnum opulus</i>	highbush cranberry	herb	UPL	*
<i>Viburnum recognitum</i>	smooth arrowwood	shrub	FACW-	*
<i>Vicia americana</i>	American vetch	herb	UPL	6
<i>Viola pedatifida</i>	prairie violet	herb	FACU-	9
<i>Viola pratincola</i>	common blue violet	herb	FAC	1
<i>Vitis riparia</i>	riverbank grape	woody vine/herb	FACW-	2
<i>Zanthoxylum americanum</i>	prickly ash	shrub/herb	UPL	4
<i>Zizia aptera</i>	heart leaf meadow parsnip	herb	FACU	9
<i>Zizia aurea</i>	golden Alexanders	herb	FAC+	6

= Coefficient of Conservatism (Taft et al. 1997)

$$mCv = \sum C/N = 529/130 = 4.07$$

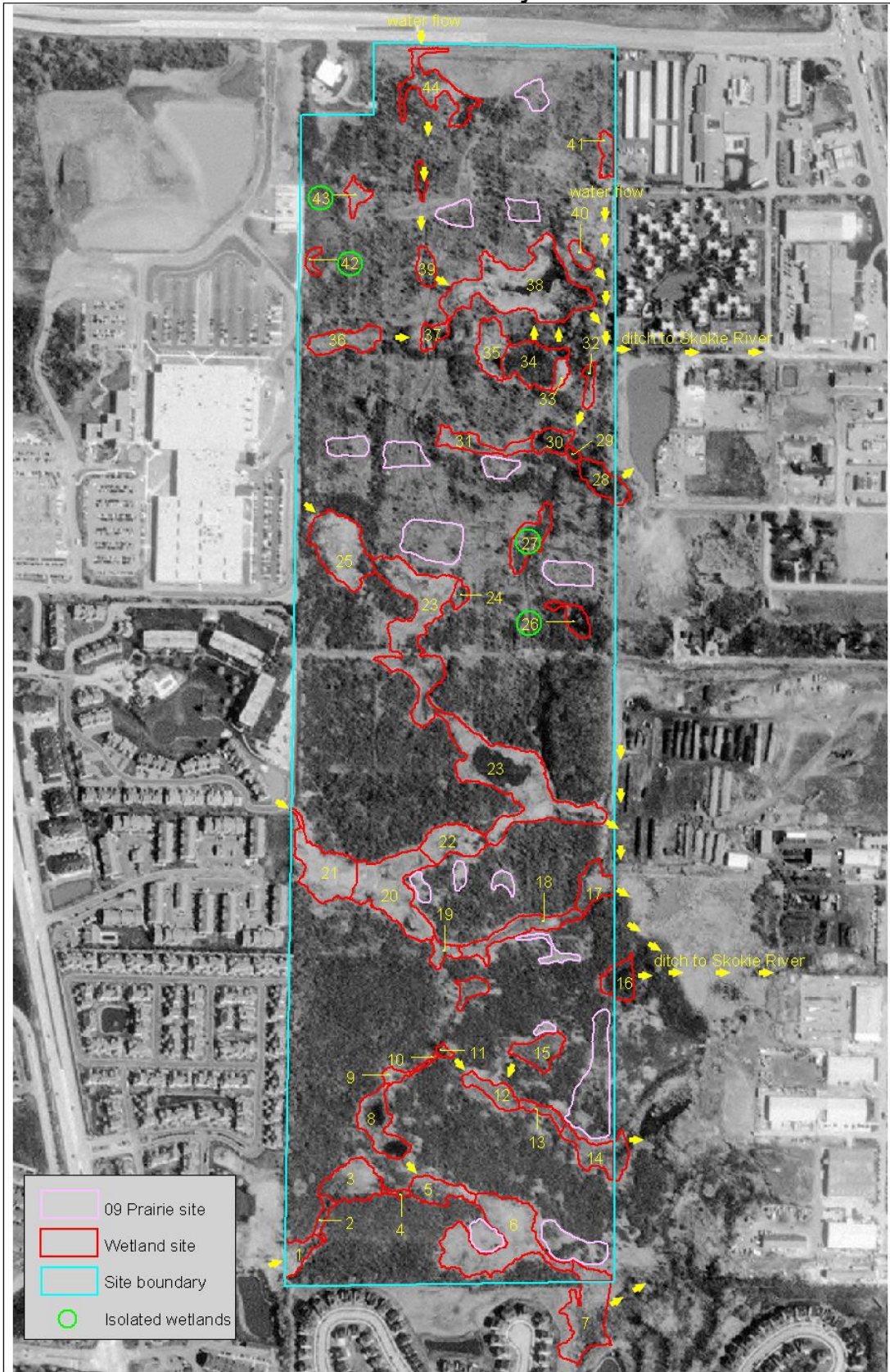
* Non-native species

$$FQI = \sum C/\sqrt{N} = 529/\sqrt{130} = 46.4$$

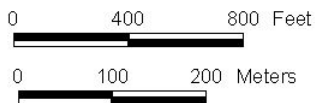
weedy/nonnative species = 41/154=26.62%

Quality = very high

North Chicago Mitigation Site Lake County



- 09 Prairie site
- Wetland site
- Site boundary
- Isolated wetlands



scale 1:4800
1 inch=400 ft



01/10