



JUANITA WILLIAMS UNIT
Prepared by Anna Scheidel

PLANTING 133

2020 Planting History

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Site Conditions

General Location – located on the corner south of Stone Barn Rd. and west of S. Carthage Rd.

GPS: 41°53'40.0"N 89°19'26.5"W

Elevation: 733 ft – 764 ft

County: Ogle

Soil Types

According to the Web Soil Survey for the planting area, soil types include:

Soil Type	Acres in AOI	Percent of AOI
La Hogue loam, 0 to 2 percent slopes	5.3	24.5%
Fayette silt loam, glaciated, 2 to 5 percent slopes	0.7	3.1%
Jasper loam, 2 to 5 percent slopes	1.9	8.7%
Eleva fine sandy loam, 7 to 15 percent slopes	0.2	0.9%
Rodman-Fox complex, 6 to 12 percent slopes	0.9	4.3%
Rodman-Warsaw complex, 6 to 12 percent slopes	2.6	11.9%
Radford silt loam, 0 to 2 percent slopes, frequently flooded	0.4	2.0%
Comfrey loam, 0 to 2 percent slopes, frequently flooded	9.6	44.7%
Totals for Area of Interest	21.5	100.0%

Table 1: Soil types present within the planting. Source: NRCS.

*Above are basic descriptions, a complete soil test is needed to determine specific soil characteristics. For additional information, see Soil Web Survey website: <http://websoilsurvey.nrcs.usda.gov/app/>

Refer to Map A that shows the location of the soil types within the planting.

Topography

The general topography of the planting consists of two hilltops on the East side of the field, one in the Northeast corner where out vehicles entered, and the tallest hill on the middle East edge up against where the former house, sheds, and pines were located. There's a small hill on the West edge up against a 3.67-acre patch of coniferous and deciduous woods. There is a wetland running down the center of the field, dividing the West and East sides.

Agricultural History

This site has been in agriculture for years and was in feed corn before the crew planting. The central wet strip did not have corn and had a mixture of agricultural weeds and native wetland plants.

Site Preparations

The feed corn was harvested in late-October with a few stalks left standing in areas with standing water. Paul Mellen mowed the remaining stalk stubs in early-November. In preparation for building the new Morton building, Nordman removed soil from the Southeast border, creating a deeper wetland scrape. The old farmhouse and some of the sheds on the East hill were demolished in November. The central wet strip was also scraped, stripping off the weeds that were growing there as well. In December, 2 dykes were constructed in order to separate bodies of standing water, shown in Photo 5. Drain tiles were discovered and dug up, some in areas that had already been seeded. This delayed planting the mesic and wet mixes.

Planting the Seed

The planting began on November 11th, 2020 and finished on December 22nd.

Weather: Wind was modest, 0-10mph, when seeders were used early on. Step-in species were delayed due to 40mph gusts on November 19th. Conditions started dry but rained before November 16th creating muddy field conditions.

The planting was regularly accessed at the Northeast corner on top of the hill, both sides of the telephone pole. The area was seeded using 2 broadcast seeders (Seeders #1 and #2) and switched off between the white Kawasaki mule, the old white truck, and MRCP truck. The planting was divided into the East and West sides by the central wetland strip. All seed mixes could not be planted at the same time due to demolition of the house, sheds, and trees on the central East hill. The three hills were planted first. The two East hills were seeded November 11-12, using the old white truck and MRCP truck to pull the seeders traveling in concentric circles, taking about 2 hours each to complete. Anna Scheidel and Morgan Anderson drove the seeders while Emma Dombrow and Khushali Desai drove a Gator in order to move cones around to mark where the seeders had traveled.

Due to muddy conditions, the MRCP truck was switched for the white Kawasaki mule on November 16th. Part of the West side was seeded, the crew moving in concentric circles then random directions to ensure as much ground was planted. Part of the seed had to be hand planted due to the small size of the seed mix patch. The four crew members each had a bucket that they filled with seed, kept about 2 corn rows away from one another, and slowly walked a transect of the patch while swinging a hand left to right dropping seed. The patch was covered twice with walking transects in order to use up all the seed.

On November 17th, a different plant mix was planted on the East side with the same vehicle arrangement as the 16th. The seeders drove in concentric circles, then random directions. Planting started around 10am and ended around 3:40pm. The rest of the planting was put on hold to allow for Nordman to finish demolition and scraping of the wetland strip.

The dry/dry mesic step-in species were planted by Anna Scheidel and Khushali Desai on November 23rd, delayed due to the previous week's strong winds. Refer to Map C for location of step-in seeds.

On December 15th, Khushali Desai and Anna Scheidel used 1 seeder to plant most of the Canada rye border and began hand seeding 2019 Didier mesic mix over the former drain tile lines.

On December 16th, the crew finished the rye border and began hand seeding wet mix, starting on SW corner. On the next day, they planted mesic and continued hand seeding the wet seed. The crew continued hand seeding wet mix on the 18th, using silver and seeder #1 to plant wet. Khushali used silver and seeder #1 to plant 2009 combine mix on bare soil where house and sheds stood.

