

**MAPS AND
SUPPLEMENTAL
MATERIAL**



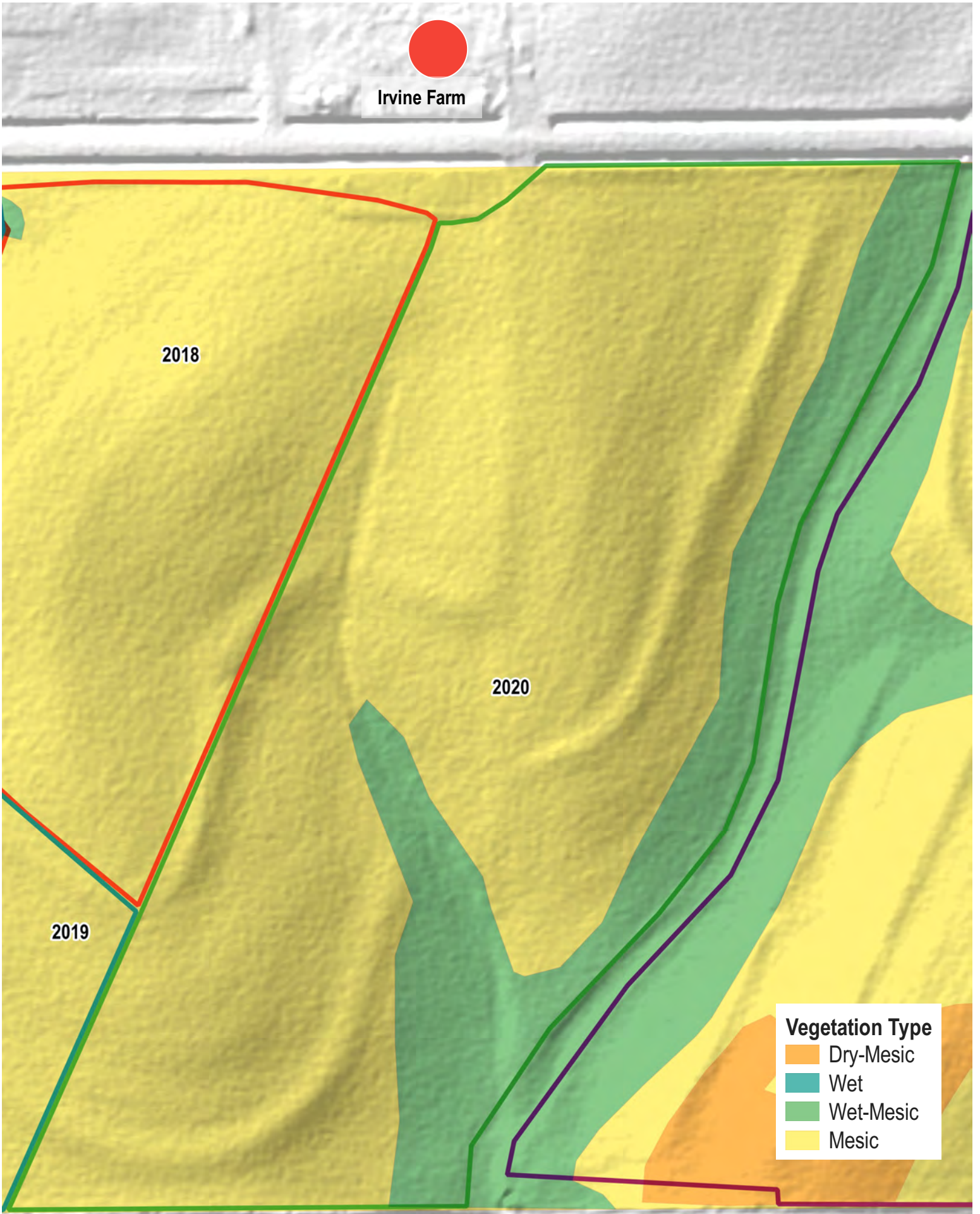
Map 1. Restoration Timeline
Irvine Prairie Operations





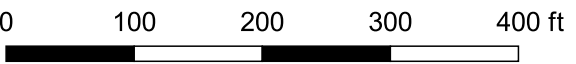
Map 2. Restoration Area Aerial View
Irvine Prairie Operations 2020





