



US Army Corps  
of Engineers  
St Paul District

APPLICANT: City of Racine

# Public Notice

ISSUED: August 15, 2014

EXPIRES: September 15, 2014

REFER TO: MVP-2013-03306-MHK

SECTION:404 - Clean Water Act  
SECTION: 10 – Rivers and Harbors Act

1. APPLICATION FOR PERMIT TO discharge dredged and fill material into 1.59 acres of lakebed below the ordinary high water mark (OHWM) of Lake Michigan (0.79 acre of which is wetland) to address water quality issues and improve recreational opportunities at Samuel Myers Park.

## 2. SPECIFIC INFORMATION.

APPLICANT'S ADDRESS: Ms. Julie Kinzelman  
City of Racine Department of Public Health  
730 Washington Avenue  
Racine, Wisconsin 53403

PROJECT LOCATION: The project site is located at Samuel Myers Park in SE ¼ of the NE ¼ of Sec. 16, T. 3N., R. 23E., Racine County, Wisconsin. The approximate UTM coordinates are latitude 42.71867, longitude -87.7797.

DESCRIPTION OF PROJECT: The project is located at the beach at Samuel Myers Park which is managed by the City of Racine. Swimming at the beach has been closed for several years and access to the boat launch has also been closed to the public. Over the past five years, conditions at the beach have exceeded recreational water quality standards which have resulted in multiple beach advisories and closures. The beach and shallow marsh wetlands are currently in a degraded condition as a result of high wave action overtopping the existing breakwater, stagnant water along the shoreline, dominance of invasive species (*Phragmites australis*), storm water runoff from the park, elevated levels of bacteria from waterfowl waste, and submerged algae (*Cladophora*). The proposed activities would result in the discharge of dredged and fill material on the bed of 1.59 acres of Lake Michigan (0.79 acres of which is wetland) to raise the breakwater wall and prevent the accumulation and redistribution of stagnant water on the shoreline, to create a series of native vegetated dunes and constructed wetland systems to capture and infiltrate pollution from surface runoff, to elevate the foreshore in order to provide the drainage necessary to alleviate bacteria growing conditions, and to enhance existing wetlands by removing and managing invasive species and planting native wetland species. Improving water quality at the beach would open public access to a designated offshore swimming area. In addition, in order to improve recreational opportunities, cordwalk paths, elevated boardwalks, a viewing platform, kayak launch and seasonal access to the water are proposed.

ALTERNATIVES CONSIDERED: The size and configuration of the lakebed above the OHWM is limited in space to accommodate the proposed water quality improvement features. Several modifications to the bio-retention, infiltration, and constructed wetland design were considered for the project. The proposed locations of these features were chosen because it minimizes the area of impact needed to accomplish water quality improvements. The use of this "sandwich" technique, which would construct wetlands planted with native vegetation and segregate existing wetlands dominated by invasive species, would create a positive grade to promote drainage and reduce non point source

**Operations - Regulatory (2013-03306-MHK)**  
**SUBJECT: Notice of Application for Permit**

solution to the lake. A no build alternative was considered but was eliminated as it would not meet the project purpose and need of improving water quality and providing additional recreational opportunities for Samuel Myers Park.

**QUANTITY, TYPE, AND AREA OF FILL:** Both dredged material and clean sand fill would be discharged over 1.59 acres below the OHWM (0.79 acre of which is wetlands) to obtain appropriate grading for surface runoff infiltration and drainage. Approximately 4,026 cubic yards of clean fill material would create a one foot deep cap over 1,768 cubic yards of dredged material. Dredged material from the Racine Yacht Club in Lake Michigan would be used. The applicant has stated that the dredged material was tested and that the use of the material as proposed would meet state exemption criteria for solid waste management (NR 500.08(3)).

**VEGETATION IN AFFECTED AREA:** According to a Southeastern Wisconsin Regional Planning Commission wetland delineation, the wetland community is approximately 8.5 acres in size and is dominated by Tall reed grass (*Phragmites australis*). Some shrubs such as willow (*Salix spp.*) and dogwood (*Cornus spp.*) are located throughout the wetland area but have been trimmed.

**SOURCE OF FILL MATERIAL:** The supplemental sand fill and riprap utilized for the project would come from onsite or an existing commercial source.

**SURROUNDING LAND USE:** Gateway Technical College borders Samuel Myers Park to the north while mostly residential homes are located to the west.

**DESCRIPTION OF STRUCTURE:** a 6-foot wide kayak launch, 4-foot wide cordwalk paths, 6-foot wide ADA compliant boardwalks, and a 12' by 16' observation platform would be installed below the OHWM allowing pedestrian access over infiltration swales and through the sand dunes. Seasonal Mobi-mats would be temporarily installed when necessary to extend pedestrian access to the water.

To prevent future overtopping of waves, 450 cubic yards of riprap would be placed along 200 linear feet of the existing breakwater to raise the top of the structure by 3 feet. Riprap would consist of angular to sub-angular, irregularly shaped quarry stone approximately 1-2 ton in weight.

**THE FOLLOWING POTENTIALLY TOXIC MATERIALS COULD BE USED AT THE PROJECT SITE:** Fuel, hydraulic fluid, lubricants, coolant and other fluids commonly used by construction equipment would be expected to be present for construction of the project.

**THE FOLLOWING PRECAUTIONS TO PROTECT WATER QUALITY HAVE BEEN DESCRIBED BY THE APPLICANT:** The proposed project would be conducted in compliance with the state's erosion control and stormwater best management practices to prevent sediment from leaving the site during and after construction.

**MITIGATION:** The applicant proposes to compensate for the unavoidable loss of 0.92 acre of shallow marsh wetlands by enhancing 2.64 acres of adjacent wetlands. Enhancement activities would include invasive species removal and management using controlled burning, herbicide application, and soil amendment. The planting of native vegetation such as bulrush, sedges, grasses, rushes and broad-

**Operations - Regulatory (2013-03306-MHK)**  
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leafed arrowhead are proposed. In addition, balsam fir, red maple, silver maple, and additional shrubs and trees would be planted so there would be no net loss of shrub-carr community.