On the 21st, Anna Scheidel finished hand seeding wet mix. 40mph gusts picked up in the afternoon, putting seeding the dykes on hold until the 22nd.

Wet Step-In Species	
Scientific Name	Common Name
<i>Cephalanthus occidentalis</i>	Buttonbush
<i>Physocarpus opulifolius</i>	Ninebark
<i>Amorpha fruticosa</i>	False Indigo Bush
<i>Gentianopsis crinita</i>	Fringed Gentian
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid

Table 2: List of species in wet mesic step-in mix

Dry / Dry Mesic Step-In Species	
Scientific Name	Common Name
<i>Geum triflorum</i>	Prairie smoke
<i>Viola pedata lineariloba</i>	Birdsfoot violet
<i>Oxalis violacea</i>	Violet wood sorrel
<i>Cuscuta gronovii</i>	Common Dodder
<i>Cuscuta campestris</i>	Field Dodder
<i>Pedicularis canadensis</i>	Wood Betony
<i>Cirsium hillii</i>	Hill's Thistle
<i>Scutellaria parvula leonardi</i>	Small skullcap
<i>Polygala polygama obtusata</i>	Purple milkwort
<i>Gentiana purberulenta</i>	Prairie gentian
<i>Krigia virginica</i>	Dwarf dandelion
<i>Penstemon grandiflorus</i>	Large flowered beardtongue
<i>Phemeranthes rugospermum</i>	Sand fameflower
<i>Zizia aptera</i>	Heart-leaved Meadow Parsnip

Table 3: List of species in dry and dry-mesic step-in mix

Planting Mixes

Several planting mixes were made this year, all but one used for this planting. The handpicked mixes are broken up into five categories: Dry, Dry Mesic, Mesic, Wet, and Woodland. The woodland mix was set aside for overseeding elsewhere.

Species Diversity				
Dry	Dry Mesic	Mesic	Wet	Woodland
64	62	53	38	26

Table 4: Number of species in each seed mix, not including step-in species. A total of 180 species were hand-picked by the crew this year, although not all of them were included in Planting #133.

Dry Seed Mix

The dry seed mix barrels were divided into three groups: the West dry (0.24 acres), NE dry (1.66 acres), and Central dry (2.85 acres) mixes and was planted at a rate of 55lbs/acre. All the dry seed was planted November 11-12th. Both of the East side sections were seeded using the old white truck and MRCP truck with seeders 1 and 2. Anna and Morgan drove the vehicles while Emma and Khushali moved cones with a Gator. The central patch was planted first on November 11th in the afternoon. Both seeders were 75% open, but were dropping at very slow rates, possibly due to the large amount of fluff that was included in this particular mix. After two full loops in concentric circles covering the hill, the seeders were opened to 100%, then drove for a third loop and random driving, finishing at 5pm. The Northeast corner was planted the next morning (11/12/2020). Both seeders were left open to 100% and made two full loops in concentric circles before randomly driving. The West patch was only a quarter acre, so the crew hand planted it the same afternoon, taking less than an hour.

Dry Mesic Seed Mix

The dry mesic seed mix was divided into two groups: West dry mesic (1.75 acres) and East dry mesic (6.36 acres), separated by the wet strip. The mix was planted at a rate of 70lb/acre. The West section was planted on November 16th, the MRCP truck switched for the white Kawasaki mule due to recent rains. Vehicles must drive over the central wet strip in order to reach the West side. Anna and Morgan drove the seeders while Emma and Khushali moved cones. The seeders were opened to 75% and drove three loops of concentric circles, driving randomly at the end to empty the seeders, opened to 100%.

The East side was planted the next day (11/17/2020), split into North and South sections for easier driving. The North portion was planted in the morning and took two hours using the same driving assignments as November 16th. The South portion was planted in the afternoon, again taking two hours.

Mesic Seed Mix

The mesic mix was split into West (1.1 acres) and East (3.92 acres) sections, planted at a rate of 75 lb/acre. Planting was delayed until Nordman finished scraping the wetland. Mesic borders had to be redrawn after the landscape was redone. Seeders #1 & 3 were used on MRCP and Silver truck.

Wet Seed Mix

The 3.76-acre wet section was planted at a rate of 65lb/acre. Planting was delayed until Nordman finished scraping the wetland. Mostly hand seeding was necessary due to muddy conditions. Planting began on December 16th and finished the 21st. Anna Scheidel and Khushali Desai frequently filled up buckets and walked along planting area. Anna Scheidel drove silver truck with seeder #3 to drop seed closer to the edge of the border, further away from the water.

Canada Rye Border

A rye border was planted using Seeder #3 along most of the border beginning on December 15th and finishing the 16th with a width of two seeders. Seeder #3 was initially opened to 50%, then 100%. Due to the cold weather, Seeder #1 was frozen shut and wasn't used. About 3 barrels of rye were used to complete the border.

Combine Seed Mix

Five barrels of 2009 Holland prairie combine mix, each weighing around 20lbs, were used to seed the East hill after demolition of the house and sheds. Khushali Desai used the silver truck and seeder #1 to complete the task on December 18th. Around 1.6 acres were covered.