Map 3. Target Native Vegetation Areas

Irvine Prairie Operations 2020





Irvine Farm

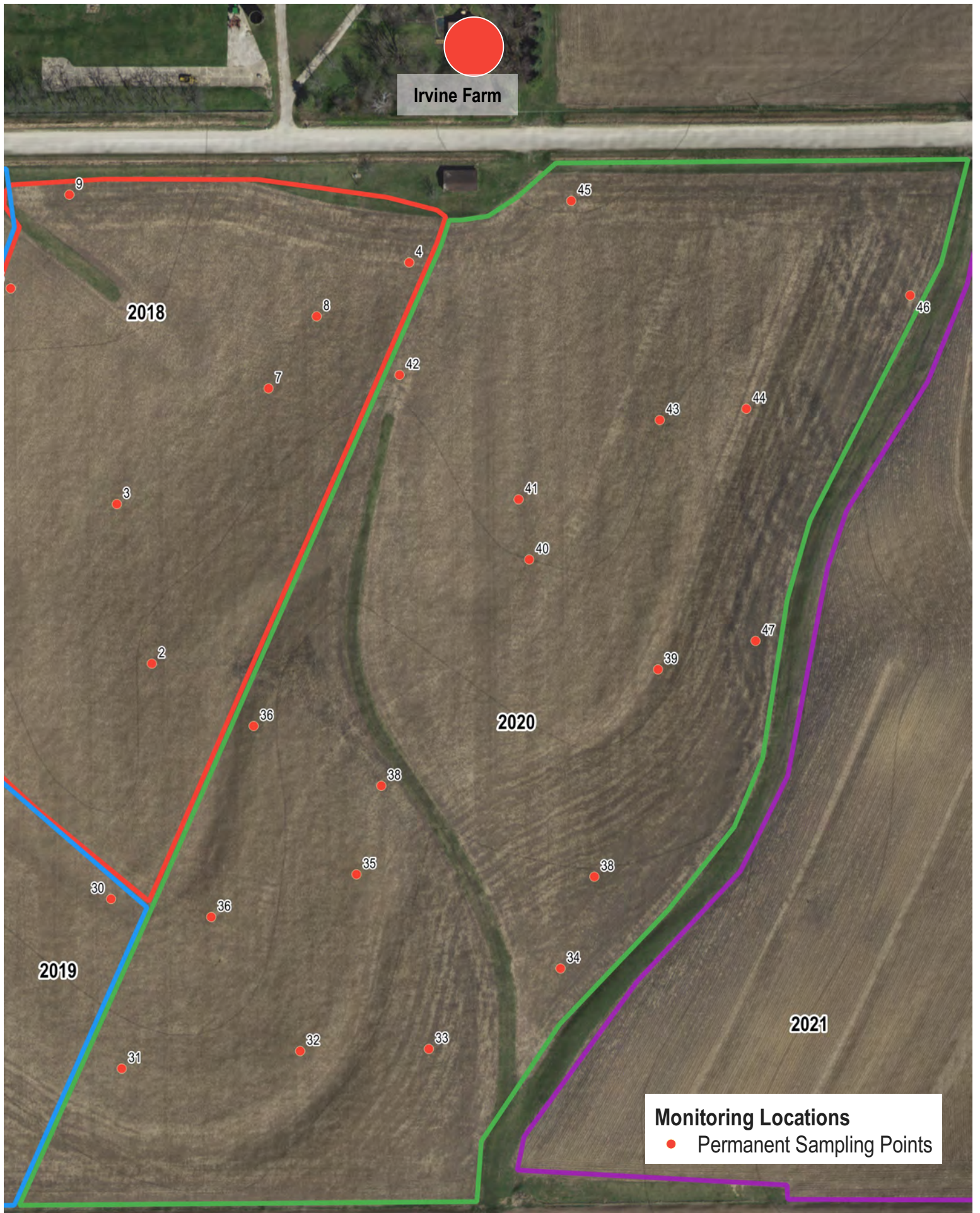


Map 4. 2020 Seeding Areas
Irvine Prairie Operations 2020



0 100 200 300 400 ft





Map 5. 2020 Vegetation Monitoring Map
Irvine Prairie 2020 Operations



Map 6. Management Units
Irvine Prairie Operations



SEEDING PLAN
Central Slopes Mix (Mesic)

Client: Cathy Irvine
Area seeded: 15.000 ac
Date seeded:
Job name: Irvine Prairie 2020

Common Name	Scientific Name	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
GRASSES					
big bluestem	<i>Andropogon gerardii</i>	1.500	4%	0.408	6.13
sideoats grama	<i>Bouteloua curtipendula</i>	3.000	7%	0.944	14.16
Canada wildrye	<i>Elymus canadensis</i>	1.000	2%	0.439	6.59
switchgrass	<i>Panicum virgatum</i>	1.000	2%	0.170	2.55
little bluestem	<i>Schizachyrium scoparium</i>	3.000	7%	0.534	8.01
Indiangrass	<i>Sorghastrum nutans</i>	2.000	5%	0.473	7.10
tall dropseed	<i>Sporobolus compositus</i>	5.000	12%	0.454	6.81
prairie dropseed	<i>Sporobolus heterolepis</i>	0.025	0%	0.005	0.07
SEDGES AND OTHER GRAMINOIDS					
yellow fox sedge	<i>Carex annectens</i>	1.000	2%	0.030	0.45
Bicknell's sedge	<i>Carex bicknellii</i>	0.200	0%	0.032	0.48
shortbeak sedge	<i>Carex brevior</i>	1.000	2%	0.094	1.41
heavy sedge	<i>Carex gravida</i>	0.020	0%	0.005	0.07
troublesome sedge	<i>Carex molesta</i>	0.250	1%	0.027	0.41
path rush	<i>Juncus tenuis</i>	2.000	5%	0.002	0.03
Total grasses and sedges:		20.995	50%	3.617	54.26
LEGUMES					
leadplant	<i>Amorpha canescens</i>	0.100	0%	0.015	0.23
Canada milkvetch	<i>Astragalus canadensis</i>	0.600	1%	0.096	1.44
white wild indigo	<i>Baptisia alba</i>	0.020	0%	0.032	0.48
partridge pea	<i>Chamaecrista fasciculata</i>	0.250	1%	0.252	3.78
white prairie clover	<i>Dalea candida</i>	0.500	1%	0.072	1.07
purple prairie clover	<i>Dalea purpurea</i>	1.000	2%	0.182	2.72
showy tick-trefoil	<i>Desmodium canadense</i>	0.150	0%	0.074	1.11
Illinois tick-trefoil	<i>Desmodium illinoense</i>	0.020	0%	0.013	0.19
round-headed bushclover	<i>Lespedeza capitata</i>	0.100	0%	0.034	0.51
FORBS					
Canada anemone	<i>Anemone canadensis</i>	0.050	0%	0.017	0.26
thimbleweed	<i>Anemone cylindrica</i>	0.100	0%	0.010	0.16
prairie sage	<i>Artemisia ludoviciana</i>	0.500	1%	0.005	0.08
swamp milkweed	<i>Asclepias incarnata</i>	0.100	0%	0.057	0.85
common milkweed	<i>Asclepias syriaca</i>	0.100	0%	0.068	1.02
butterfly milkweed	<i>Asclepias tuberosa</i>	0.030	0%	0.019	0.28
whorled milkweed	<i>Asclepias verticillata</i>	0.050	0%	0.012	0.19
false boneset	<i>Brickellia eupatoriodes</i>	0.200	0%	0.017	0.26
New Jersey tea	<i>Ceanothus americanus</i>	0.100	0%	0.036	0.54
prairie coreopsis	<i>Coreopsis palmata</i>	0.050	0%	0.014	0.20
pale purple coneflower	<i>Echinacea pallida</i>	0.200	0%	0.103	1.54
rattlesnake master	<i>Eryngium yuccifolium</i>	0.300	1%	0.109	1.63
tall boneset	<i>Eupatorium altissimum</i>	0.300	1%	0.016	0.25
flowering spurge	<i>Euphorbia corollata</i>	0.010	0%	0.003	0.05
grass-leaved goldenrod	<i>Euthamia graminifolia</i>	0.700	2%	0.005	0.08
bottle gentian	<i>Gentiana andrewsii</i>	0.500	1%	0.005	0.07
stiff sunflower	<i>Helianthus pauciflorus</i>	0.050	0%	0.038	0.57
ox-eye	<i>Heliopsis helianthoides</i>	0.500	1%	0.216	3.24
alumroot	<i>Heuchera richardsonii</i>	0.250	1%	0.001	0.01
spotted St. John's wort	<i>Hypericum punctatum</i>	0.500	1%	0.002	0.04
rough blazingstar	<i>Liatris aspera</i>	0.100	0%	0.017	0.26
prairie blazingstar	<i>Liatris pycnostachya</i>	0.100	0%	0.025	0.37
great blue lobelia	<i>Lobelia siphilitica</i>	1.000	2%	0.005	0.08
wild bergamot	<i>Monarda fistulosa</i>	0.800	2%	0.031	0.47