**3. REPLIES/COMMENTS.**

Interested parties are invited to submit to this office written facts, arguments, or objections within 30 days of the date of this notice. These statements should bear upon the suitability of the location and the adequacy of the project and should, if appropriate, suggest any changes believed to be desirable. Comments received may be forwarded to the applicant.

Replies may be addressed to Regulatory Branch, St. Paul District, Corps of Engineers, 20711 Watertown Road, Suite F, Waukesha, Wisconsin 53186.

Or, IF YOU HAVE QUESTIONS ABOUT THE PROJECT, call Marie Kopka at the Waukesha office of the Corps, telephone number (651) 290-5733.

To receive Public Notices by e-mail, go to: [http://mvp-extstp.mvp.usace.army.mil/list\\_server/](http://mvp-extstp.mvp.usace.army.mil/list_server/) and add your information in the New Registration Box.

**4. FEDERALLY-LISTED THREATENED OR ENDANGERED WILDLIFE OR PLANTS OR THEIR CRITICAL HABITAT.**

None were identified by the applicant or are known to exist in the permit area. However, Racine County is within the known or historic range of the following Federally-listed candidate (C), threatened (T) and endangered (E) species:

<u>Species</u>	<u>Habitat</u>
Northern long-eared bat (Proposed as E)	Hibernates in caves and mines – swarming in surrounding wooded areas in autumn. During summer, roosts and forages in upland forests.
Rufa red knot (Proposed as T)	Along Lake Michigan

According the ebird.org website, observations of the Red knot and Piping plover (E) have been documented once at the project site. This application is being coordinated with the U.S. Fish and Wildlife Service. Any comments it may have concerning Federally-listed threatened or endangered wildlife or plants or their critical habitat will be considered in our final assessment of the described work.

**5. JURISDICTION.**

This application is being reviewed in accordance with the practices for documenting Corps jurisdiction under Sections 9 & 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act identified in Regulatory Guidance Letter 08-02. We have made an initial determination that the aquatic resources that would be impacted by the proposed project are regulated by the Corps of Engineers under Section 404 of the Clean Water Act and/or Section(s) 9 & 10 of the Rivers and

**Operations - Regulatory (2013-03306-MHK)**  
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Harbors Act. The Corps will prepare an approved or preliminary jurisdictional determination prior to making a permit decision. Approved jurisdictional determinations are posted on the St. Paul District web page at <http://www.mvp.usace.army.mil/Missions/Regulatory.aspx>.

THE APPLICANT HAS STATED THAT THE FOLLOWING STATE, COUNTY, AND/OR LOCAL PERMITS HAVE BEEN APPLIED FOR/ISSUED:

6. STATE SECTION 401 WATER QUALITY CERTIFICATION.

This Public Notice has been sent to the Wisconsin Department of Natural Resources and is considered by the District Engineer to constitute valid notification to that agency for Section 401 water quality certification. A permit will not be granted until the Wisconsin Department of Natural Resources has issued or waived Section 401 certification.

7. HISTORICAL/ARCHAEOLOGICAL.

This public notice is being sent to the National Park Service and the State Archaeologist for their comments. The latest versions of the national Register of Historic Places and the Wisconsin Historic Preservation Database have been consulted and two shipwreck sites were identified as adjacent to the project area. These shipwreck locations were further reviewed using the Wisconsin Historical Society Wisconsin's Maritime Trails website (<http://www.maritimetrails.org/>) which indicated that the shipwrecks are not within the project area. The results of this review and the Corps' determination of effect will be coordinated with the State Historic Preservation Officer independent of this public notice. Any adverse effects on historic properties will be resolved prior to the Corps authorization, or approval, of the work in connection with this project.

8. PUBLIC HEARING REQUESTS.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, in detail, the reasons for holding a public hearing. A request may be denied if substantive reasons for holding a hearing are not provided or if there is otherwise no valid interest to be served.

9. PUBLIC INTEREST REVIEW.

The decision whether to issue a permit will be based on an evaluation of the probable impact, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects. Among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production and, in general, the needs and welfare of the people. Environmental and other documents will be available for review in the St. Paul District Office.

**Operations - Regulatory (2013-03306-MHK)**  
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The Corps of Engineers is soliciting comments from the public; Federal, State, and local agencies and officials; Indian tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition, or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

10. COASTAL ZONE MANAGEMENT.

The Wisconsin Coastal Management Program (WCMP) in the Department of Administration is inviting public comment regarding this project. The WCMP may conduct a Federal consistency review to verify that the project will comply with State policies in Wisconsin's coastal zone. Further information may be obtained from the Federal Consistency Coordinator at: Wisconsin Coastal Management Program, P.O. Box 7868, Madison, WI 53707-7868; (608) 266-8234. Any comments on whether or not this proposed project complies with the State enforceable policies should be received within 30 days by the Federal Consistency Coordinator.

Todd Vesperman  
Chief, Southeast Section

Enclosures: MVP-2013-03306-MHK Page 1 of 4 through Page 4 of 4

NOTICE TO EDITORS: This public notice is provided as background information and is not a request or contract for publication.