Dyke Seed Mix

2.5 barrels of 1-part dry mesic seed mix, 4-parts 2009 Holland prairie combine mix, and 1-part tallgrass combine mix were used to seed the newly built dykes separating the wetland ponds. The mix was hand seeded by Anna Scheidel to cover the tops of the 2 dykes that separated the wetland ponds. The two dykes together covered around 0.6 acres

Seed Species Mix

SCIENTIFIC NAME	COMMON NAME	Dry	Dry Mesic	Mesic	Wet	Step-In	Total lbs	Total lbs/acre
		Total lbs	Total lbs	Total lbs	Total lbs	Total lbs		
<i>Agalinis tenuifolia</i>	Slender False foxglove				2.3		2.300	0.575
<i>Agastache nepetoides</i>	Yellow Giant Hyssop					0.5844	0.584	0.877
<i>Agrimonia parviflora</i>	Swamp Agrimony				0.6		0.600	0.150
<i>Allium canadense</i>	Wild Onion		0.171				0.171	0.019
<i>Allium cernuum</i>	Nodding Wild Onion	0.759					0.759	0.152
<i>Amorpha canescens</i>	Leadplant	6.54	4.36				10.900	1.792
<i>Amorpha fruticosa</i>	Indigo Bush					2.145	2.145	0.536
<i>Anemone canadensis</i>	Meadow Anemone			0.0544	0.0816		0.136	0.031
<i>Anemone cylindrica</i>	Thimbleweed	4.5					4.500	0.900
<i>Anemone virginianum</i>	Tall Thimbleweed	0.22					0.220	0.044
<i>Angelica atropurpurea</i>	Great Angelica				2.75		2.750	0.688
<i>Antennaria neglecta</i>	Field Cat's Foot	0.033					0.033	0.007
<i>Antennaria plantaginifolia</i>	Pussy Toes (Everlasting)	2.65					2.650	0.530
<i>Apocynum androsaemifolium</i>	Spreading Dogbane				1.65		1.650	0.413
<i>Aristida purpurea</i>	3 Awn Grass	0.187					0.187	0.037
<i>Arnoglossum atriplicifolia</i>	Pale Indian Plantain		0.6	0.9			1.500	0.247
<i>Artemisia campestris caudata</i>	Beach Wormwood	5.88	3.92				9.800	1.612
<i>Asclepias incarnata</i>	Swamp Milkweed				3.55		3.550	0.888
<i>Asclepias syriaca</i>	Common Milkweed		14				14.000	1.556
<i>Asclepias tuberosa interior</i>	Butterfly Weed		0.07				0.070	0.008
<i>Asclepias verticillata</i>	Whorled Milkweed	0.248					0.248	0.050
<i>Astragalus canadensis</i>	Canadian Milk Vetch		3.24	7.56			10.800	1.872
<i>Baptisia alba</i>	White Wild Indigo		24.41	97.64			122.050	22.240
<i>Baptisia bracteata</i>	Cream Wild Indigo	0.36					0.360	0.072
<i>Besseyia bullii</i> ***	Kittentails	0.042					0.042	0.008