Common Name	Scientific Name	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
biennial guara	<i>Oenothera gaura</i>	0.025	0%	0.025	0.38
stiff goldenrod	<i>Oligoneuron rigidum</i>	0.800	2%	0.053	0.80
wild quinine	<i>Parthenium integrifolium</i>	0.200	0%	0.078	1.17
wood betony	<i>Pedicularis canadensis</i>	0.050	0%	0.004	0.06
foxglove beardtongue	<i>Penstemon digitalis</i>	2.000	5%	0.042	0.63
prairie phlox	<i>Phlox pilosa</i>	0.025	0%	0.004	0.05
prairie cinquefoil	<i>Potentilla arguta</i>	1.000	2%	0.012	0.18
hairy mt. mint	<i>Pycnanthemum pilosum</i>	1.000	2%	0.015	0.22
common mt. mint	<i>Pycnanthemum virginianum</i>	1.000	2%	0.012	0.19
yellow coneflower	<i>Ratibida pinnata</i>	0.700	2%	0.064	0.95
wild rose	<i>Rosa arkansana</i>	0.020	0%	0.022	0.33
black-eyed susan	<i>Rudbeckia hirta</i>	0.700	2%	0.021	0.31
sweet coneflower	<i>Rudbeckia subtomentosa</i>	1.000	2%	0.063	0.95
rosinweed	<i>Silphium integrifolium</i>	0.030	0%	0.068	1.02
compass plant	<i>Silphium laciniatum</i>	0.010	0%	0.041	0.62
showy goldenrod	<i>Solidago speciosa</i>	0.600	1%	0.017	0.26
heath aster	<i>Symphyotrichum ericoides</i>	0.500	1%	0.007	0.10
smooth blue aster	<i>Symphyotrichum laeve</i>	0.500	1%	0.025	0.37
New England aster	<i>Symphyotrichum novae-angliae</i>	0.300	1%	0.012	0.19
sky-blue aster	<i>Symphyotrichum oolentangiense</i>	0.500	1%	0.017	0.26
prairie spiderwort	<i>Tradescantia bracteata</i>	0.050	0%	0.014	0.20
ohio spiderwort	<i>Tradescantia ohioensis</i>	0.050	0%	0.017	0.26
hoary vervain	<i>Verbena stricta</i>	0.100	0%	0.010	0.15
ironweed	<i>Vernonia fasciculata</i>	0.300	1%	0.034	0.51
prairie violet	<i>Viola pedatifida</i>	0.100	0%	0.010	0.15
golden alexanders	<i>Zizia aurea</i>	0.300	1%	0.074	1.11

Total forbs: 21.190 50% 2.362 35.43

COVER CROP		Included	STD	PLS lb/ac	PLS lbs	
Oats (<10% slope)	<i>Avena sativa</i>	1.000	16.00	16.00	240.00	
Summary		Total Species	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
Graminoid Total:		14	21.00	50%	3.62	54.26
Forb Total:		59	21.19	50%	2.36	35.43
Cover Crop Total:		N/A	N/A	N/A	16.00	240.00
Overall Total:		73	42.19	100%	21.98	329.69

SEEDING PLAN
Central Waterway (Wet-Mesic)

Client: Cathy Irvine
Area seeded: 3.500 ac
Date seeded:
Job name: Irvine Prairie 2020

Common Name	Scientific Name	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
GRASSES					
big bluestem	<i>Andropogon gerardii</i>	2.000	3%	0.545	1.91
sideoats grama	<i>Bouteloua curtipendula</i>	2.000	3%	0.629	2.20
bluejoint reedgrass	<i>Calamagrostis canadensis</i>	1.000	2%	0.011	0.04
Canada wildrye	<i>Elymus canadensis</i>	1.000	2%	0.439	1.54
Virginia wildrye	<i>Elymus virginicus</i>	0.500	1%	0.324	1.13
fowl mannagrass	<i>Glyceria striata</i>	2.000	3%	0.034	0.12
marsh muhly	<i>Muhlenbergia racemosa</i>	1.000	2%	0.034	0.12
switchgrass	<i>Panicum virgatum</i>	1.000	2%	0.170	0.60
little bluestem	<i>Schizachyrium scoparium</i>	2.000	3%	0.356	1.25
Indiangrass	<i>Sorghastrum nutans</i>	2.000	3%	0.473	1.66
prairie cordgrass	<i>Spartina pectinata</i>	0.250	0%	0.113	0.39
tall dropseed	<i>Sporobolus compositus</i>	2.000	3%	0.182	0.64
prairie dropseed	<i>Sporobolus heterolepis</i>	0.100	0%	0.018	0.06
SEDGES AND OTHER GRAMINOIDS					
yellow fox sedge	<i>Carex annectens</i>	1.000	2%	0.030	0.11
Bicknell's sedge	<i>Carex bicknellii</i>	0.250	0%	0.040	0.14
shortbeak sedge	<i>Carex brevior</i>	0.500	1%	0.047	0.16
heavy sedge	<i>Carex gravida</i>	0.050	0%	0.011	0.04
troublesome sedge	<i>Carex molesta</i>	0.500	1%	0.054	0.19
pointed broom sedge	<i>Carex scoparia</i>	1.000	2%	0.032	0.11
awl-fruited sedge	<i>Carex stipata</i>	0.500	1%	0.040	0.14
Dudley's rush	<i>Juncus dudleyi</i>	5.000	8%	0.005	0.02
path rush	<i>Juncus tenuis</i>	5.000	8%	0.005	0.02
brown fox sedge	<i>Carex vulpinoidea</i>	2.000	3%	0.054	0.19
dark-green bulrush	<i>Scirpus atrovirens</i>	2.000	3%	0.012	0.04
Total grasses and sedges:		34.650	52%	3.659	12.81
LEGUMES					
Canada milkvetch	<i>Astragalus canadensis</i>	1.000	2%	0.160	0.56
white wild indigo	<i>Baptisia alba</i>	0.020	0%	0.032	0.11
partridge pea	<i>Chamaecrista fasciculata</i>	0.250	0%	0.252	0.88
white prairie clover	<i>Dalea candida</i>	0.250	0%	0.036	0.13
purple prairie clover	<i>Dalea purpurea</i>	0.250	0%	0.045	0.16
showy tick-trefoil	<i>Desmodium canadense</i>	0.250	0%	0.124	0.43
wild licorice	<i>Glycyrrhiza lepidota</i>	0.100	0%	0.070	0.24
Maryland senna	<i>Senna marilandica</i>	0.020	0%	0.032	0.11
purple vetch	<i>Vicia americana</i>	0.100	0%	0.101	0.35
FORBS					
Canada anemone	<i>Anemone canadensis</i>	0.020	0%	0.007	0.02
prairie sage	<i>Artemisia ludoviciana</i>	0.100	0%	0.001	0.00
swamp milkweed	<i>Asclepias incarnata</i>	0.100	0%	0.057	0.20
common milkweed	<i>Asclepias syriaca</i>	0.100	0%	0.068	0.24
nodding bur marigold	<i>Bidens cernua</i>	0.100	0%	0.013	0.05
false aster	<i>Boltonia asteroides</i>	0.300	0%	0.005	0.02
white turtlehead	<i>Chelone glabra</i>	0.200	0%	0.006	0.02
tall coreopsis	<i>Coreopsis tripteris</i>	0.050	0%	0.010	0.03
flat-topped aster	<i>Doellingeria umbellata</i>	0.500	1%	0.020	0.07
rattlesnake master	<i>Eryngium yuccifolium</i>	0.200	0%	0.073	0.25
boneset	<i>Eupatorium perfoliatum</i>	0.500	1%	0.009	0.03
grass-leaved goldenrod	<i>Euthamia graminifolia</i>	1.000	2%	0.008	0.03
joe-pye weed	<i>Eutrochium maculatum</i>	0.500	1%	0.014	0.05
cream gentian	<i>Gentiana alba</i>	0.500	1%	0.010	0.03

