

TAB 4 - WETLAND SUBMITTAL
NORTH REGIONAL STORMWATER MANAGEMENT FACILITY
VILLAGE OF GLEN ELLYN, MILTON TOWNSHIP, DUPAGE COUNTY, ILLINOIS

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Attachments:

- #1 Native Landscape Specifications
- #2 Wetland Delineation Report
- #3 IDNR and USFWS Correspondence
- #4 Existing Conditions Plan (prepared by AW McGurr, Ltd.)
- #5 Site Plan (prepared by AW McGurr, Ltd.)
- #6 Buffer and Tree Impact Plan (prepared by ENCAP, Inc.)
- #7 Native Landscape Plan (prepared by ENCAP, Inc.)
- #8 Cost Estimate
- #9 Draft Conservation Easement Language
- #10 Existing and Proposed Hydrology Information

DUPAGE COUNTY TAB 4 WETLAND SUBMITTAL

Project Name / Applicant: North Regional Stormwater Management Facility / Village of Glen Ellyn
ENCAP, Inc. Project No.: C-07-1023C
Location: Illinois, DuPage County, Milton Township, Village of Glen Ellyn, T39N R10E, Section 2

1.0 PROJECT OVERVIEW

The project site is located north of Saint Charles Road and east of Lenox Road, in the Village of Glen Ellyn, DuPage County, Illinois (See Exhibit A: Location Map, included within the attached Wetland Delineation Report). The Village of Glen Ellyn proposes construction of two dry bottom stormwater management facilities to provide stormwater storage for the upstream commercial and park drainage area. The two basins will be designed as ball fields to provide additional recreational areas for the Village residents.

ENCAP, Inc. conducted a wetland delineation on November 8, 2007 for the project site. Three wetlands were identified on-site, totaling 0.95 acre. Wetland 2 is located within a permitted stormwater detention basin that was created in 1995 (see attached documentation). Any proposed impacts to this area do not require mitigation or compensation for impacts. Wetlands 1 and 3 consist of natural areas and require 50-foot buffers. Ms. Juli Crane of Planning Resources, Inc. (PRI) verified and confirmed the delineated wetland boundaries on November 14, 2007.

No direct or indirect wetland impacts are proposed by this development. Since wetland impacts are not anticipated, no compensatory wetland mitigation will be required for this development. Portions of the 50-foot buffers associated with Wetlands 1 and 3 extend onto the project area. This development proposes 0.38 acre of buffer impacts for installation of the dry bottom stormwater/recreational facilities. All trees and shrubs located within the impacted buffer areas will be removed. Buffer impacts will be compensated for by enhancing 0.25 acre of preserved buffer with native prairie/woodland herbaceous vegetation, trees, and shrubs.

Three existing 36-inch culverts are located at the southeastern corner of the project area underneath Riford Road. The project involves installing small PVC pipes (24-inch) within the existing culverts and filling the void space between the pipes with concrete. Currently, the culverts are back-pitched towards Wetland 1; thus, preventing all stormwater runoff from draining to the east. As shown on the attached Existing Conditions Plan and Site Plan, the existing invert of the northernmost pipe is 701.06 and the proposed invert is 701.44. The other two pipes' inverts will also be raised slightly; however, this will not create ponding near the western portion of the pipes. According to Mr. Bill McGurr, engineer for the Village of Glen Ellyn, long-term observation of the site does not indicate that the back-pitched condition causes a continual ponding of water. It would appear that any ponded water after a storm event is infiltrated into the soil in a relatively short time. If any stormwater does pond within this area, it would not be greater than 4-5 inches at any one time and this water is anticipated to recharge groundwater resources. Therefore, no direct or indirect wetland impacts are anticipated by this improvement.

A total of twenty-four (24) trees and approximately ten (10) shrubs will be removed within the 50-foot buffers associated with Wetlands 1 and 3. The majority of the woody herbaceous vegetation proposed for removal consists of Garlic Mustard (*Alliaria petiolata*) and White

Snakeroot (*Eupatorium rugosum*). The majority of the trees proposed for removal consist of American Elm (*Ulmus americana*), Box Elder (*Acer negundo*), and Black Walnut (*Juglans nigra*). The majority of the shrubs proposed for removal consist of Wild Gooseberry (*Ribes missouriense*) and Black Raspberry (*Rubus occidentalis*) as well as some Common Buckthorn (*Rhamnus cathartica*), a non-native species. To compensate for the proposed impacts, twenty-four (24) native trees and eighty-four (84) native shrubs will be planted within preserved portions of the wetland buffers and around the embankments of the proposed basins to replace functions lost by the removed trees and shrubs. In addition, native prairie/woodland herbaceous vegetation will be planted within the preserved buffer of Wetland 3 to replace functions lost by the removed herbaceous vegetation.