**GENERAL NOTES**

- DIMENSIONS TAKE PRECEDENCE OVER SCALE. CONTRACTOR TO VERIFY ALL DIMENSIONS IN FIELD.
- BEFORE CONSTRUCTION OF ANY IMPROVEMENTS, THE CONTRACTOR MUST CALL DODGE'S HOTLINE SERVICE AND THE CITY OF RACINE FOR THE LOCATION AND STAKING OF ALL EXISTING UNDERGROUND UTILITIES.
- ALL CONSTRUCTION STAKING AND TRAFFIC CONTROL TO BE IN ACCORDANCE WITH THE CITY OF RACINE AND WISCONSIN DEPARTMENT OF TRANSPORTATION REQUIREMENTS.
- THE PROPOSED IMPROVEMENTS SHALL BE CONSTRUCTED ACCORDING TO THE ORDINANCES AND REQUIREMENTS OF THE CITY OF RACINE AND THE STATE OF WISCONSIN DOT, DNR, AND DNR REQUIREMENTS.
- THE PROPOSED IMPROVEMENTS MUST BE CONSTRUCTED IN ACCORDANCE WITH ENGINEERING PLANS APPROVED BY THE CITY OF RACINE. PROPOSED CONSTRUCTION TECHNIQUES MUST BE FOLLOWED IN CONSTRUCTING THE IMPROVEMENTS INDICATED ON THE CONSTRUCTION PLANS.
- THE CONTRACTOR IS RESPONSIBLE FOR EXAMINING ALL SITE CONDITIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION AND IS TO COMPARE THE SITE CONDITIONS TO THOSE INDICATED ON THE ENGINEERING DRAWINGS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ENGINEER AND RESOLVED PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY THE MUNICIPALITY AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION TO ARRANGE FOR APPROPRIATE CONSTRUCTION INSPECTION.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE OWNER WITH AS-BUILT INFORMATION OF THE DESIRED IMPROVEMENTS. ANY CHANGES TO THE DESIGN OR ADDITIONAL ITEMS MUST HAVE PRIOR APPROVAL FROM THE MUNICIPALITY.
- PERMITS MAY BE REQUIRED FROM LOCAL, COUNTY, STATE AND FEDERAL AGENCIES TO IMPLEMENT THE WORK DESCRIBED HEREIN. THESE PERMITS MAY INCLUDE, BUT ARE NOT LIMITED TO, PERMIT FOR ESTABLISHMENT OF A BULKHEAD LINE (MNRG, ACCE, BOPL), PERMIT FOR WORK IN US WATERS (ACCE), PERMIT FOR REMOVAL OF PLANT AND ANIMAL NUISANCE DEPOSITS (MNRG), PERMIT FOR WETLAND FILL OR DISTURBANCE (MNRG), AND/OR PERMIT FOR CONSTRUCTION SITE EROSION WATER RUNOFF (MNRG). PLEASE CONTACT YOUR MUNICIPAL AND COUNTY PLANNING AGENCIES, WNRW WATER RESOURCE SPECIALISTS AND REGIONAL AGENCIES REPRESENTATIVE TO DETERMINE WHICH PERMITS MAY APPLY TO YOUR SPECIFIC PROJECT.
- THE PRIME CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL CONSTRUCTION WITH OTHER CONTRACTORS INVOLVED WITH CONSTRUCTION AND FOR REPORTING ANY DISCREPANCIES BETWEEN THESE PLANS AND PLANS PREPARED BY OTHERS.
- CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY DURING CONSTRUCTION OF IMPROVEMENTS.
- THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING ALL OF THE UTILITIES PRIOR TO THE INSTALLATION OF ANY UNDERGROUND IMPROVEMENTS.
- ANY UTILITIES WHICH ARE DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED TO THE OWNER'S SATISFACTION AND AT THE CONTRACTOR'S EXPENSE.
- 11TH STREET SHALL BE THE CONSTRUCTION ACCESS POINT TO THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE SURFACE OF THE ROAD FOR USE BY THE PUBLIC DURING CONSTRUCTION. 11TH STREET SHALL REMAIN IN SERVICE DURING AND AFTER CONSTRUCTION.

**BEACH NOURISHMENT SAND SPECIFICATIONS**

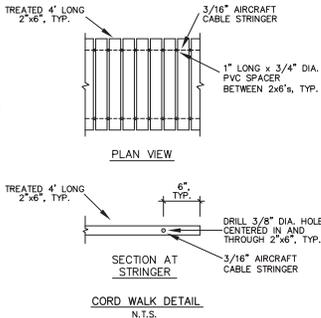
- ALL VEGETATION AND TOPSOIL SHOULD BE REMOVED FROM THE AREA OF THE PROPOSED BEACH NOURISHMENT PRIOR TO PLACING THE SAND.
- BEACH NOURISHMENT SAND SHALL BE NATURAL, MINED, MANUFACTURED, OR MIXTURE THEREOF. PARTICLE SIZE SHALL CONFORM TO TABLE 3. THE AMOUNT OF MATERIAL PASSING THE #200 SIEVE SHALL NOT EXCEED 5.0%.

TABLE 3 - BEACH SAND PARTICLE SIZE DISTRIBUTION

SIEVE SIZE	PERCENT PASSING (BY WT.)
#10	100
#40	100-60
#60	100-40
#100	100-30
#200	100-0
#300	45-0
#400	25

PERCENT PASSING (BY WT.)	GRAIN SIZE DIAMETER (MILLIMETERS)
D100	0.075-0
D60	0.25-0.4
D30	0.15-0.30
D10	0.08-0.26



**MATERIALS SPECIFICATIONS**

**PART 1 - GENERAL**

**1.01 WORK INCLUDED**

**A. BEACH NOURISHMENT SAND**

**B. TOPSOIL**

**C. RIP RAP**

**1.02 QUALITY ASSURANCE**

**1.03 SUBMITTALS**

**RESULTS OF LABORATORY TESTS PERFORMED ON REPRESENTATIVE MATERIALS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO DELIVERY TO THE SITE.**

**A. COMPOST TEST RESULTS**

**B. GRAZING TEST RESULTS**

**C. BEST MANAGEMENT PRACTICES AND WATER LEACH TESTS ON SAME SOURCE AND PRODUCTION PROCESS WITHIN LAST 12 MONTHS ON ANY INDUSTRIAL BY-PRODUCT SAND USED FOR PLANTING SOIL MIX**

**D. RESULTS FROM TESTS IDENTIFIED IN SECTION 1.02**

**PART 2 - PRODUCTS**

**2.01 BEACH NOURISHMENT SAND**

**A. THE BEACH NOURISHMENT SAND SHALL CONFORM TO THE SPECIFICATION PROVIDED ON THIS PLAN IN TABLE 3.**

**B. DREDGED MATERIAL FROM THE NORTH SIDE OF THE RACINE HARBOR MAY BE USED AS LOW HAZARD SOLID WASTE FILL ON THIS SITE, PROVIDED IT IS COVERED BY A MINIMUM OF TWO FEET OF BEACH NOURISHMENT SAND.**