Common Name	Scientific Name	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
bottle gentian	<i>Gentiana andrewsii</i>	2.000	3%	0.019	0.07
stiff gentian	<i>Gentianella quinquefolia</i>	0.700	1%	0.011	0.04
sneezeweed	<i>Helenium autumnale</i>	1.000	2%	0.021	0.07
bigtooth sunflower	<i>Helianthus grosseserratus</i>	0.050	0%	0.009	0.03
ox-eye	<i>Heliopsis helianthoides</i>	0.500	1%	0.216	0.76
cow parsnip	<i>Heracleum sphondylium</i>	0.100	0%	0.058	0.20
meadow blazingstar	<i>Liatris ligulistylis</i>	0.100	0%	0.027	0.10
prairie blazingstar	<i>Liatris pycnostachya</i>	0.100	0%	0.025	0.09
cardinal flower	<i>Lobelia cardinalis</i>	2.000	3%	0.014	0.05
great blue lobelia	<i>Lobelia siphilitica</i>	2.000	3%	0.011	0.04
water horehound	<i>Lycopus americanus</i>	0.500	1%	0.010	0.04
prairie loosestrife	<i>Lysimachia quadriflora</i>	0.250	0%	0.008	0.03
winged loosestrife	<i>Lythrum alatum</i>	3.000	5%	0.003	0.01
wild bergamot	<i>Monarda fistulosa</i>	0.800	1%	0.031	0.11
Riddell's goldenrod	<i>Oligoneuron ridellii</i>	0.800	1%	0.023	0.08
stiff goldenrod	<i>Oligoneuron rigidum</i>	0.700	1%	0.046	0.16
marsh betony	<i>Pedicularis lanceolata</i>	0.500	1%	0.031	0.11
foxglove beardtongue	<i>Penstemon digitalis</i>	1.000	2%	0.021	0.07
obedient plant	<i>Physostegia virginiana</i>	0.100	0%	0.025	0.09
prairie phlox	<i>Phlox pilosa</i>	0.010	0%	0.001	0.01
slender mt. mint	<i>Pycnanthemum tenuifolium</i>	0.500	1%	0.004	0.01
common mt. mint	<i>Pycnanthemum virginianum</i>	1.000	2%	0.012	0.04
yellow coneflower	<i>Ratibida pinnata</i>	0.700	1%	0.064	0.22
black-eyed susan	<i>Rudbeckia hirta</i>	0.700	1%	0.021	0.07
sweet coneflower	<i>Rudbeckia subtomentosa</i>	0.100	0%	0.006	0.02
mad-dog skullcap	<i>Scutellaria lateriflora</i>	0.100	0%	0.004	0.01
rosinweed	<i>Silphium integrifolium</i>	0.020	0%	0.045	0.16
smooth blue aster	<i>Symphyotrichum laeve</i>	0.700	1%	0.035	0.12
New England aster	<i>Symphyotrichum novae-angliae</i>	0.500	1%	0.021	0.07
germander	<i>Teucrium canadense</i>	0.200	0%	0.027	0.10
purple meadow rue	<i>Thalictrum dasycarpum</i>	0.200	0%	0.050	0.17
ohio spiderwort	<i>Tradescantia ohimensis</i>	0.100	0%	0.034	0.12
blue vervain	<i>Verbena hastata</i>	1.000	2%	0.029	0.10
ironweed	<i>Vernonia fasciculata</i>	0.800	1%	0.091	0.32
culver's root	<i>Veronicastrum virginicum</i>	2.000	3%	0.007	0.02
golden alexanders	<i>Zizia aurea</i>	0.300	0%	0.074	0.26

Total forbs: 31.540 48% 2.285 8.00

COVER CROP		Included	STD	PLS lb/ac	PLS lbs	
Oats (<10% slope)	<i>Avena sativa</i>	1.000	16.00	16.00	56.00	
Summary		Total Species	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
Graminoid Total:		24	34.65	52%	3.66	12.81
Forb Total:		59	31.54	48%	2.29	8.00
Cover Crop Total:		N/A	N/A	N/A	16.00	56.00
Overall Total:		83	66.19	100%	21.94	76.81

SEEDING PLAN
Mesic Midslope Mix

Client: Cathy Irvine
Area seeded: 10.000 ac
Date seeded: 5/16/2019
Job name: Irvine Prairie 2019

Common Name	Scientific Name	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
GRASSES					
big bluestem	<i>Andropogon gerardii</i>	1.500	4%	0.408	4.08
sideoats grama	<i>Bouteloua curtipendula</i>	3.000	7%	0.944	9.44
Kalm's brome	<i>Bromus kalmii</i>	0.250	1%	0.085	0.85
bluejoint reedgrass	<i>Calamagrostis canadensis</i>	0.000	0%	0.000	0.00
Canada wildrye	<i>Elymus canadensis</i>	1.000	2%	0.439	4.39
Virginia wildrye	<i>Elymus virginicus</i>	0.000	0%	0.000	0.00
fowl mannagrass	<i>Glyceria striata</i>	0.000	0%	0.000	0.00
marsh muhly	<i>Muhlenbergia racemosa</i>	0.000	0%	0.000	0.00
switchgrass	<i>Panicum virgatum</i>	1.000	2%	0.170	1.70
little bluestem	<i>Schizachyrium scoparium</i>	3.000	7%	0.534	5.34
Indiangrass	<i>Sorghastrum nutans</i>	2.000	5%	0.473	4.73
prairie cordgrass	<i>Spartina pectinata</i>	0.000	0%	0.000	0.00
tall dropseed	<i>Sporobolus compositus</i>	5.000	12%	0.454	4.54
prairie dropseed	<i>Sporobolus heterolepis</i>	0.100	0%	0.018	0.18
SEDGES AND OTHER GRAMINOIDS					
yellow fox sedge	<i>Carex annectens</i>	0.100	0%	0.003	0.03
Bicknell's sedge	<i>Carex bicknellii</i>	0.300	1%	0.048	0.48
troublesome sedge	<i>Carex molesta</i>	0.250	1%	0.027	0.27
pointed broom sedge	<i>Carex scoparia</i>	0.000	0%	0.000	0.00
brown fox sedge	<i>Carex vulpinoidea</i>	0.000	0%	0.000	0.00
Total grasses and sedges:		18.000	42%	3.651	36.51
LEGUMES					
Canada milkvetch	<i>Astragalus canadensis</i>	0.600	1%	0.096	0.96
white wild indigo	<i>Baptisia alba</i>	0.020	0%	0.032	0.32
partridge pea	<i>Chamaecrista fasciculata</i>	0.250	1%	0.252	2.52
white prairie clover	<i>Dalea candida</i>	0.500	1%	0.072	0.72
purple prairie clover	<i>Dalea purpurea</i>	1.000	2%	0.182	1.82
showy tick-trefoil	<i>Desmodium canadense</i>	0.150	0%	0.074	0.74
wild licorice	<i>Glycyrrhiza lepidota</i>	0.000	0%	0.000	0.00
purple vetch	<i>Vicia americana</i>	0.000	0%	0.000	0.00
FORBS					
Canada anemone	<i>Anemone canadensis</i>	0.050	0%	0.017	0.17
thimbleweed	<i>Anemone cylindrica</i>	0.100	0%	0.010	0.10
prairie sage	<i>Artemisia ludoviciana</i>	1.000	2%	0.011	0.11
swamp milkweed	<i>Asclepias incarnata</i>	0.100	0%	0.057	0.57
common milkweed	<i>Asclepias syriaca</i>	0.100	0%	0.068	0.68
tall coreopsis	<i>Coreopsis tripteris</i>	0.000	0%	0.000	0.00
flat-topped aster	<i>Doellingeria umbellata</i>	0.000	0%	0.000	0.00
rattlesnake master	<i>Eryngium yuccifolium</i>	0.250	1%	0.091	0.91
boneset	<i>Eupatorium perfoliatum</i>	0.000	0%	0.000	0.00
grass-leaved goldenrod	<i>Euthamia graminifolia</i>	1.000	2%	0.008	0.08
joe-pye weed	<i>Eutrochium maculatum</i>	0.200	0%	0.006	0.06
northern bedstraw	<i>Galium boreale</i>	0.100	0%	0.004	0.04
bottle gentian	<i>Gentiana andrewsii</i>	0.500	1%	0.005	0.05
sneezeweed	<i>Helenium autumnale</i>	0.000	0%	0.000	0.00
bigtooth sunflower	<i>Helianthus grosseserratus</i>	0.080	0%	0.015	0.15
ox-eye	<i>Helianthus scaberrimus</i>	0.500	1%	0.216	2.16
meadow blazingstar	<i>Liatris ligulistylis</i>	0.000	0%	0.000	0.00
prairie blazingstar	<i>Liatris pycnostachya</i>	0.100	0%	0.025	0.25
cardinal flower	<i>Lobelia cardinalis</i>	0.000	0%	0.000	0.00
great blue lobelia	<i>Lobelia siphilitica</i>	1.000	2%	0.005	0.05