2.0 AVOIDANCE AND MINIMIZATION

No direct or indirect wetland impacts are anticipated by the proposed development. The installation of the dry bottom stormwater/recreational facilities will impact portions of the on-site 50-foot wetland buffers. The proposed facilities were requested to be installed by the Park District of Glen Ellyn for recreational purposes. In addition, these facilities will provide the required amount of stormwater storage for the upstream commercial and park drainage area. These facilities are sized accordingly to reduce runoff flow rates for the upstream drainage area. The majority of the stormwater reaching Wetlands 1 and 2 originates from the western residential development, while the majority of the stormwater reaching Wetland 3 originates from development to the north. The proposed facilities will include stormsewer pipes to convey stormwater into Wetland 2, which will then drain into Wetland 1; however, after significant rain events, stormwater will overflow towards Wetlands 1 and 3 from the easternmost stormwater facility. All proposed stormwater will reach these wetlands at the same rates as the existing stormwater (see Attachment #10).

Buffer impacts total 0.38 acre and will be compensated for by planting native prairie/woodland herbaceous vegetation, trees, and shrubs within the preserved on-site buffers of Wetlands 1 and 3. The proposed native prairie/woodland herbaceous vegetation, trees, and shrubs will increase soil stabilization, stormwater infiltration, pollutant and sediment removal, plant diversity, and habitat for wildlife over the current vegetation. The proposed project has avoided impacts to all the on-site wetland areas, and has minimized wetland buffer impacts to only that necessary to develop the site according to stormwater requirements.

3.0 COMPENSATORY WETLAND MITIGATION

The on-site wetland will not be impacted by the development; therefore, compensatory wetland mitigation is not required. A total of 0.38 acre of buffer impacts is proposed by this development. The functions lost by these impacts will be minimal and will be replaced and enhanced by native prairie/woodland, tree, and shrub plantings. Details regarding the native plantings are provided in the attached Native Landscape Plan.

4.0 COMPLIANCE WITH SECTIONS 15-134 THROUGH 15-136 OF THE DUPAGE COUNTY COUNTYWIDE STORMWATER AND FLOODPLAIN ORDINANCE FEBRUARY 2006

4.1 Sec. 15-134. Requirements for Wetland Delineation.

- 1. Any developer proposing development in or near mapped wetland areas shall identify the boundaries, extent, function and value, and quality of all wetland areas on the subject property. The presence and extent of wetland areas on**

the subject property shall be determined as the result of an on-site wetland procedure. This procedure shall be conducted in accordance with the current Federal wetland delineation methodology authorized under Section 404 of the Clean Water Act.

ENCAP, Inc. performed a wetland delineation on November 8, 2007. The Wetland Delineation Report identifies three regulatory wetlands located on-site. Ms. Juli Crane of Planning Resources, Inc. verified and confirmed the delineated wetland boundaries on November 14, 2007. The Wetland Delineation Report is attached within this submittal.

- 2. The approximate location, extent, and relative quality of off-site wetlands contiguous to the development shall be identified. The location and extent of contiguous off-site wetlands shall be determined by using the first of the following documents or procedures pertaining at the time of development:**
 - a. Site specific delineation according to the procedures specified in the Plan and Federal Manual for Identifying and Delineating Jurisdictional Wetlands.**

Wetlands 1 and 2 are encompassed entirely within the project site. Wetland 3 extends off-site to the north of the project area. No other off-site wetlands were identified. This determination was made through a site specific delineation, conducted according to the procedures specified in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands.

- 3. Wetlands shall be classified as either critical or regulatory wetlands. Critical wetlands, because of their sizes, configurations, vegetation, soils, or other characteristics, play crucial roles in storing or conveying flood water, controlling erosion, maintaining or enhancing water quality, and providing habitat for threatened and endangered species. Critical wetland status shall be assigned to those wetlands that have been determined to satisfy one or more of the following:**

- a. The wetland is identified as critical wetland in the County's wetland inventory; or**

Wetlands 1, 2, and 3 are not identified as critical by the DuPage County Wetland Inventory.