<i>Boltonia asteroides</i> **	False Aster				6.75		6.750	1.688
<i>Bouteloua curtipendula</i>	Side-Oats Grama	0.675	0.675				1.350	0.210
<i>Brickellia eupatorioides</i>	False Boneset	6.72	4.48				11.200	1.842
<i>Bromus kalmii</i>	Prairie brome	9.35	51.642	15.248			76.240	10.658
<i>Calamagrostis canadensis</i>	Blue Joint Grass				0.45		0.450	0.113
<i>Carex bicknellii</i>	Copper-shouldered oval Sedge		0.0978	0.2282			0.326	0.057
<i>Carex Frankii</i>	Bristly Cattail Sedge				4.84		4.840	1.210
<i>Carex vulpinoides</i>	Brown Fox Sedge				5.125		5.125	1.281
<i>Castilleja sessiliflora</i> **	Downy Yellow Painted Cup	0.143					0.143	0.029
<i>Cephalanthus occidentalis</i>	Buttonbush					3	3.000	0.750
<i>Chamecrista fasciculata</i>	Partridge Pea			3			3.000	0.600
<i>Cirsium hillii</i> ***	Hill's Thistle					0.3	0.300	0.060
<i>Coreopsis lanceolata</i>	Sand Coreopsis	3.5					3.500	0.700
<i>Coreopsis palmata</i>	Prairie Coreopsis		4.77	3.18			7.950	1.166
<i>Coreopsis tripteris</i>	Tall Coreopsis		3.615	3.615			7.230	1.125
<i>Crocanthemum canadense</i>	Common Rockrose (Frostweed)		1.85				1.850	0.206
<i>Cuscuta campestris</i>	Field Dodder					0.44	0.440	0.049
<i>Cuscuta gronovii</i>	Common dodder					0.16	0.160	0.018
<i>Cyperus lupulinus (filiculmus)</i>	Slender Sand Sedge	0.027					0.027	0.005
<i>Dalea candidum</i>	White Prairie Clover	4	4.94	3.41			12.350	2.031
<i>Dalea purpureum</i>	Purple Prairie Clover		22.6				22.600	2.511
<i>Danthonia spicata</i>	Poverty Oat Grass	0.374					0.374	0.075
<i>Desmodium illinoense</i>	Ill. Tick Trefoil			0.031			0.031	0.006
<i>Dichanthelium scribnerium</i>	Scribner's Panic Grass		0.45				0.450	0.050
<i>Dodecatheon meadia</i>	Shooting Star	4	9	2			15.000	2.200
<i>Drymocalis arguta</i>	Prairie Cinquefoil			2.41			2.410	0.482
<i>Echinacea pallida</i>	Pale Purple Coneflower		53.75	53.75			107.500	16.722
<i>Epilobium coloratum</i>	Cinnamon Willow Herb				4.4		4.400	1.100
<i>Erigeron strigosus</i>	Daisy Fleabane	17.46	11.64				29.100	4.785
<i>Eryngium yuccifolium</i>	Rattlesnake Master		11.08	2.77			13.850	1.785
<i>Eupatorium altissimum</i>	Tall Boneset			2.9			2.900	0.580
<i>Eupatorium perfoliatum</i>	Boneset				21.6		21.600	5.400
<i>Euphorbia corollata</i>	Flowering Spurge			3.75			3.750	0.750
<i>Euthamia graminifolia</i>	Smooth Grass-leaved Goldenrod			9.25			9.250	1.850
<i>Eutrochium maculatum</i>	Spotted Joe Pye Weed				0.45		0.450	0.113
<i>Gaura biennis (longiflora)</i>	Common Gaura		0.0654	0.1526			0.218	0.038
<i>Gentiana alba</i>	Cream Gentian			16.43			16.430	3.286
<i>Gentiana andrewsii</i>	Bottle Gentian			1.4			1.400	0.280
<i>Gentiana purberulenta</i>	Prairie Gentian					0.003	0.003	0.001
<i>Gentianopsis crinita</i>	Fringed Gentian					0.003	0.003	0.001
<i>Geum triflorum</i>	Prairie Smoke					0.006	0.006	0.001
<i>Hasteola suaveolens</i>	Sweet-scented Indian Plantain			0.899			0.899	0.180
<i>Helenium autumnale</i>	Sneezeweed				7.85		7.850	1.963
<i>Helianthus grosseserratus</i>	Sawtooth Sunflower			0.39	0.91		1.300	0.306
<i>Helianthus occidentalis</i>	Western Sunflower; Naked S.	1.785	0.765				2.550	0.442
<i>Helianthus pauciflorus</i>	Prairie Sunflower	0.94					0.940	0.188
<i>Heliopsis helianthoides</i>	False Sunflower; " Ox-eye "			1.45			1.450	0.290
<i>Hesperostipa spartea</i>	Porcupine Grass	0.313					0.313	0.063
<i>Heterotheca camporum</i>	Plains Golden Aster	0.332					0.332	0.066
<i>Heuchera richardsonii</i>	Prairie Alum root			1.0535	1.0535		2.107	0.474