Common Name	Scientific Name	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
palespike lobelia	<i>Lobelia spicata</i>	0.000	0%	0.000	0.00
prairie loosestrife	<i>Lysimachia quadriflora</i>	0.000	0%	0.000	0.00
winged loosestrife	<i>Lythrum alatum</i>	0.000	0%	0.000	0.00
wild bergamot	<i>Monarda fistulosa</i>	0.750	2%	0.029	0.29
Riddell's goldenrod	<i>Oligoneuron ridellii</i>	0.000	0%	0.000	0.00
stiff goldenrod	<i>Oligoneuron rigidum</i>	0.750	2%	0.050	0.50
prairie ragwort	<i>Packera plattensis</i>	0.010	0%	0.000	0.00
marsh betony	<i>Pedicularis lanceolata</i>	0.000	0%	0.000	0.00
foxglove beardtongue	<i>Penstemon digitalis</i>	2.000	5%	0.042	0.42
prairie phlox	<i>Phlox pilosa</i>	0.025	0%	0.004	0.04
common mt. mint	<i>Pycnanthemum virginianum</i>	1.000	2%	0.012	0.12
yellow coneflower	<i>Ratibida pinnata</i>	1.000	2%	0.091	0.91
black-eyed susan	<i>Rudbeckia hirta</i>	1.080	3%	0.032	0.32
sweet coneflower	<i>Rudbeckia subtomentosa</i>	1.000	2%	0.063	0.63
mad-dog skullcap	<i>Scutellaria lateriflora</i>	0.000	0%	0.000	0.00
rosinweed	<i>Silphium integrifolium</i>	0.010	0%	0.023	0.23
heath aster	<i>Symphyotrichum ericoides</i>	0.500	1%	0.007	0.07
smooth blue aster	<i>Symphyotrichum laeve</i>	0.500	1%	0.025	0.25
New England aster	<i>Symphyotrichum novae-angliae</i>	0.200	0%	0.008	0.08
purple meadow rue	<i>Thalictrum dasycarpum</i>	0.100	0%	0.025	0.25
ohio spiderwort	<i>Tradescantia ohioensis</i>	0.100	0%	0.034	0.34
blue vervain	<i>Verbena hastata</i>	0.100	0%	0.003	0.03
ironweed	<i>Vernonia fasciculata</i>	0.250	1%	0.028	0.28
culver's root	<i>Veronicastrum virginicum</i>	2.000	5%	0.007	0.07
golden alexanders	<i>Zizia aurea</i>	0.300	1%	0.074	0.74

Total forbs: 24.495 58% 2.417 24.17

COVER CROP	Summary	Included		STD	PLS lb/ac	PLS lbs
		Total Species	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
	Graminoid Total:	13	18.00	42%	3.65	36.51
	Forb Total:	64	24.50	58%	2.42	24.17
	Cover Crop Total:	N/A	N/A	N/A	16.00	160.00
	Overall Total:	77	42.50	100%	22.07	220.68

SEEDING PLAN
Wet-Mesic Poor Drainage Mix

Client: Cathy Irvine
Area seeded: 3.000 ac
Date seeded: 5/16/2019
Job name: Irvine Prairie 2019

Common Name	Scientific Name	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
GRASSES					
big bluestem	<i>Andropogon gerardii</i>	1.000	2%	0.272	0.82
sideoats grama	<i>Bouteloua curtipendula</i>	2.000	4%	0.629	1.89
Kalm's brome	<i>Bromus kalmii</i>	0.250	0%	0.085	0.26
bluejoint reedgrass	<i>Calamagrostis canadensis</i>	1.000	2%	0.011	0.03
Canada wildrye	<i>Elymus canadensis</i>	1.000	2%	0.439	1.32
Virginia wildrye	<i>Elymus virginicus</i>	0.250	0%	0.162	0.49
fowl mannagrass	<i>Glyceria striata</i>	2.000	4%	0.034	0.10
marsh muhly	<i>Muhlenbergia racemosa</i>	1.000	2%	0.034	0.10
switchgrass	<i>Panicum virgatum</i>	1.000	2%	0.170	0.51
little bluestem	<i>Schizachyrium scoparium</i>	2.000	4%	0.356	1.07
Indiangrass	<i>Sorghastrum nutans</i>	2.000	4%	0.473	1.42
prairie cordgrass	<i>Spartina pectinata</i>	0.250	0%	0.113	0.34
tall dropseed	<i>Sporobolus compositus</i>	2.000	4%	0.182	0.54
prairie dropseed	<i>Sporobolus heterolepis</i>	0.100	0%	0.018	0.05
SEDGES AND OTHER GRAMINOIDS					
yellow fox sedge	<i>Carex annectens</i>	1.000	2%	0.030	0.09
Bicknell's sedge	<i>Carex bicknellii</i>	0.500	1%	0.080	0.24
troublesome sedge	<i>Carex molesta</i>	1.000	2%	0.109	0.33
pointed broom sedge	<i>Carex scoparia</i>	1.000	2%	0.032	0.10
brown fox sedge	<i>Carex vulpinoidea</i>	2.000	4%	0.054	0.16
Total grasses and sedges:		21.350	41%	3.285	9.85
LEGUMES					
Canada milkvetch	<i>Astragalus canadensis</i>	1.000	2%	0.160	0.48
white wild indigo	<i>Baptisia alba</i>	0.020	0%	0.032	0.10
partridge pea	<i>Chamaecrista fasciculata</i>	0.300	1%	0.303	0.91
white prairie clover	<i>Dalea candida</i>	0.500	1%	0.072	0.21
purple prairie clover	<i>Dalea purpurea</i>	0.500	1%	0.091	0.27
showy tick-trefoil	<i>Desmodium canadense</i>	0.250	0%	0.124	0.37
wild licorice	<i>Glycyrrhiza lepidota</i>	0.100	0%	0.070	0.21
purple vetch	<i>Vicia americana</i>	0.100	0%	0.101	0.30
FORBS					
Canada anemone	<i>Anemone canadensis</i>	0.020	0%	0.007	0.02
thimbleweed	<i>Anemone cylindrica</i>	0.050	0%	0.005	0.02
prairie sage	<i>Artemisia ludoviciana</i>	1.000	2%	0.011	0.03
swamp milkweed	<i>Asclepias incarnata</i>	0.100	0%	0.057	0.17
common milkweed	<i>Asclepias syriaca</i>	0.100	0%	0.068	0.20
tall coreopsis	<i>Coreopsis tripteris</i>	0.100	0%	0.019	0.06
flat-topped aster	<i>Doellingeria umbellata</i>	0.100	0%	0.004	0.01
rattlesnake master	<i>Eryngium yuccifolium</i>	0.100	0%	0.036	0.11
boneset	<i>Eupatorium perfoliatum</i>	0.500	1%	0.009	0.03
grass-leaved goldenrod	<i>Euthamia graminifolia</i>	1.000	2%	0.008	0.02
joe-pye weed	<i>Eutrochium maculatum</i>	0.500	1%	0.014	0.04
northern bedstraw	<i>Galium boreale</i>	0.200	0%	0.008	0.02
bottle gentian	<i>Gentiana andrewsii</i>	2.000	4%	0.019	0.06
sneezeweed	<i>Helenium autumnale</i>	2.000	4%	0.042	0.13
bigtooth sunflower	<i>Helianthus grosseserratus</i>	0.100	0%	0.018	0.05
ox-eye	<i>Heliopsis helianthoides</i>	0.500	1%	0.216	0.65
meadow blazingstar	<i>Liatris ligulistylis</i>	0.150	0%	0.041	0.12
prairie blazingstar	<i>Liatris pycnostachya</i>	0.100	0%	0.025	0.07
cardinal flower	<i>Lobelia cardinalis</i>	0.100	0%	0.001	0.00
great blue lobelia	<i>Lobelia siphilitica</i>	2.000	4%	0.011	0.03