- b. The wetland is known to possess a Federal or State listed threatened or endangered species based on consultation with the Illinois Department of Natural Resources; or**

Both the Illinois Department of Natural Resources (IDNR) and U.S. Fish and Wildlife Service (USFWS) have determined that no state-listed or federally endangered or threatened species occur within the vicinity of the site. Consultation with these agencies has been terminated (see attached correspondence).

- c. **The plant community within the wetland is determined to have a native floristic quality index of 20 or higher during a single season assessment, a native mean C-value of 3.5 or greater, or alternatively a natural area rating index (NARI) value of 35.0 or higher during a spring, summer, and fall assessment, as calculated by the Swink & Wilhelm methodology. If both methods are performed, the NARI value shall prevail as the determining value; or**

The plant communities within Wetlands 1 and 3 exhibited a Coefficient of Conservatism (\hat{c}) value less than 3.5 and a Floristic Quality Index value of less than 20.

- d. **The initial wildlife quality value using the modified Michigan Department of Natural Resources Method is 5.0 or higher, or alternatively the mean rated wildlife quality (MRWQ) is determined to be 8.0 or higher, as calculated by the Ludwig wildlife habitat evaluation methodology. If both methods are performed, the Ludwig shall prevail as the determining value.**

The Wildlife Habitat Ranking for Wetlands 1 and 3 were less than 5.0.

Based on items a, b, c and d above, Wetlands 1 and 3 are considered to be regulatory.

4.2 Sec. 15-135. Requirements for Development Affecting the Function and Values of Wetlands.

1. **Development within or affecting critical wetlands shall be prohibited, unless documentation is submitted that conclusively proves that the presence of critical wetlands precludes all economic use of the entire parcel, and that no practicable alternative to wetland modification exists. Based upon a review of the submitted documentation, and any other available resources, the Director, or the Administrator in a complete waiver community, will make a determination as to whether the proposed critical wetland modification represents the least amount of wetland impact required to restore an economic use to the upland portion of the parcel, and whether a permit should be granted.**

Not applicable. This development does not affect critical wetland.

2. **Development within or affecting a regulatory wetland that includes contiguous waters of DuPage less than 0.10 acre does not require documentation showing that no practicable alternatives to wetland modification exists, and is allowable pursuant to Sections 15-135.5 and 15-136. Based upon a review of the submitted documentation, and other available resources, the Director, or the Administrator in a complete waiver community, will make a determination as to whether the proposed wetland modifications will be permitted.**

Not applicable. This development does not impact the regulatory wetlands located on-site; therefore, no documentation showing practicable alternatives to wetland modification is required. Indirect impacts to the wetlands are not anticipated.

3. **Development within or affecting a regulatory wetland that is equal to or great than 0.10 acre shall be prohibited unless documentation is submitted that conclusively proves that no practicable alternative to wetland modification exists. Based upon a review of the submitted documentation, and other available resources, the Director, or the Administrator in a complete waiver community, will make a determination as to whether the proposed wetland modifications will be permitted.**

Not applicable. This development does not impact the regulatory wetlands located on-site; therefore, no documentation showing practicable alternatives to wetland modification is required. Indirect impacts to the wetlands are not anticipated.

4. **Development of a regulatory wetland that is equal to or greater than 0.10 acre, or a critical wetland, will be permitted only when the proposed direct and indirect environmental impacts to on-site wetlands, and indirect environmental impacts to off-site wetlands, can be sufficiently evaluated, minimized, and mitigated, as specified in this Section 5-135.**

The proposed development will not directly impact the on-site wetlands. The enhancement of native herbaceous prairie/woodland, tree, and shrub plant communities within the on-site preserved buffers will replace and enhance on-site functions lost by the buffer impacts.

5. **Mitigation for developments within or affecting a wetland shall provide for the replacement of the wetland environment lost to development at a minimum proportional rate of three to one (3:1) for critical wetlands where critical for wetland environments as defined in Sections 15-134.3. b, c, and d, and one and one half to one (1.5:1.0) for regulatory wetlands. The mitigated wetlands shall be designed to duplicate or improve the hydrologic, biologic, and economic features of the original wetland. The Director, or the Administrator in a complete waiver community, may require a greater compensation ratio where special wetland functions are threatened.**

Not applicable. The proposed development will not impact wetland; therefore, no wetland mitigation is necessary.