<i>Hibiscus palustris</i>	Swamp Rose Mallow				3.4		3.400	0.850
<i>Hieracium gronovii</i>	Hairy Hawkweed	0.026					0.026	0.005
<i>Hypericum punctatum</i>	Spotted St. Johnswort				0.059		0.059	0.015
<i>Ionactis linariifolia</i>	Stiff Aster (Flax-Leaved)	1.45					1.450	0.290
<i>Juncus interior</i>	Inland Rush		0.95				0.950	0.106
<i>Juncus tenuis</i>	Path Rush	14.35					14.350	2.870
<i>Juncus torreyi</i>	Torrey's Rush				0.2		0.200	0.050
<i>Koeleria macrantha</i>	Prairie June Grass	4.24	1.06				5.300	0.966
<i>Krigia virginica</i>	Dwarf Dandelion					0.005	0.005	0.001
<i>Lespedeza capitata</i> --	Round-headed Bush Clover		45.24	11.31			56.550	7.289
<i>Liatris aspera</i>	Rough Blazing-star	18.3					18.300	3.660
<i>Liatris cylindracea</i>	Dwarf Blazingstar	0.8					0.800	0.160
<i>Liatris pycnostachya</i>	Gayfeather; Prairie Blazing Star		5.895	5.895	7.86		19.650	3.799
<i>Linum sulcatum</i>	Grooved Yellow Flax	0.285					0.285	0.057
<i>Lithospermum canescens</i>	Hoary Puccoon	0.006					0.006	0.001
<i>Lobelia cardinalis</i>	Cardinal Flower				0.184		0.184	0.046
<i>Lobelia spicata</i>	Pale-spike Lobelia			0.006			0.006	0.001
<i>Ludwigia alternifolia</i>	Seed Box				1.9		1.900	0.475
<i>Lupinus perennis</i>	Wild Lupine	0.0695	0.0695				0.139	0.022
<i>Lycopus americanis</i>	common horehound				0.55		0.550	0.138
<i>Mimulus ringens</i>	Monkey Flower				2.01		2.010	0.503
<i>Monarda fistulosa</i>	Wild Bergamot		4.5	4.5			9.000	1.400
<i>Monarda punctata villicualis</i>	Horse Mint	0.342					0.342	0.068
<i>Oenothera biennis canescens</i>	Common Evening Primrose	0.21					0.210	0.042
<i>Oenothera clelandii</i>	Sand Evening Primrose	0.02					0.020	0.004
<i>Oligoneuron rigidum</i>	Stiff Goldenrod	5.13	8.55	1.026			14.706	2.181
<i>Onoclea sensibilis</i>	Sensitive Fern				7.7		7.700	1.925
<i>Onosmodium molle</i>	Marbleseed	0.48	0.48	0.24			1.200	0.197
<i>Opuntia cespitosa</i>	Prickly Pear Cactus	0.331					0.331	0.066
<i>Oxalis violacea</i>	Violet Wood-sorrel					0.029	0.029	0.006
<i>Packera plattensis</i>	Prairie Ragwort			2.55			2.550	0.510
<i>Panicum capillare</i>	Old Witch Grass	1.575	0.175				1.750	0.334
<i>Parthenium integrifolium</i>	Wild Quinine (Feverfew)		51.198	21.942			73.140	10.077
<i>Pedicularis canadensis</i>	Wood Betony					4.65	4.650	0.517
<i>Pedicularis lanceolata</i>	Swamp Betony				1.009		1.009	0.252
<i>Penstemon digitalis</i>	Foxglove Beardtongue		5.95	23.8			29.750	5.421
<i>Penstemon grandiflorus</i>	Large Flowered Beardtongue					0.03	0.030	0.003
<i>Penstemon hirsutus</i>	Hairy Beard tongue	0.781					0.781	0.156
<i>Phemeranthes rugospermum</i> ***	Sand Fameflower					0.003	0.003	0.001
<i>Physocarpus opulifolius</i>	Ninebark					0.105	0.105	0.026
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid					0.018	0.018	0.005
<i>Polygala polygama obtusata</i>	Purple Milkwort					0.001	0.001	0.000
<i>Polytaenia nuttallii</i>	Prairie Parsley	0.65	1				1.650	0.241
<i>Prenanthes aspera</i>	Rough White Lettuce	0.14					0.140	0.028
<i>Pseudognaphalium obtusifolium</i>	Sweet Everlasting	0.3					0.300	0.060