Common Name	Scientific Name	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
palespike lobelia	<i>Lobelia spicata</i>	1.000	2%	0.003	0.01
prairie loosestrife	<i>Lysimachia quadriflora</i>	0.100	0%	0.003	0.01
winged loosestrife	<i>Lythrum alatum</i>	1.000	2%	0.001	0.00
wild bergamot	<i>Monarda fistulosa</i>	0.750	1%	0.029	0.09
Riddell's goldenrod	<i>Oligoneuron ridellii</i>	0.500	1%	0.015	0.04
stiff goldenrod	<i>Oligoneuron rigidum</i>	0.750	1%	0.050	0.15
prairie ragwort	<i>Packera plattensis</i>	0.000	0%	0.000	0.00
marsh betony	<i>Pedicularis lanceolata</i>	0.500	1%	0.031	0.09
foxglove beardtongue	<i>Penstemon digitalis</i>	1.000	2%	0.021	0.06
prairie phlox	<i>Phlox pilosa</i>	0.020	0%	0.003	0.01
common mt. mint	<i>Pycnanthemum virginianum</i>	2.000	4%	0.025	0.07
yellow coneflower	<i>Ratibida pinnata</i>	1.000	2%	0.091	0.27
black-eyed susan	<i>Rudbeckia hirta</i>	0.750	1%	0.022	0.07
sweet coneflower	<i>Rudbeckia subtomentosa</i>	0.750	1%	0.047	0.14
mad-dog skullcap	<i>Scutellaria lateriflora</i>	0.100	0%	0.004	0.01
rosinweed	<i>Silphium integrifolium</i>	0.010	0%	0.023	0.07
heath aster	<i>Symphyotrichum ericoides</i>	0.500	1%	0.007	0.02
smooth blue aster	<i>Symphyotrichum laeve</i>	0.500	1%	0.025	0.07
New England aster	<i>Symphyotrichum novae-angliae</i>	0.750	1%	0.031	0.09
purple meadow rue	<i>Thalictrum dasycarpum</i>	0.200	0%	0.050	0.15
ohio spiderwort	<i>Tradescantia ohioensis</i>	0.100	0%	0.034	0.10
blue vervain	<i>Verbena hastata</i>	0.200	0%	0.006	0.02
ironweed	<i>Vernonia fasciculata</i>	0.500	1%	0.057	0.17
culver's root	<i>Veronicastrum virginicum</i>	4.000	8%	0.014	0.04
golden alexanders	<i>Zizia aurea</i>	0.400	1%	0.099	0.30

Total forbs: 30.870 59% 2.259 6.78

COVER CROP	Summary	Included		STD	PLS lb/ac	PLS lbs
		Total Species	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
	Graminoid Total:	19	21.35	41%	3.28	9.85
	Forb Total:	52	30.87	59%	2.26	6.78
	Cover Crop Total:	N/A	N/A	N/A	16.00	48.00
	Overall Total:	71	52.22	100%	21.54	64.63

SEEDING PLAN
Wet-Mesic Toeslope Mix

Client: Cathy Irvine
Area seeded: 4.000 ac
Date seeded: 5/16/2019
Job name: Irvine Prairie 2019