6. **Mitigation for storage lost within wetlands shall be provided in accordance with Section 15-112 and Subsection 15-114.5 of this Ordinance.**

Not applicable. The proposed development will not impact wetland; therefore, no mitigation for storage lost within wetlands is necessary.

7. **Mitigation for development impacts within or affecting a critical or regulatory wetland shall take place in the same watershed planning area as the affected wetland. For the purpose of Section 15-135 and Section 15-136, the four watershed planning areas are defined by the Salt Creek and Des Plaines River Tributaries Watersheds, West Branch DuPage River and Fox River Watersheds, the East Branch DuPage River Watershed, and the Sawmill Creek Watershed, as shown on Exhibit 1.**

Not applicable. The proposed development will not impact wetland; therefore, no wetland mitigation is necessary.

8. **Creation of wetlands for the mitigation of development impacts within or affecting a critical or regulatory wetland may take place only within areas not currently comprised of wetlands.**

Not applicable. The proposed development will not impact wetland; therefore, no wetland mitigation is necessary.

9. **Mitigation of impacts within or affecting critical and regulatory wetlands shall include design, construction, and continued maintenance of the mitigation measures. See Section 15-197 of this Ordinance.**

Not applicable. The proposed development will not impact wetland; therefore, no wetland mitigation is necessary.

10. **The Director, or the Administrator in a complete waiver community, at his or her discretion may allow an existing wetland contiguous to a proposed regulatory wetland mitigation site to be enhanced in exchange for a partial reduction in the mitigation area required. In no case shall there be a loss of wetland function and value. The area of creation of new wetland to compensate for unavoidable wetland loss shall not be allowed to fall below a one to one ratio.**

Not applicable. The proposed development will not impact wetland; therefore, no wetland mitigation is necessary.

11. **Development in or affecting a wetland environment shall be initiated only after a mitigation plan has been approved and adequate securities are provided as specified in Article 13 of this Ordinance.**

Not applicable. The proposed development will not impact wetland; therefore, no wetland mitigation is necessary.

12. **The designs and analysis of all wetland mitigation measures shall meet the standards of the Plan and shall comply with all applicable Federal, State, and local regulations regarding wetland impact and mitigation.**

Not applicable. The proposed development will not impact wetland; therefore, no wetland mitigation is necessary.

13. **The Director, or the Administrator in a complete waiver community, shall require that the developer or owner provide the County or the waiver community with periodic monitoring reports on the status of the constructed mitigation measures, and further may require the developer or owner to undertake remedial action to bring the area into compliance with the mitigation plan.**

Not applicable. The proposed development will not impact wetland; therefore, no wetland mitigation is necessary.

14. **Mitigation for development within or affecting a wetland begun prior to issuance of a stormwater permit, or other unauthorized impact to a wetland, shall presume the wetland disturbed was a critical wetland requiring mitigation at a minimum rate of three to one (3:1).**

Understood, development will not occur prior to issuance of a stormwater permit.

15. **To the extent practicable, development within a wetland buffer shall not, without mitigation:**

- a. **Adversely change the quantity, quality, or temporal and aerial distribution of flows entering any adjacent wetlands or waters; nor**

The proposed development consists of the creation two dry bottom stormwater/recreational facilities. These facilities will be planted with turf grass, including native trees and shrubs around the edges. All stormwater from the site will eventually drain towards Wetlands 1, 2, or 3 after rain events, which will not adversely change the quantity, quality, or temporal and aerial distribution of flows entering the adjacent wetlands.

- b. **Destroy or damage vegetation that stabilizes wetland fringe areas or provides overland flow filtration to wetlands; nor**

Currently, the on-site portions of the 50-foot wetland buffers consist primarily of wooded herbaceous, tree, and scrub-shrub vegetation. A total of twenty-four (24) trees and approximately ten (10) shrubs are proposed to be removed from the wetland buffers associated with Wetlands 1 and 3 for the creation of the basins. To replace functions lost by these removed trees and shrubs, twenty-four (24) quality native trees and eighty-four (84) native shrubs will be planted within the on-site portions of the 50-foot buffer associated with Wetlands 1 and 3. In addition, native herbaceous prairie/woodland vegetation is proposed to be planted within the preserved on-site buffer associated with Wetland 3. This area was chosen for the establishment of prairie/woodland herbaceous vegetation because it currently consists of non-native upland grasses.