<i>Pycnanthemum virginianum</i>	Mountain mint			10.05	6.7		16.750	3.685
<i>Ratibida pinnata</i>	Yellow Coneflower	1.04	3.12	1.04			5.200	0.763
<i>Rosa carolina</i>	Pasture Rose	3.1					3.100	0.620
<i>Rudbeckia hirta</i>	Black-eyed Susan	2.67	8.01	2.67			13.350	1.958

<i>Rudbeckia subtomentosa</i>	Sweet Black-eyed Susan		1.12	4.48			5.600	1.020
<i>Sagittaria latifolia</i>	Arrowhead				0.0156		0.016	0.004
<i>Schizachyrium scoparium</i>	Little Bluestem	25.25	25.25				50.500	7.856
<i>Scirpus atrovirens</i>	Dark Green Rush				22.775		22.775	5.694
<i>Scirpus cyperinus</i>	Wool Grass				40.05		40.050	10.013
<i>Scutellaria parvula leonardi</i>	Small Skullcap					0.003	0.003	0.001
<i>Senna marylandica</i>	Maryland wild senna			0.1025			0.103	0.123
<i>Silphium integrifolium</i>	Rosinweed		2.875	2.875			5.750	0.894
<i>Silphium laciniatum</i>	Compass plant	4	10.65	6.65			21.300	3.313
<i>Silphium perfoliatum</i>	Cup-plant		2.46	3.69			6.150	1.011
<i>Silphium terebinthaceum</i>	Prairie Dock		1.62	3.78			5.400	0.936
<i>Sparganium eurycarpum</i>	Giant Burr reed				0.109		0.109	0.027
<i>Sphenopholis obtusata</i>	Prairie Wedge Grass	0.1953	0.4557				0.651	0.090
<i>Symphotrichum ericoides</i>	Heath Aster	0.56	0.84				1.400	0.205
<i>Symphotrichum laeve</i>	Smooth (Blue) Aster	1.9	5.7	1.9			9.500	1.393
<i>Symphotrichum novae-angliae</i>	New England Aster		1.02	1.53			2.550	0.419
<i>Symphotrichum oblongifolius</i>	Aromatic Aster	1.76	0.44				2.200	0.401
<i>Symphotrichum ontarionis</i>	Ontario Aster		1.375	1.375			2.750	0.428
<i>Symphotrichum sericeum</i>	Silky Aster	1.2	0.8				2.000	0.329
<i>Tephrosia virginiana</i>	Goat's Rue	0.1057	0.0453				0.151	0.026
<i>Tradescantia ohiensis</i>	Ohio Spiderwort	8.16	57.12	16.32			81.600	11.243
<i>Triodanis perfoliata</i>	Venus' Looking Glass	0.014					0.014	0.003
<i>Triosteum perfoliatum</i>	Horse Gentian		0.0615	0.0615			0.123	0.019
<i>Verbena hastata</i>	Blue Vervain				22.7		22.700	5.675
<i>Verbena stricta</i>	Hoary Vervain	3.4					3.400	0.680
<i>Vernonia fasciculata</i>	Common Ironweed				10.7		10.700	2.675
<i>Veronicastrum virginicum</i>	Culver's Root				9.25		9.250	2.313
<i>Viola pedata lineariloba</i>	Birdsfoot Violet					0.018	0.018	0.004
<i>Zizia aptera</i>	Heart-leaved Meadow Parsnip					0.404	0.404	0.081
<i>Zizia aurea</i>	Golden Alexander		4.975	4.975			9.950	1.548
tall coreopsis & mountain mint mix	hand-picked			4.55			4.550	0.910
SOLIDAGO MIX	hand-picked	12.425	12.425				24.850	3.866
2019 Sweet & Spotted Joe Pye mix					5.39		5.390	1.348
2019 WET mix					50		50.000	12.500
Gayfeather & Cream gentian	hand-picked		1.96	7.84			9.800	1.786
Sally's Sedge Meadow Sedge Mix	hand-picked			3.64	14.56		18.200	4.368
OLD Lil Blue Prairie Mix Main Unit	Combine	35	63				98.000	14.000
Dropseed Garden	Combine	35.1	23.4				58.500	9.620
tall grasses; big blue and indian	Combine	0	18	15			33.000	5.000
OLD Aster Mix; Sky Blue, Smooth Blue, etc	Combine	28.24	7.06				35.300	6.432
Canada Rye	Combine	10	36				46.000	6.000