**2.02 TOPSOIL**

**A. TOPSOIL SHALL MEET THE CRITERIA FOR COMPOST IN MNRG SPECIFICATION S100 - COMPOST**

**2.03 RIP RAP**

**A. RIP RAP USED TO SUPPLEMENT THE EXISTING STONE BETTY TO THE EAST SHALL CONSIST OF ANGULAR TO SUB-ANGULAR, IRREGULARLY SHAPED QUARRY STONE OF DURABLE ROCK QUALITY THAT MEETS ARMY CORPS OF ENGINEERS' STANDARDS. THE STONES SHALL BE OF 1.0 TO 2.5 TON WEIGHT, WITH A MEAN DIAMETER OF INDIVIDUAL STONES OF APPROXIMATELY 27" TO 32".**

**2.04 SUPPLEMENT RIP-RAP BREAKWALL BEACH NOURISHMENT, INFILTRATION BASIN, KAYAK LAUNCH AND NATIVE VEGETATION**

**2.05 BEACH NOURISHMENT, INFILTRATION BASIN, KAYAK LAUNCH, AND NATIVE VEGETATION**

**2.06 BEACH NOURISHMENT, CORDWALKS, AND NATIVE VEGETATION**

**2.07 BEACH NOURISHMENT, CORDWALKS, AND NATIVE VEGETATION**

**2.08 ELEVATED BOARDWALK AND ASPHALT PATHS (PART A) AND LOWER SCENIC OVERLOOK (PART B)**

**2.09 CORDWALK LOOP**

**2.10 UPPER SCENIC OVERLOOK AND CONNECTING ASPHALT PATHS**

**2.11 GAZEBO AND CONNECTING ASPHALT PATHS**

**2.12 EASTERN NATIVE VEGETATION AREA (SEE LANDSCAPE PLAN)**

**2.13 LOWER WESTERN NATIVE VEGETATION AND PICNIC AREAS (SEE LANDSCAPE PLAN)**

**2.14 UPPER WESTERN NATIVE VEGETATION AND PICNIC AREAS (SEE LANDSCAPE PLAN)**

**2.15 SUPPLEMENT RIP-RAP BREAKWALL BEACH NOURISHMENT, INFILTRATION BASIN, KAYAK LAUNCH AND NATIVE VEGETATION**

**2.16 BEACH NOURISHMENT, INFILTRATION BASIN, KAYAK LAUNCH, AND NATIVE VEGETATION**

**2.17 BEACH NOURISHMENT, CORDWALKS, AND NATIVE VEGETATION**

**2.18 BEACH NOURISHMENT, CORDWALKS, AND NATIVE VEGETATION**

**2.19 ELEVATED BOARDWALK AND ASPHALT PATHS (PART A) AND LOWER SCENIC OVERLOOK (PART B)**

**2.20 CORDWALK LOOP**

**2.21 UPPER SCENIC OVERLOOK AND CONNECTING ASPHALT PATHS**

**2.22 GAZEBO AND CONNECTING ASPHALT PATHS**

**2.23 EASTERN NATIVE VEGETATION AREA (SEE LANDSCAPE PLAN)**

**2.24 LOWER WESTERN NATIVE VEGETATION AND PICNIC AREAS (SEE LANDSCAPE PLAN)**

**2.25 UPPER WESTERN NATIVE VEGETATION AND PICNIC AREAS (SEE LANDSCAPE PLAN)**

**2.26 SUPPLEMENT RIP-RAP BREAKWALL BEACH NOURISHMENT, INFILTRATION BASIN, KAYAK LAUNCH AND NATIVE VEGETATION**

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**2.29 BEACH NOURISHMENT, CORDWALKS, AND NATIVE VEGETATION**

**2.30 ELEVATED BOARDWALK AND ASPHALT PATHS (PART A) AND LOWER SCENIC OVERLOOK (PART B)**

**2.31 CORDWALK LOOP**

**2.32 UPPER SCENIC OVERLOOK AND CONNECTING ASPHALT PATHS**

**2.33 GAZEBO AND CONNECTING ASPHALT PATHS**

**2.34 EASTERN NATIVE VEGETATION AREA (SEE LANDSCAPE PLAN)**

**2.35 LOWER WESTERN NATIVE VEGETATION AND PICNIC AREAS (SEE LANDSCAPE PLAN)**

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**2.40 BEACH NOURISHMENT, CORDWALKS, AND NATIVE VEGETATION**

**2.41 ELEVATED BOARDWALK AND ASPHALT PATHS (PART A) AND LOWER SCENIC OVERLOOK (PART B)**

**2.42 CORDWALK LOOP**

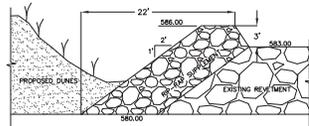
**2.43 UPPER SCENIC OVERLOOK AND CONNECTING ASPHALT PATHS**

**2.44 GAZEBO AND CONNECTING ASPHALT PATHS**

**2.45 EASTERN NATIVE VEGETATION AREA (SEE LANDSCAPE PLAN)**

**2.46 LOWER WESTERN NATIVE VEGETATION AND PICNIC AREAS (SEE LANDSCAPE PLAN)**

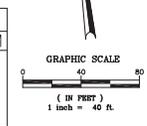
**2.47 UPPER WESTERN NATIVE VEGETATION AND PICNIC AREAS (SEE LANDSCAPE PLAN)**



**VOLUME CALCULATIONS FOR SAND FILL**

	ABOVE OHWM	BELOW OHWM
TOTAL FILL VOLUME	1823 CY	5794 CY
MAX ALLOWABLE DREDGED MATERIAL*	832 CY	4050 CY
ANTICIPATED AMOUNT OF DREDGED FILL**	832 CY	1768 CY
ANTICIPATED AMOUNT OF CLEAN SAND FILL	991 CY	4026 CY