The proposed native prairie/woodland plant community, trees, and shrubs within the preserved buffers will stabilize disturbed areas and provide overland flow filtration. The native vegetation in the buffers will be monitored and maintained for a minimum of three years as outlined in the attached Native Landscape Plan.

- c. **Adversely affect any ground water infiltration functions.**

No additional impervious surfaces are proposed for development. The proposed project shall create two dry bottom stormwater/recreational facilities. This activity will not adversely affect ground water infiltration functions as the installed turf grass will also provide groundwater infiltration functions. In addition, planting of native vegetation within the preserved buffers will help expand on any groundwater infiltration functions currently being provided by the scrub-shrub vegetation. The establishment of a native prairie/woodland plant community, trees, and shrubs within

the preserved buffers will slow the flow of stormwater and allow more water to enter the soil.

4.3 Sec. 15-136. Wetland Banking.

This section is not applicable because the proposed development will not impact regulatory wetland. Compensatory wetland mitigation through wetland banking is not required.

4.3 Sec. 15-137. Riparian Environments Requirements.

This section is not applicable because no riparian environment is located within the proposed development area.

NATIVE LANDSCAPE SPECIFICATIONS

1.0 PURPOSE

The North Regional Stormwater Management Facility native landscape plan includes the enhancement of 0.25 acre of wetland buffer through the installation of seed of native herbaceous prairie/woodland plant species. In addition, twenty-four (24) trees and eighty-four (84) shrubs will be planted within portions of the preserved wetland buffers. The purpose of this planting plan is to compensate for tree and shrub removal from a special management area. The native herbaceous prairie/woodland vegetation, trees, and shrubs will increase stormwater infiltration and filtration functions, remove sediments and pollutants, and provide habitat for wildlife. Existing vegetation within the buffers will not be removed except for that which is necessary for site development.

2.0 CONTRACTOR QUALIFICATIONS

The Native Landscape Contractor chosen for the establishment of the native herbaceous vegetation, trees, and shrubs must be experienced in the restoration, installation, and management of said areas. They must have a minimum of five years experience in the field. There shall be a supervisor available at all times that can identify non-native and native plants by genus and species. The goal of installing successful native plant communities is a long-term process. Therefore, it is imperative that a qualified Native Landscape Contractor perform the initial installation and maintenance.

3.0 QUALITY AND CONDITION

1. Native seed shall be obtained from sources east of the Mississippi River within the same EPA Level III Ecoregion as the project site (Central Corn Belt Plains). Plant origins outside of the Ecoregion shall be approved by the Wetland Consultant.
2. Native seeds shall be blended by the vendor, and the mixture and ratio shall be guaranteed in writing to be as specified. The amount of seed indicated on the specifications shall mean the total amount of pure live seed (PLS) per acre for all species listed. It is the sole responsibility of the Native Landscape Contractor to provide approved seed that meets industry-standard PLS requirements.
3. Native Landscape Contractor shall provide the Wetland Consultant with the name and location of the seed supplier, origin of the various kinds of plants, and a statement of the purity of the seed.
4. Seed shall conform to applicable State and Federal regulations as in effect on the date of letting. Unless otherwise specified, seed shall not contain in excess of 1 percent weed seeds; 0 percent is desirable.
5. All storage requirements, stratification, and scarification considerations shall be the sole responsibility of the Native Landscape Contractor.
6. Mycorrhizal inoculants shall be palletized and mixed at 1 lb. per acre with the fine seeds before installation. The inoculants shall contain a diverse mixture of Glomales fungal species (*Glomus* spp.) in palletized form.

- Under no circumstances shall Wheat (*Triticum aestivum*), Cereal Rye (*Secale cereale*), Perennial Rye (*Lolium perenne*), or Barley (*Hordeum vulgare*) be used as a temporary cover crop.