Table 5: The 2020 Seed List, which names the different species that were included in the mixes used for this planting. The amounts are separated by which seed mix they were added to.

	Dry	Dry Mesic	Mesic	Wet	Step-In	SUM
Total LBS	294.6435	647.0412	397.2697	271.4817	11.9074	1622.344
Total # species	62	60	51	35	20	165

Table 6: Summary of seed mixes used solely for Planting #133.

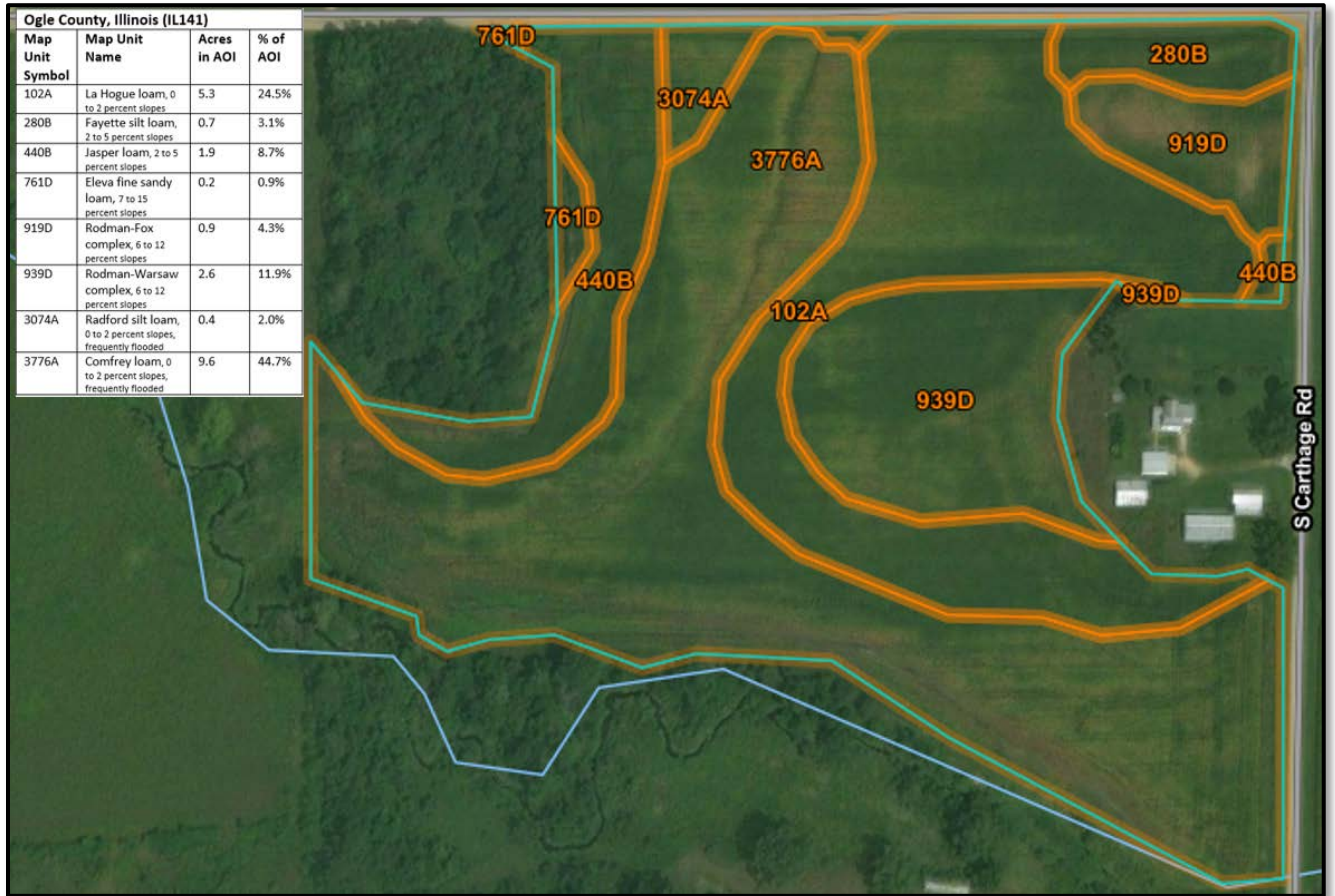
Lessons Learned

Because we seeded a smaller area, it made sense to only use two seeders. The presence of a third seeder would have been crowded and difficult to navigate. Having two people moving cones to mark transects was very helpful. At the first hill we planted, the cone movers went by foot which left them out of breath. For all other sections planted, the cone movers used a Gator. Radios are a must, as constant communication was necessary.

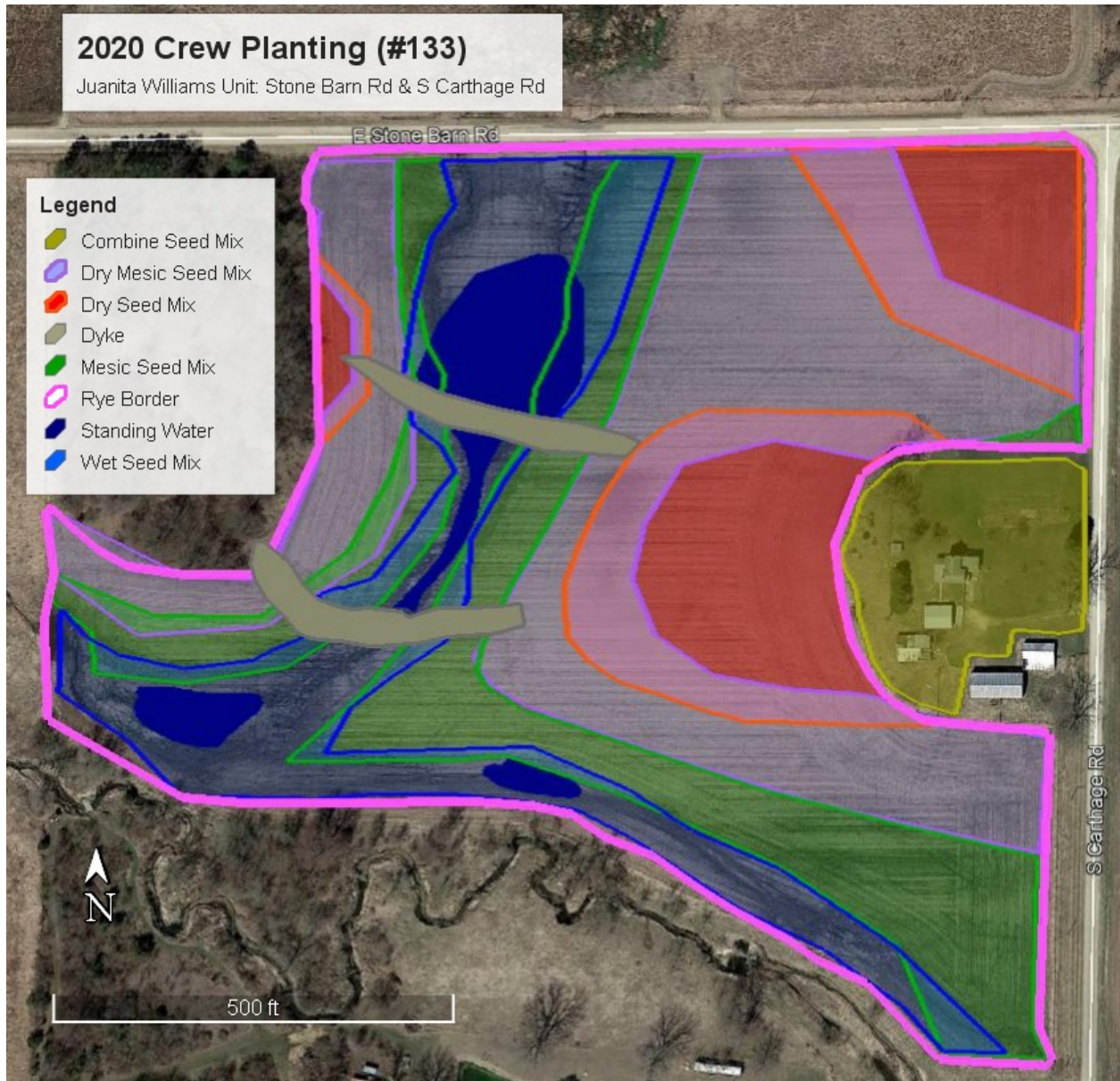
For crew members who have never used a seeder before, it is probably useful to read a previous report the day before and plant combine mix at a place that needs over-seeding first to allow everyone to get used to the equipment. Driving around each section with the seeders closed helped the cone movers see where they should place markers.