Common Name	Scientific Name	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
GRASSES					
big bluestem	<i>Andropogon gerardii</i>	1.000	2%	0.272	1.09
sideoats grama	<i>Bouteloua curtipendula</i>	3.000	6%	0.944	3.78
Kalm's brome	<i>Bromus kalmii</i>	0.250	0%	0.085	0.34
Canada wildrye	<i>Elymus canadensis</i>	1.000	2%	0.439	1.76
switchgrass	<i>Panicum virgatum</i>	1.000	2%	0.170	0.68
little bluestem	<i>Schizachyrium scoparium</i>	2.000	4%	0.356	1.42
Indiangrass	<i>Sorghastrum nutans</i>	2.000	4%	0.473	1.89
tall dropseed	<i>Sporobolus compositus</i>	3.000	6%	0.272	1.09
prairie dropseed	<i>Sporobolus heterolepis</i>	0.100	0%	0.018	0.07
SEDGES AND OTHER GRAMINOIDS					
yellow fox sedge	<i>Carex annectens</i>	1.000	2%	0.030	0.12
Bicknell's sedge	<i>Carex bicknellii</i>	0.500	1%	0.080	0.32
shortbeak sedge	<i>Carex brevior</i>	0.500	1%	0.047	0.19
troublesome sedge	<i>Carex molesta</i>	0.500	1%	0.054	0.22
Total grasses and sedges:		21.350	40%	3.640	14.56
LEGUMES					
leadplant	<i>Amorpha canescens</i>	0.100	0%	0.015	0.06
Canada milkvetch	<i>Astragalus canadensis</i>	0.700	1%	0.112	0.45
white wild indigo	<i>Baptisia alba</i>	0.020	0%	0.032	0.13
partridge pea	<i>Chamaecrista fasciculata</i>	0.300	1%	0.303	1.21
white prairie clover	<i>Dalea candida</i>	0.500	1%	0.072	0.29
purple prairie clover	<i>Dalea purpurea</i>	1.000	2%	0.182	0.73
showy tick-trefoil	<i>Desmodium canadense</i>	0.250	0%	0.124	0.50
Illinois tick-trefoil	<i>Desmodium illinoense</i>	0.000	0%	0.000	0.00
round-headed bushclover	<i>Lespedeza capitata</i>	0.000	0%	0.000	0.00
FORBS					
Canada anemone	<i>Anemone canadensis</i>	0.020	0%	0.007	0.03
thimbleweed	<i>Anemone cylindrica</i>	0.050	0%	0.005	0.02
field pussytoes	<i>Antennaria neglecta</i>	0.000	0%	0.000	0.00
prairie sage	<i>Artemisia ludoviciana</i>	1.000	2%	0.011	0.04
swamp milkweed	<i>Asclepias incarnata</i>	0.100	0%	0.057	0.23
common milkweed	<i>Asclepias syriaca</i>	0.100	0%	0.068	0.27
butterfly milkweed	<i>Asclepias tuberosa</i>	0.010	0%	0.006	0.03
whorled milkweed	<i>Asclepias verticillata</i>	0.010	0%	0.002	0.01
New Jersey tea	<i>Ceanothus americanus</i>	0.050	0%	0.018	0.07
prairie coreopsis	<i>Coreopsis palmata</i>	0.050	0%	0.014	0.05
shootingstar	<i>Dodecatheon media</i>	0.000	0%	0.000	0.00
pale purple coneflower	<i>Echinacea pallida</i>	0.200	0%	0.103	0.41
rattlesnake master	<i>Eryngium yuccifolium</i>	0.200	0%	0.073	0.29
tall boneset	<i>Eupatorium altissimum</i>	0.000	0%	0.000	0.00
flowering spurge	<i>Euphorbia corollata</i>	0.000	0%	0.000	0.00
grass-leaved goldenrod	<i>Euthamia graminifolia</i>	1.500	3%	0.012	0.05
joe-pye weed	<i>Eutrochium maculatum</i>	0.250	0%	0.007	0.03
northern bedstraw	<i>Galium boreale</i>	0.200	0%	0.008	0.03
bottle gentian	<i>Gentiana andrewsii</i>	2.000	4%	0.019	0.08
bigtooth sunflower	<i>Helianthus grosseserratus</i>	0.100	0%	0.018	0.07
prairie sunflower	<i>Helianthus laetiflorus</i>	0.000	0%	0.000	0.00
ox-eye	<i>Helopsis helianthoides</i>	0.500	1%	0.216	0.86
alumroot	<i>Heuchera richardsonii</i>	0.000	0%	0.000	0.00
rough blazingstar	<i>Liatris aspera</i>	0.000	0%	0.000	0.00
prairie blazingstar	<i>Liatris pycnostachya</i>	0.200	0%	0.050	0.20

Common Name	Scientific Name	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
great blue lobelia	<i>Lobelia siphilitica</i>	2.000	4%	0.011	0.04
wild bergamot	<i>Monarda fistulosa</i>	0.750	1%	0.029	0.12
biennial guara	<i>Oenothera gaura</i>	0.000	0%	0.000	0.00
stiff goldenrod	<i>Oligoneuron rigidum</i>	0.750	1%	0.050	0.20
prairie ragwort	<i>Packera plattensis</i>	0.100	0%	0.003	0.01
wild quinine	<i>Parthenium integrifolium</i>	0.100	0%	0.039	0.16
wood betony	<i>Pedicularis canadensis</i>	0.000	0%	0.000	0.00
foxglove beardtongue	<i>Penstemon digitalis</i>	1.000	2%	0.021	0.08
prairie phlox	<i>Phlox pilosa</i>	0.020	0%	0.003	0.01
prairie cinquefoil	<i>Potentilla arguta</i>	0.000	0%	0.000	0.00
hairy mt. mint	<i>Pycnanthemum pilosum</i>	0.000	0%	0.000	0.00
common mt. mint	<i>Pycnanthemum virginianum</i>	2.000	4%	0.025	0.10
yellow coneflower	<i>Ratibida pinnata</i>	1.000	2%	0.091	0.36
wild rose	<i>Rosa arkansana</i>	0.020	0%	0.022	0.09
black-eyed susan	<i>Rudbeckia hirta</i>	0.750	1%	0.022	0.09
sweet coneflower	<i>Rudbeckia subtomentosa</i>	0.750	1%	0.047	0.19
rosinweed	<i>Silphium integrifolium</i>	0.010	0%	0.023	0.09
compass plant	<i>Silphium laciniatum</i>	0.010	0%	0.041	0.17
showy goldenrod	<i>Solidago speciosa</i>	0.000	0%	0.000	0.00
heath aster	<i>Symphyotrichum ericoides</i>	0.500	1%	0.007	0.03
smooth blue aster	<i>Symphyotrichum laeve</i>	0.500	1%	0.025	0.10
New England aster	<i>Symphyotrichum novae-angliae</i>	0.750	1%	0.031	0.12
sky-blue aster	<i>Symphyotrichum oolentangiense</i>	0.000	0%	0.000	0.00
purple meadow rue	<i>Thalictrum dasycarpum</i>	0.100	0%	0.025	0.10
prairie spiderwort	<i>Tradescantia bracteata</i>	0.000	0%	0.000	0.00
ohio spiderwort	<i>Tradescantia ohioensis</i>	0.100	0%	0.034	0.14
blue vervain	<i>Verbena hastata</i>	0.100	0%	0.003	0.01
ironweed	<i>Vernonia fasciculata</i>	0.250	0%	0.028	0.11
culver's root	<i>Veronicastrum virginicum</i>	4.000	8%	0.014	0.05
golden alexanders	<i>Zizia aurea</i>	0.300	1%	0.074	0.30

Total forbs: 31.545 60% 2.446 9.79

COVER CROP		Included	STD	PLS lb/ac	PLS lbs	
Oats (<10% slope)	<i>Avena sativa</i>	1.000	16.00	16.00	64.00	
Summary		Total Species	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
Graminoid Total:		18	21.35	40%	3.64	14.56
Forb Total:		59	31.55	60%	2.45	9.79
Cover Crop Total:		N/A	N/A	N/A	16.00	64.00
Overall Total:		77	52.90	100%	22.09	88.34

SEEDING PLAN
Mesic Hilltop Mix

Client: Cathy Irvine
Area seeded: 8.500 ac
Date seeded: 5/17/2018
Job name: Irvine Prairie 2018