4.0 HANDLING

- Native Landscape Contractor shall be solely responsible for the proper handling and storage of the seed according to the best seed handling and storage practices, including fungicide treatments and stratification considerations. Owner shall make no compensation for damage to the seed because of improper storage, cleaning, threshing, or screening operations.
- All native seeds shall be packed and covered in such a manner as to ensure adequate protection against damage and maintain dormancy while in transit, storage, or during planting operations.
- Seed shall be kept dry and unopened until needed for use. Seed shall not be stored or temporarily stored in locations or vehicles where the temperature will be in excess of 90 degrees F.

5.0 SITE PREPARATION

- The General Contractor and Native Landscape Contractor shall be responsible for performing all work necessary to achieve and maintain an acceptable seedbed prior to seeding.
- Unless the Wetland Consultant agrees to another approach, seed shall be hand broadcast over the preserved Wetland 3 buffer area at twice the specified rate. Site preparation equipment shall be of a design that can be utilized efficiently by the Native Landscape Contractor to meet the requirements for the work specified.
- If present, compacted soils shall be disked or raked prior to seeding.
- Under no circumstances shall machinery enter the adjacent wetland.

6.0 PLANT MATERIALS

TABLE 1. Temporary Matrix Seed Mix – to be mixed with the Prairie and Woodland Seed Mix

Scientific Name	Common Name	lbs / acre
<i>Avena sativa</i>	Seed Oats	32.000
<i>Elymus canadensis</i>	Canada Wild Rye	4.000
<i>Lolium multiflorum</i>	Annual Rye	4.000
Total		40.000 lbs

TABLE 2. Prairie and Woodland Seed Mix – to be installed within Wetland 3 Buffer Enhancement Area

Scientific Name	Common Name	lbs / acre
<i>Andropogon scoparius</i>	Little Bluestem Grass	4.000

<i>Allium cernuum</i>	Nodding Wild Onion	0.125
<i>Amorpha canescens</i>	Lead Plant	0.125
<i>Anemone virginiana</i>	Tall Anemone	0.063
<i>Aquilegia canadensis</i>	Wild Columbine	0.063
<i>Arisaema atrorubens</i>	Jack-in-the-Pulpit	0.031
<i>Asclepias sullivantii</i>	Prairie Milkweed	0.031
<i>Asclepias syriaca/verticillata</i>	Milkweed	0.031
<i>Aster azureus</i>	Sky Blue Aster	0.090
<i>Aster ericoides</i>	Heath Aster	0.031
<i>Aster laevis</i>	Smooth Blue Aster	0.125
<i>Aster lateriflorus</i>	Side-Flowering Aster	0.031
<i>Aster macrophyllus</i>	Big-leaved Aster	0.015
<i>Aster oblongifolius</i>	Aromatic Aster	0.063
<i>Aster sagittifolius</i>	Arrow-leaved Aster	0.063
<i>Aster shortii</i>	Short's Aster	0.061
<i>Blephilia hirsuta</i>	Wood Mint	0.015
<i>Bouteloua curtipendula</i>	Side-Oats Grama	5.000
<i>Campanula americana</i>	Tall Bellflower	0.063
<i>Carex grisea</i>	Wood Gray Sedge	0.125
<i>Carex radiata</i>	Straight-styled Wood Sedge	0.015
<i>Carex rosea</i>	Curly-styled Wood Sedge	0.015
<i>Carex shortiana</i>	Short's Sedge	0.375
<i>Carex sprengei</i>	Long-Beaked Sedge	0.031
<i>Cassia fasciculata</i>	Partridge Pea	0.250
<i>Coreopsis lanceolata</i>	Sand Coreopsis	0.500
<i>Coreopsis palmata</i>	Prairie Coreopsis	0.015
<i>Echinacea pallida</i>	Purple Coneflower	0.031
<i>Echinacea purpurea</i>	Broad-Leaved Purple Coneflower	0.500
<i>Elymus villosus</i>	Silky Wild Rye	4.000
<i>Elymus virginicus</i>	Virginia Wild Rye	2.000
<i>Eryngium yuccifolium</i>	Rattlesnake Master	0.125
<i>Eupatorium purpureum</i>	Purple Joe Pye Weed	0.031
<i>Eupatorium rugosum</i>	White Snakeroot	0.031
<i>Festuca obtusa</i>	Nodding Fescue	0.250
<i>Geranium maculatum</i>	Wild Geranium	0.015
<i>Glyceria striata</i>	Fowl Manna Grass	0.500
<i>Hystrix patula</i>	Bottlebrush Grass	0.250
<i>Lespedeza capitata</i>	Roundheaded Bush Clover	0.125
<i>Liatris aspera</i>	Rough Blazing Star	0.031
<i>Lonicera prolifera</i>	Yellow Honeysuckle	0.016
<i>Osmorhiza claytonii</i>	Hairy Sweet Cicely	0.015
<i>Parthenium integrifolium</i>	Wild Quinine	0.125
<i>Penstemon digitalis</i>	Foxglove Beard Tongue	0.125
<i>Petalostemum candidum</i>	White Prairie Clover	0.015
<i>Petalostemum purpureum</i>	Purple Prairie Clover	0.500
<i>Phlox divaricata</i>	Woodland Phlox	0.016
<i>Polygonatum canaliculatum</i>	Smooth Solomon's Seal	0.188
<i>Potentilla arguta</i>	Prairie Cinquefoil	0.031
<i>Prenanthes alba</i>	Lion's Foot	0.016
<i>Pycnanthemum spp.</i>	Mountain Mint species	0.031
<i>Ribes americanum</i>	Wild Black Currant	0.015