\*ASSUMES A 1-FOOT CAP OF CLEAN SAND FILL  
 \*\*ONLY 2,600 CY OF DREDGED FILL ON-SITE - AS MUCH AS POSSIBLE WILL BE USED ABOVE THE OHWM BEFORE PLACING BELOW THE OHWM



**MILLER ENGINEERS SCIENTISTS**  
 5308 S. 12th Street, Racine, WI 53406  
 Phone 920-468-0164, Fax 920-468-0869, www.millerengineers.com

**UW OSHKOSH SAMUEL MYERS 6TH TO 11TH STREET RACINE, WISCONSIN**

SCALE: HOR. 1"=40'  
 DATE: 7-15-2014  
 JOB: 11-18931 20-103  
 BY: TRO  
 CK: RGM  
 SHEET: 1 OF 1

REVISIONS:  
 1. 7-15-2014 CREATED DREDGED FILL SURFACE  
 2. 7-15-2014 ADDED UNPAVED CONTIGUOUS FILL ZONE  
 3. 8-13-2014 UPDATED OHWM AND WETLAND LINES  
 4. 9-26-2014 UPDATED OHWM AND WETLAND LINES  
 5. 1-1-2014 UPDATED CONTIGUOUS TO MATCH NEW CONCEPT  
 6. 8-1-2014

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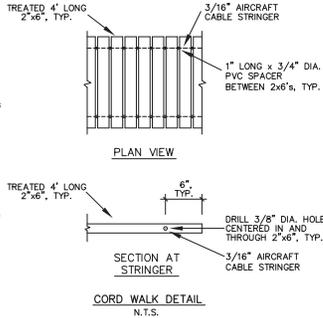
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#40	100-60
#60	100-50
#70	100-0
#100	60-0
#200	5

PERCENT PASSING (BY WT.)	GRAIN SIZE DIAMETER (MILLIMETERS)
D60	0.25-0.50
D80	0.2-0.4
D90	0.15-0.30
D10	0.08-0.26



**MATERIALS SPECIFICATIONS**

- PART 1 - GENERAL**
- 1.01 WORK INCLUDED
    - A. BEACH NOURISHMENT SAND
    - B. TOPSOIL
    - C. RIP RAP
  - 1.02 QUALITY ASSURANCE
 

THESE TESTS SHALL BE PERFORMED ON MATERIAL PRIOR TO SHIPMENT TO THE SITE WITH A MINIMUM OF ONE TEST PER MATERIAL TYPE.

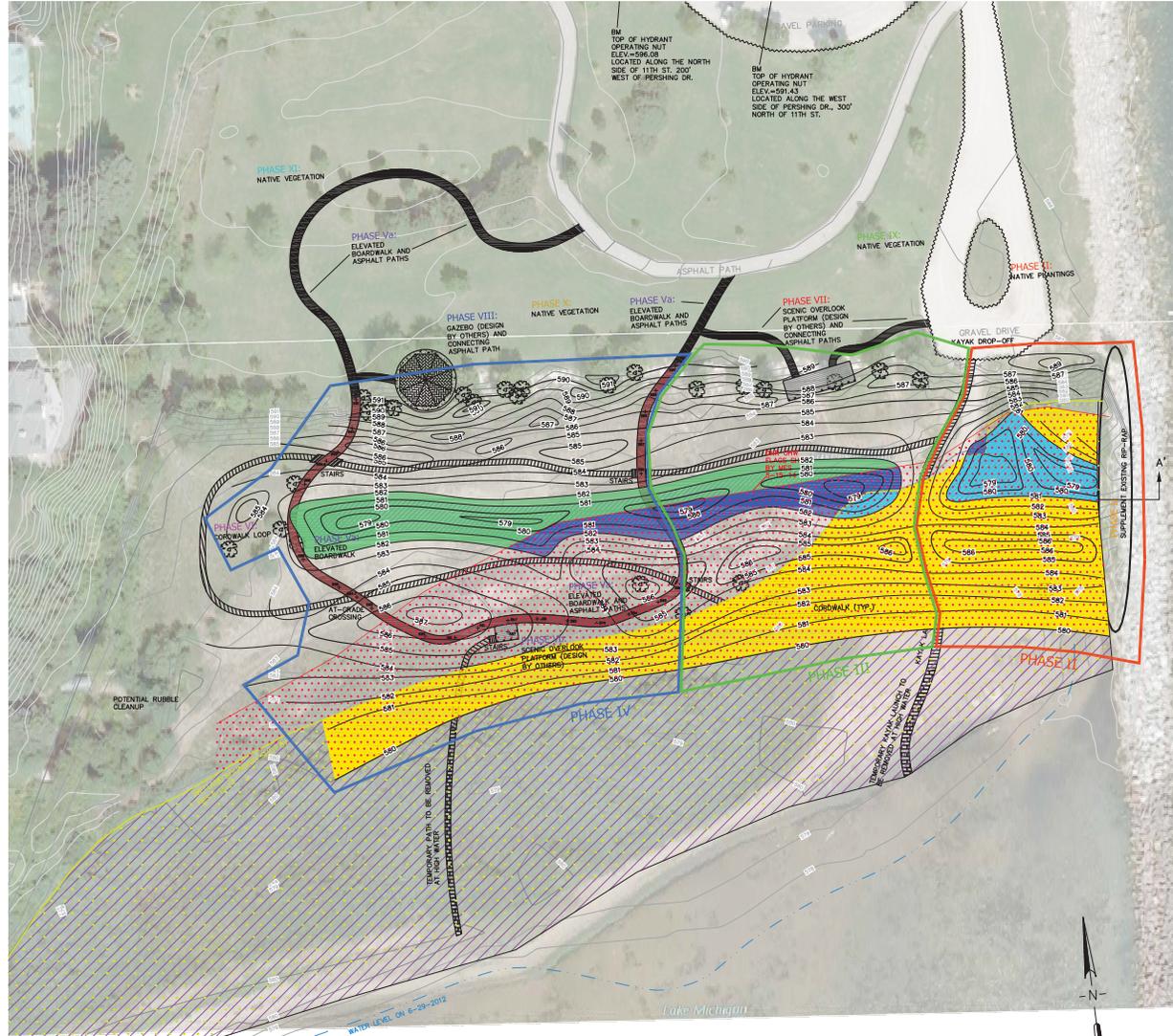
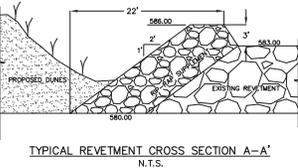
    - A. ASTM C 117 AND C 136 TESTS ON SAND USED FOR PLANTING SOIL MIX AND FOR SAND USED AS A FILTER BENEATH THE BOULDER SOL MIX.
  - 1.03 SUBMITTALS
 

RESULTS OF LABORATORY TESTS PERFORMED ON REPRESENTATIVE MATERIALS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO DELIVERY TO THE SITE.