Common Name	Scientific Name	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
GRASSES					
big bluestem	<i>Andropogon gerardii</i>	1.500	4%	0.408	3.47
sideoats grama	<i>Bouteloua curtipendula</i>	3.000	7%	0.944	8.03
Kalm's brome	<i>Bromus kalmii</i>	0.250	1%	0.085	0.72
bluejoint reedgrass	<i>Calamagrostis canadensis</i>	0.000	0%	0.000	0.00
Canada wildrye	<i>Elymus canadensis</i>	1.000	2%	0.439	3.73
Virginia wildrye	<i>Elymus virginicus</i>	0.000	0%	0.000	0.00
fowl mannagrass	<i>Glyceria striata</i>	0.000	0%	0.000	0.00
marsh muhly	<i>Muhlenbergia racemosa</i>	0.000	0%	0.000	0.00
switchgrass	<i>Panicum virgatum</i>	2.000	5%	0.340	2.89
little bluestem	<i>Schizachyrium scoparium</i>	3.000	7%	0.534	4.54
Indiangrass	<i>Sorghastrum nutans</i>	2.000	5%	0.473	4.02
prairie cordgrass	<i>Spartina pectinata</i>	0.000	0%	0.000	0.00
tall dropseed	<i>Sporobolus compositus</i>	5.000	12%	0.454	3.86
prairie dropseed	<i>Sporobolus heterolepis</i>	0.500	1%	0.091	0.77
SEDGES AND OTHER GRAMINOIDS					
yellow fox sedge	<i>Carex annectens</i>	0.100	0%	0.003	0.03
Bicknell's sedge	<i>Carex bicknellii</i>	0.200	0%	0.032	0.27
troublesome sedge	<i>Carex molesta</i>	0.100	0%	0.011	0.09
pointed broom sedge	<i>Carex scoparia</i>	0.000	0%	0.000	0.00
brown fox sedge	<i>Carex vulpinoidea</i>	0.000	0%	0.000	0.00
Total grasses and sedges:		19.170	46%	3.866	32.86
LEGUMES					
Canada milkvetch	<i>Astragalus canadensis</i>	1.000	2%	0.160	1.36
white wild indigo	<i>Baptisia alba</i>	0.050	0%	0.080	0.68
partridge pea	<i>Chamaecrista fasciculata</i>	0.250	1%	0.252	2.14
white prairie clover	<i>Dalea candida</i>	0.000	0%	0.000	0.00
purple prairie clover	<i>Dalea purpurea</i>	1.000	2%	0.182	1.54
showy tick-trefoil	<i>Desmodium canadense</i>	0.150	0%	0.074	0.63
wild licorice	<i>Glycyrrhiza lepidota</i>	0.000	0%	0.000	0.00
purple vetch	<i>Vicia americana</i>	0.000	0%	0.000	0.00
FORBS					
Canada anemone	<i>Anemone canadensis</i>	0.000	0%	0.000	0.00
thimbleweed	<i>Anemone cylindrica</i>	0.100	0%	0.010	0.09
prairie sage	<i>Artemisia ludoviciana</i>	1.000	2%	0.011	0.09
swamp milkweed	<i>Asclepias incarnata</i>	0.100	0%	0.057	0.48
common milkweed	<i>Asclepias syriaca</i>	0.250	1%	0.170	1.45
tall coreopsis	<i>Coreopsis tripteris</i>	0.000	0%	0.000	0.00
flat-topped aster	<i>Doellingeria umbellata</i>	0.000	0%	0.000	0.00
rattlesnake master	<i>Eryngium yuccifolium</i>	0.330	1%	0.120	1.02
boneset	<i>Eupatorium perfoliatum</i>	0.000	0%	0.000	0.00
grass-leaved goldenrod	<i>Euthamia graminifolia</i>	1.000	2%	0.008	0.07
joe-pye weed	<i>Eutrochium maculatum</i>	0.000	0%	0.000	0.00
northern bedstraw	<i>Galium boreale</i>	0.100	0%	0.004	0.03
bottle gentian	<i>Gentiana andrewsii</i>	0.500	1%	0.005	0.04
sneezeweed	<i>Helenium autumnale</i>	0.000	0%	0.000	0.00
bigtooth sunflower	<i>Helianthus grosseserratus</i>	0.150	0%	0.027	0.23
ox-eye	<i>Heliopsis helianthoides</i>	0.500	1%	0.216	1.84
meadow blazingstar	<i>Liatris ligulistylis</i>	0.000	0%	0.000	0.00
prairie blazingstar	<i>Liatris pycnostachya</i>	0.102	0%	0.025	0.21
cardinal flower	<i>Lobelia cardinalis</i>	0.000	0%	0.000	0.00
great blue lobelia	<i>Lobelia siphilitica</i>	1.000	2%	0.005	0.05

Common Name	Scientific Name	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
palespike lobelia	<i>Lobelia spicata</i>	0.000	0%	0.000	0.00
prairie loosestrife	<i>Lysimachia quadriflora</i>	0.000	0%	0.000	0.00
winged loosestrife	<i>Lythrum alatum</i>	0.000	0%	0.000	0.00
wild bergamot	<i>Monarda fistulosa</i>	0.750	2%	0.029	0.25
Riddell's goldenrod	<i>Oligoneuron ridellii</i>	0.000	0%	0.000	0.00
stiff goldenrod	<i>Oligoneuron rigidum</i>	0.750	2%	0.050	0.42
prairie ragwort	<i>Packera plattensis</i>	0.000	0%	0.000	0.00
marsh betony	<i>Pedicularis lanceolata</i>	0.000	0%	0.000	0.00
foxglove beardtongue	<i>Penstemon digitalis</i>	1.000	2%	0.021	0.18
prairie phlox	<i>Phlox pilosa</i>	0.025	0%	0.004	0.03
common mt. mint	<i>Pycnanthemum virginianum</i>	1.000	2%	0.012	0.11
yellow coneflower	<i>Ratibida pinnata</i>	1.000	2%	0.091	0.77
black-eyed susan	<i>Rudbeckia hirta</i>	1.080	3%	0.032	0.27
sweet coneflower	<i>Rudbeckia subtomentosa</i>	1.000	2%	0.063	0.54
mad-dog skullcap	<i>Scutellaria lateriflora</i>	0.000	0%	0.000	0.00
rosinweed	<i>Silphium integrifolium</i>	0.050	0%	0.113	0.96
heath aster	<i>Symphyotrichum ericoides</i>	0.230	1%	0.003	0.03
smooth blue aster	<i>Symphyotrichum laeve</i>	0.500	1%	0.025	0.21
New England aster	<i>Symphyotrichum novae-angliae</i>	0.300	1%	0.012	0.11
purple meadow rue	<i>Thalictrum dasycarpum</i>	0.200	0%	0.050	0.42
ohio spiderwort	<i>Tradescantia ohioensis</i>	0.200	0%	0.068	0.58
blue vervain	<i>Verbena hastata</i>	0.000	0%	0.000	0.00
ironweed	<i>Vernonia fasciculata</i>	0.500	1%	0.057	0.48
culver's root	<i>Veronicastrum virginicum</i>	0.000	0%	0.000	0.00
golden alexanders	<i>Zizia aurea</i>	0.232	1%	0.057	0.49

Total forbs: 22.311 54% 3.027 25.73

COVER CROP	Included		STD	PLS lb/ac	PLS lbs
	Total Species	Seeds/ft ²	% mix	PLS lb/ac	PLS lbs
Summary					
Graminoid Total:	14	19.17	46%	3.87	32.86
Forb Total:	60	22.31	54%	3.03	25.73
Cover Crop Total:	N/A	N/A	N/A	16.00	136.00
Overall Total:	74	41.48	100%	22.89	194.59