<i>Rosa carolina</i>	Pasture Rose	0.125
<i>Rudbeckia hirta</i>	Black-Eyed Susan	0.500
<i>Rudbeckia subtomentosa</i>	Sweet Black-Eyed Susan	0.015
<i>Sanicula spp.</i>	Sanicula species	0.031
<i>Silphium laciniatum</i>	Compass Plant	0.031
<i>Silphium terebinthinaceum</i>	Prairie Dock	0.031
<i>Smilax tamnoides hispida</i>	Bristly Cat Brier	0.015
<i>Solidago caesia</i>	Blue-Stemmed Goldenrod	0.031
<i>Solidago flexicaulis</i>	Broad-Leaved Goldenrod	0.063
<i>Solidago graminifolia</i>	Grass-Leaved Goldenrod	0.015
<i>Solidago juncea</i>	Early Goldenrod	0.010
<i>Solidago nemoralis</i>	Old-Field Goldenrod	0.125
<i>Solidago ulmifolia</i>	Elm-leaved Goldenrod	0.063
<i>Thaspium trifoliatum</i>	Meadow Parsnip	0.031
<i>Tradescantia ohimensis</i>	Common Spiderwort	0.063
<i>Verbena stricta</i>	Hoary Vervain	0.125
<i>Zizia aurea</i>	Golden Alexander	0.063
Total		22.668 lbs

TABLE 3. Trees— to be installed as depicted on the Native Landscape Plan.

Scientific Name	Common Name	Quantity
<i>Acer rubrum</i>	Red Maple (RM)	4
<i>Celtis occidentalis</i>	Hackberry (H)	4
<i>Juglans nigra</i>	Black Walnut (BW)	5
<i>Quercus bicolor</i>	Swamp White Oak (BO)	5
<i>Ulmus americana</i>	American Elm (AE)	6
Total		24

TABLE 4. Shrubs – to be installed as depicted on the Native Landscape Plan.

Scientific Name	Common Name	Quantity
<i>Cornus oblique</i>	Blue-Fruited Dogwood (BF)	12
<i>Cornus stolonifera</i>	Red-Osier Dogwood (RO)	15
<i>Corylus americana</i>	American Hazelnut (AH)	12
<i>Ribes americanum</i>	Wild Black Currant (WB)	18
<i>Viburnum lentago</i>	Nannyberry (NB)	15
<i>Viburnum prunifolium</i>	Black Haw (BH)	12
Total		84

7.0 SEED INSTALLATION

1. Wetland Consultant shall be notified at least 24 hours prior to beginning the seeding operations.
2. Seed shall be installed through hand broadcasting and lightly raking in the seed. Seed installed within undisturbed portions of the buffer do not need to be raked in. Hand broadcast seed shall be spread at twice the specified rate. Other methods of seed installation may be used with prior approval from the Wetland Consultant.

3. Seasonal Considerations:

November 1 through February 28: Seed must be protected from displacement due to water and wind erosion. Seeding on bare, graded surfaces must be protected with double netted erosion control blankets on slopes. Seed drilled into existing vegetation or on flat ground not subject to erosion may need only minimal erosion protection. Less cover crop will be observed during the following spring due to frost damage.