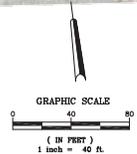
    - A. COMPOST TEST RESULTS
    - B. CERTIFICATION THAT THE DRAINAGE AGGREGATE MEETS SPECIFICATION
    - C. TESTS MEASURING COMPOST AND WATER LEACH TESTS ON SAME SOURCE AND PRODUCTION PROCESS WITHIN LAST 12 MONTHS ON ANY INDUSTRIAL BY-PRODUCT SAND USED FOR PLANTING SOIL MIX
    - D. RESULTS FROM TESTS IDENTIFIED IN SECTION 1.02
- PART 2 - PRODUCTS**
- 2.01 BEACH NOURISHMENT SAND
    - A. THE BEACH NOURISHMENT SAND SHALL CONFORM TO THE SPECIFICATION PROVIDED ON THIS PLAN IN TABLE 3.
    - B. DREDGED MATERIAL FROM THE NORTH SIDE OF THE RACINE HARBOR MAY BE USED AS LOW HAZARD SOLID WASTE FILL ON THIS SITE, PROVIDED IT IS COVERED BY A MINIMUM OF TWO FEET OF BEACH NOURISHMENT SAND.
  - 2.02 TOPSOIL
    - A. TOPSOIL SHALL MEET THE CRITERIA FOR COMPOST IN MNR SPECIFICATION S100 - COMPOST
  - 2.03 RIP RAP
    - A. RIP RAP USED TO SUPPLEMENT THE EXISTING STONE BETTY TO THE EAST SHALL CONSIST OF ANGULAR TO SUB-ANGULAR, IRREGULARLY SHAPED QUARRY STONE OF DURABLE ROCK QUALITY THAT MEETS ARMY CORPS OF ENGINEERS' STANDARDS. THE STONES SHALL BE OF 1.0 TO 2.5 TON WEIGHT, WITH A MEAN DIAMETER OF INDIVIDUAL STONES OF APPROXIMATELY 27" TO 32".

**SEQUENCE OF CONSTRUCTION**

- PHASE I: SUPPLEMENT RIP-RAP BREAKWALL, BEACH NOURISHMENT, INFILTRATION BASIN, KAYAK LAUNCH AND NATIVE VEGETATION
- PHASE II: BEACH NOURISHMENT, INFILTRATION BASIN, KAYAK LAUNCH, AND NATIVE VEGETATION
- PHASE III: BEACH NOURISHMENT, CORDWALKS, AND NATIVE VEGETATION
- PHASE IV: BEACH NOURISHMENT, CORDWALKS, AND NATIVE VEGETATION
- PHASE V: ELEVATED BOARDWALK AND ASPHALT PATHS (PART A) AND LOWER SCENIC OVERLOOK (PART B)
- PHASE VI: CORDWALK LOOP
- PHASE VII: UPPER SCENIC OVERLOOK AND CONNECTING ASPHALT PATHS
- PHASE VIII: GAZEBO AND CONNECTING ASPHALT PATHS
- PHASE IX: EASTERN NATIVE VEGETATION AREA (SEE LANDSCAPE PLAN)
- PHASE X: LOWER WESTERN NATIVE VEGETATION AND PICNIC AREAS (SEE LANDSCAPE PLAN)
- PHASE XI: UPPER WESTERN NATIVE VEGETATION AND PICNIC AREAS (SEE LANDSCAPE PLAN)



	EAST OF KAYAK LAUNCH	WEST OF KAYAK LAUNCH
TOTAL LAKEBED FILL BELOW OHWM	18,399 ft <sup>3</sup> (0.42 AC)	51,091 ft <sup>3</sup> (1.17 AC)
TOTAL AREA OF FILL WITHIN WETLAND DELINEATION	13,622 ft <sup>2</sup> (0.31 AC)	20,857 ft <sup>2</sup> (0.48 AC)
EXISTING WETLAND CONVERTED TO CONSTRUCTED WETLAND	4,143 ft <sup>2</sup> (0.10 AC)	498 ft <sup>2</sup> (0.01 AC)
CONSTRUCTED WETLANDS BELOW OHWM	126 ft <sup>2</sup> (0.003 AC)	4,990 ft <sup>2</sup> (0.11 AC)
CONSTRUCTED WETLANDS ABOVE OHWM	0 ft <sup>2</sup>	10,158 ft <sup>2</sup> (0.23 AC)
ENHANCED WETLAND (INVASIVE SPECIES MANAGEMENT)	8,078 ft <sup>2</sup> (0.19 AC)	106,874 ft <sup>2</sup> (2.45 AC)