When hand seeding, we walked with the wind so that seed didn't blow in our faces. The slow breeze helped in distributing the seed. However, we recommend wearing facemasks and dust goggles for any other large hand-seeding task to protect the face.

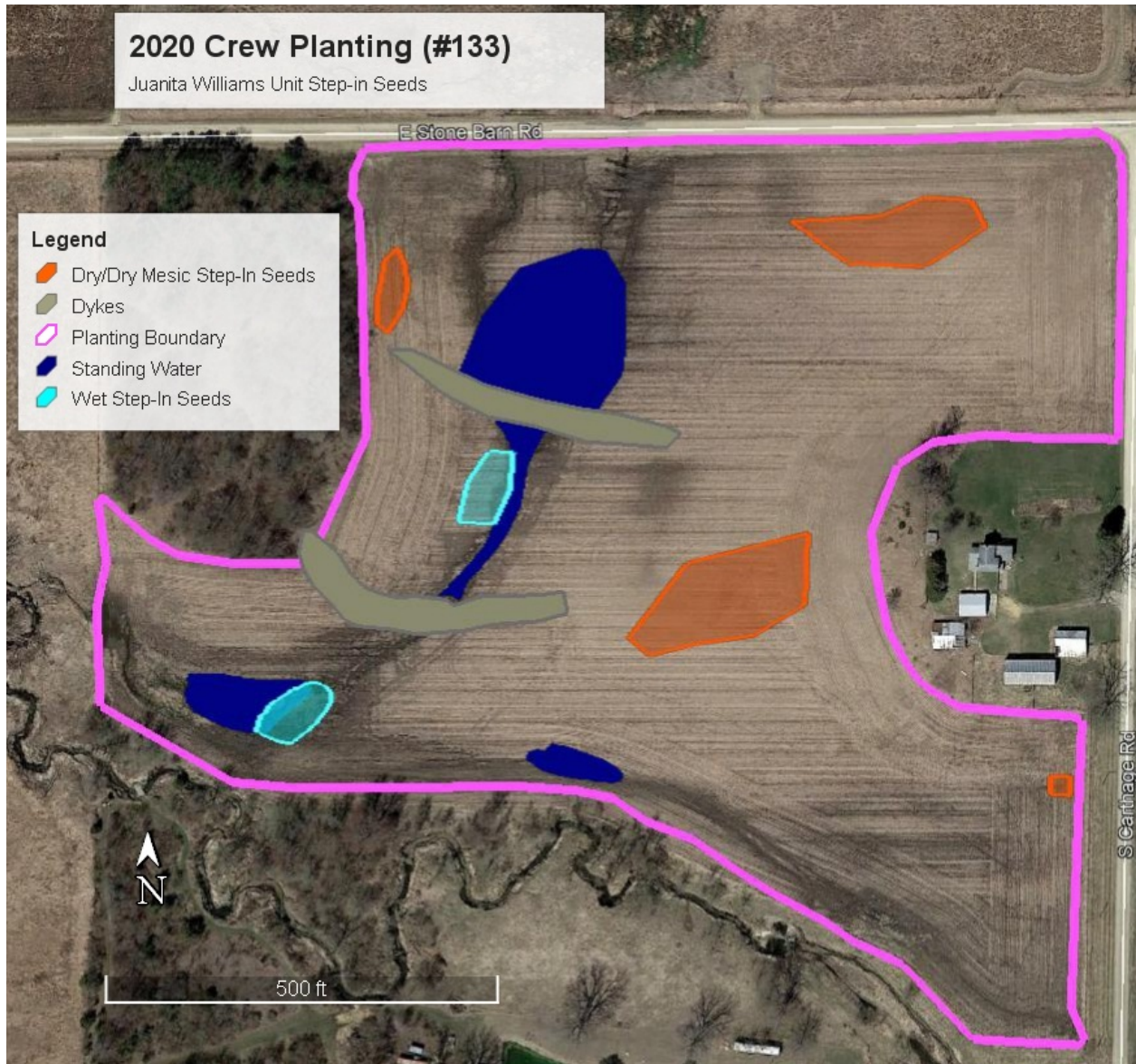
Maps



Map A: Soil types and their locations within the 21 acres of planting, according to the key. Source: NRCS.



Map B: Map showing where the different seed mixes were planted. Source: GoogleEarth.



Map C: Map showing where step-in seed species were hand-seeded. Source: GoogleEarth

Photos



Photo by: Emma Dombrow

Photo 1: Crew members Emma Dombrow, Morgan Anderson, Khushali Desai, & Anna Scheidel in front of newly mixed dry mesic seeds in 201 seed barn.



Photo 2: Crew members (from left to right) Khushali Desai, Morgan Anderson, Emma Dombrow, and Anna Scheidel loading up Seeder #2



Photo 3: Crew members Anna Scheidel and Morgan Anderson driving seeders with dry mesic seed mix.



Photo 4: Morgan Anderson, Khushali Desai, & Anna Scheidel hand-seeding dry seed mix on West hill



Photo 5: Drone picture showing the newly constructed dykes and where the drain tiles were removed