March 1 through June 29: Seeding during this period is appropriate but germination of a portion of the seed may not occur until the following season due to lack of cold stratification to break seed dormancy. Cover crop generally germinates within 2-3 weeks of seeding operation.

June 30 through September 15: Installation of native seed should be suspended unless irrigation can be provided or unseasonably cool conditions persist. Also, any annual forbs planted with the mix during this time period may germinate but not have sufficient time to flower before fall senescence.

September 15 through October 31: Seeding on bare, graded surfaces must be protected with double netted erosion control blankets on slopes. Seed drilled into existing vegetation or on flat ground not subject to erosion may need only minimal erosion protection. Less cover crop will be observed during the following spring due to frost damage.

4. Seeding and soil tracking/firming shall not be done during periods of rain, severe drought, high winds, excessive moisture, frozen ground, or other conditions that preclude satisfactory results.
5. Seeding operations must occur when soil moisture is appropriate for seeding operation.
6. Native plant seed shall not receive fertilizer.
7. Wet seed that is moldy or otherwise damaged in transit or storage shall not be used.
8. After seeding is completed, install erosion control blanket per manufacturer's specifications as necessary.

8.0 TREE AND SHRUB INSTALLATION

1. Trees (minimum 2 inch Diameter at Breast Height [DBH]) and shrubs (minimum 5-gallon container with a plant height of at least 3 feet as measured above the planted ground level) shall be installed. The Wetland Consultant must approve substitutions. Exact locations appropriate to site conditions will be determined by the Native Landscape Contractor in the field.
2. The ideal time to plant trees and shrubs is during the fall after leaf drop or early spring before bud-break. Weather conditions are cool and allow plants to establish roots in the new location. However, trees and shrubs properly cared for can be planted throughout the growing season.

3. Shrubs will be installed as shown on the planting plan in the plumb position at the same depth as grown at the nursery. Backfill material will be installed around the roots to cover all sides equally. Shrubs shall be thoroughly watered, to the point of saturation. Additional back fill material should be installed following settling. Mulch the base of the shrubs with 2-4 inches of leaf litter, pine straw, shredded bark, peat moss, or wood chips.
4. Trees will be installed as shown on the planting plan in the plumb position in a shallow, broad planting hole. The hole shall be as much as three times the diameter of the root ball, but only as deep as the root ball. Place the tree in the hole. Always lift the tree by the root ball, never the trunk. The trunk flare should be 2-3 inches above the top of the hole. Straighten the tree in the hole.
5. Fill the hole about 1/3 full and gently but firmly pack the soil around the base of the root ball. Cut and remove the string and wire from around the trunk and top 1/3 of the root ball (altering string and wire around the root ball should not occur if it will void the suppliers guarantee).
6. Fill the remainder of the hole taking care to firmly pack soil to eliminate air pockets. It is not recommended to apply fertilizer at the time of planting. Stake the tree if necessary. Remove support staking and ties after the first year of growth.
7. Mulch the base of the trees with 2 to 4 inches of leaf litter, pine straw, shredded bark, peat moss, or wood chips. Do not cover the trunk of the trees with mulch.
8. Water the trees immediately after planting and then as needed to keep the soil moist but not saturated.

9.0 EROSION CONTROL

1. The Native Landscape Contractor shall be fully responsible for implementing erosion control measures within prescribed planting areas.
2. Sparsely vegetated areas within the planting area are recommended to be covered with erosion control blanket; North American Green S75 or equivalent will be used at a minimum. Fall/winter plantings require North American Green S150 or equivalent. Erosion control blanket shall be installed within 24 hours after an area is seeded. See manufacturer's specifications for erosion control blanket composition.

10.0 CLEAN-UP AND PROTECTION

1. During landscape work, store materials and equipment where directed. Keep pavements clean and work areas and adjoining areas in an orderly condition.
2. Protect landscape work and materials from damage due to landscape operations or operations by other trades and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed by the Wetland Consultant.

11.0 INSPECTIONS AND ACCEPTANCE

1. Owner reserves the right to inspect all seeds and plants either at place of growth or at site before planting for compliance with requirements for name, variety, size, quantity, quality or mix proportion.
2. Native Landscape Contractor is to keep records of the certificates of composition or invoices of seed mixtures and integrity of plant materials with respect to species, variety, and source after purchase.
3. Native Landscape Contractor is to notify Owner within five days after completing initial and/or supplemental plantings in each area.