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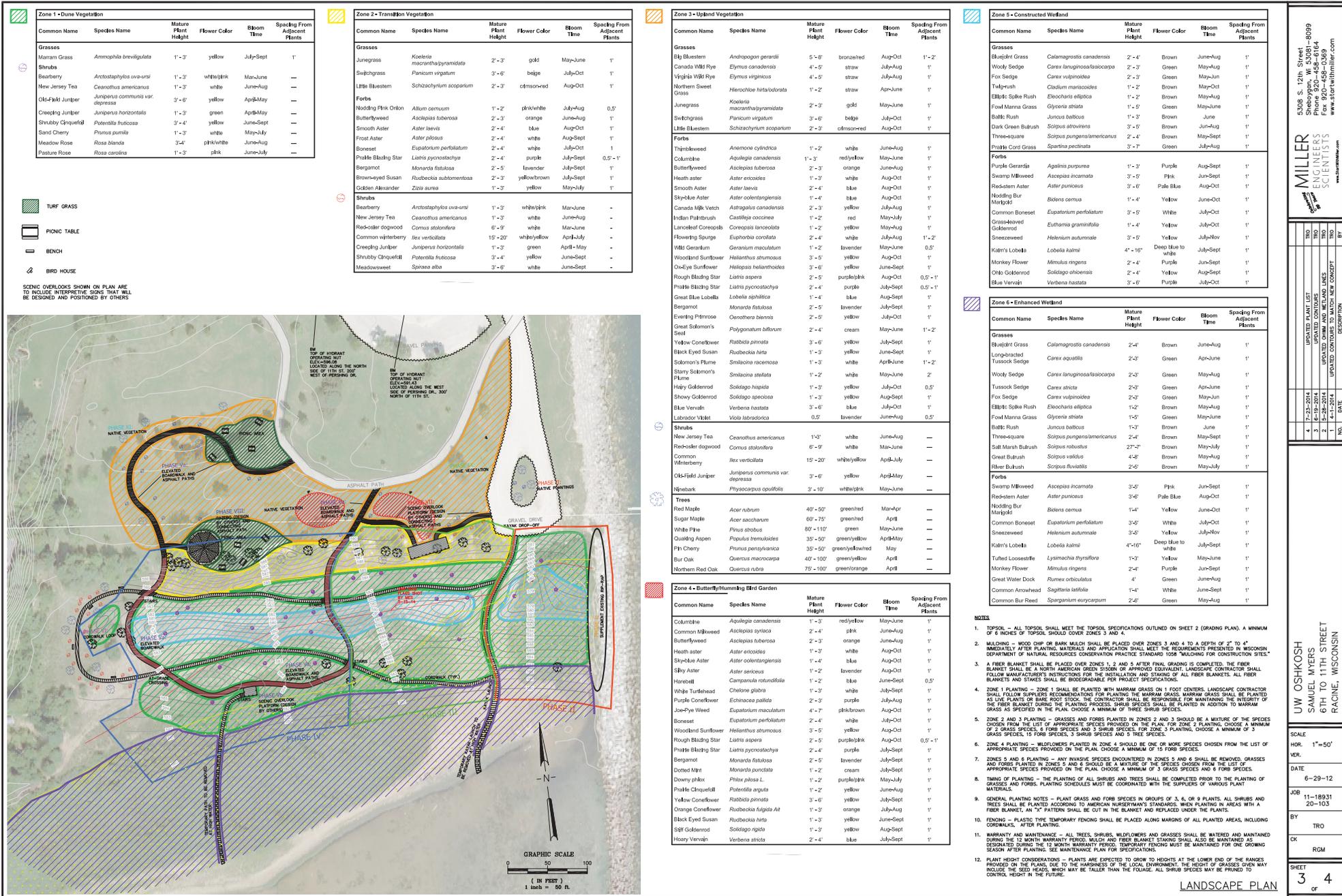
**MILLER ENGINEERS SCIENTISTS**

NO.	DATE	DESCRIPTION
1	1-15-2014	ISSUE
2	5-28-2014	UPDATED CONTIGUES TO MATCH NEW CONCEPT
3	6-10-2014	UPDATED LAYOUT AND AREA TABLE
4	7-15-2014	UPDATED LAYOUT AND AREA TABLE
5	8-13-2014	UPDATED CONTIGUES AND WETLAND LINES
6	9-1-2014	UPDATED CONTIGUES TO MATCH NEW CONCEPT
7	10-1-2014	ISSUE

UW OSHKOSH  
 SAMUEL MYERS  
 6TH TO 11TH STREET  
 RACINE, WISCONSIN

SCALE: 1"=40'  
 HOR. VER.  
 DATE: 6-29-12  
 JOB: 11-18931  
 20-103  
 BY: TRO  
 CK: RGM  
 SHEET: 4 OF 4

ACOE AREAS



Zone 1 - Dune Vegetation					
Common Name	Species Name	Mature Plant Height	Flower Color	Bloom Time	Spacing From Adjacent Plants
<b>Grasses</b>					
Marram Grass	<i>Ammophila brevigulata</i>	1'-3'	yellow	July-Sept	1'
<b>Shrubs</b>					
Beachberry	<i>Arctostaphylos uva-ursi</i>	1'-3'	white/pink	Mar-June	—
New Jersey Tea	<i>Ceanothus americanus</i>	1'-3'	white	June-Aug	—
Old-Field Juniper	<i>Juniperus communis</i> var. <i>depressa</i>	3'-6'	yellow	April-May	—
Creeching Juniper	<i>Juniperus horizontalis</i>	1'-3'	green	April-May	—
Shrubby Cinquefoil	<i>Potentilla fruticosa</i>	3'-4'	yellow	June-Sept	—
Salt Cherry	<i>Prunus pumila</i>	1'-3'	white	May-July	—
Meadow Rose	<i>Rosa blanda</i>	3'-4'	pink/white	June-Aug	—
Passure Rose	<i>Rosa carolina</i>	1'-3'	pink	June-July	—

Zone 2 - Transition Vegetation					
Common Name	Species Name	Mature Plant Height	Flower Color	Bloom Time	Spacing From Adjacent Plants
<b>Grasses</b>					
Junegrass	<i>Koeleria macrantha</i> /pyramidalis	2'-3'	gold	May-June	1'
Switchgrass	<i>Panicum virgatum</i>	3'-6'	beige	July-Oct	1'
Little Bluestem	<i>Schizachyrium scoparium</i>	2'-3'	cdm/scrwd	Aug-Oct	1'
<b>Forbs</b>					
Nodding Pink Onion	<i>Allium cernuum</i>	1'-2'	pink/white	July-Aug	0.5'
Butterflyweed	<i>Asclepias tuberosa</i>	2'-3'	orange	June-Aug	1'
Smooth Aster	<i>Aster laevis</i>	2'-4'	blue	Aug-Oct	1'
Frost Aster	<i>Aster pilosus</i>	2'-4'	white	Aug-Sept	1'
Boneset	<i>Eupatorium perfoliatum</i>	2'-4'	white	July-Sept	1'
Prattle Blazing Star	<i>Liatris pycnostachya</i>	2'-4'	purple	July-Sept	0.5 - 1'
Bergamot	<i>Monarda fistulosa</i>	2'-5'	lavender	July-Sept	1'
Brown-eyed Susan	<i>Rutbeckia subumbellata</i>	2'-3'	yellow/brown	July-Sept	1'
Giddens Alexander	<i>Zizia aurea</i>	1'-3'	yellow	May-July	1'
<b>Shrubs</b>					
Beachberry	<i>Arctostaphylos uva-ursi</i>	1'-3'	white/pink	Mar-June	—
New Jersey Tea	<i>Ceanothus americanus</i>	1'-3'	white	June-Aug	—
Red-osier dogwood	<i>Cornus stolonifera</i>	6'-9'	white	Mar-June	—
Common winterberry	<i>Ilex verticillata</i>	15'-20'	white/yellow	April-July	—
Creeching Juniper	<i>Juniperus horizontalis</i>	1'-3'	green	April-May	—
Shrubby Cinquefoil	<i>Potentilla fruticosa</i>	3'-4'	yellow	June-Sept	—
Meadowweet	<i>Spiraea alba</i>	3'-6'	white	June-Sept	—

Zone 3 - Upland Vegetation					
Common Name	Species Name	Mature Plant Height	Flower Color	Bloom Time	Spacing From Adjacent Plants
<b>Grasses</b>					
Big Bluestem	<i>Andropogon gerardii</i>	5'-8'	bronzed	Aug-Oct	1'-2'
Canada Wild Rye	<i>Elymus canadensis</i>	4'-5'	straw	July-Aug	1'
Virginia Wild Rye	<i>Elymus hirtus</i>	4'-5'	straw	July-Aug	1'
Northern Sweet Grass	<i>Heterochloa vittata/covata</i>	1'-2'	straw	Apr-June	1'
Junegrass	<i>Koeleria macrantha</i> /pyramidalis	2'-3'	gold	May-June	1'
Switchgrass	<i>Panicum virgatum</i>	3'-6'	beige	July-Oct	1'
Little Bluestem	<i>Schizachyrium scoparium</i>	2'-3'	cdm/scrwd	Aug-Oct	1'
<b>Forbs</b>					
Thimbleweed	<i>Anemone cylindrica</i>	1'-2'	white	June-Aug	1'
Columbine	<i>Aquilegia canadensis</i>	1'-3'	red/yellow	May-June	1'
Butterflyweed	<i>Asclepias tuberosa</i>	2'-3'	orange	June-Aug	1'
Heath aster	<i>Aster ericoides</i>	1'-3'	white	Aug-Oct	1'
Smooth Aster	<i>Aster laevis</i>	2'-4'	blue	Aug-Oct	1'
Sky-blue Aster	<i>Aster orientalis</i>	1'-4'	blue	Aug-Oct	1'
Canada Milk Vetch	<i>Astragalus canadensis</i>	2'-3'	yellow	July-Aug	1'
Indian Paintbrush	<i>Cassia coccinea</i>	1'-2'	red	May-July	1'
Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i>	1'-2'	yellow	May-Aug	1'
Flowering Spurge	<i>Euphorbia corollata</i>	2'-4'	white	July-Aug	1'-2'
Wild Geranium	<i>Geranium maculatum</i>	1'-2'	lavender	May-June	0.5'
Woodland Sunflower	<i>Helianthus strumosus</i>	3'-5'	yellow	Aug-Oct	1'
Orange Sunflower	<i>Helianthus scaberrimus</i>	3'-6'	yellow	June-Sept	1'
Rough Blazing Star	<i>Liatris spicata</i>	2'-5'	purple/pink	July-Sept	0.5 - 1'
Prattle Blazing Star	<i>Liatris pycnostachya</i>	2'-4'	purple	July-Sept	0.5 - 1'
Great Blue Lobelia	<i>Lobelia siphilitica</i>	1'-4'	blue	Aug-Sept	1'
Bergamot	<i>Monarda fistulosa</i>	2'-5'	lavender	July-Sept	1'
Evering Pimpernel	<i>Oenothera biennis</i>	2'-5'	yellow	July-Oct	1'
Yellow Coneflower	<i>Rudbeckia hirta</i>	3'-6'	yellow	July-Sept	1'
Black Eye Susan	<i>Rudbeckia hirta</i>	1'-3'	yellow	July-Sept	1'
Solomon's Plume	<i>Smilacina racemosa</i>	1'-3'	white	April-June	1'-2'
Starry Solomon's Plume	<i>Smilacina stellata</i>	1'-2'	white	May-June	2'
Hairy Goldenrod	<i>Solidago rugosa</i>	1'-3'	yellow	July-Oct	0.5'
Shiny Goldenrod	<i>Solidago speciosa</i>	1'-3'	yellow	Aug-Sept	1'
Blue Vervain	<i>Verbena hastata</i>	3'-4'	blue	July-Oct	1'
Lanceleaf Violet	<i>Viola lanceolata</i>	0.5'	lavender	June-Aug	0.5'
<b>Shrubs</b>					
New Jersey Tea	<i>Ceanothus americanus</i>	1'-3'	white	June-Aug	—
Red-osier dogwood	<i>Cornus stolonifera</i>	6'-9'	white	Mar-June	—
Common Winterberry	<i>Ilex verticillata</i>	15'-20'	white/yellow	April-July	—
Old-Field Juniper	<i>Juniperus communis</i> var. <i>depressa</i>	3'-6'	yellow	April-May	—
Ninebark	<i>Physocarpus opulifolius</i>	3'-10'	white/pink	May-June	—
<b>Trees</b>					
Red Maple	<i>Acer rubrum</i>	40'-50'	green/red	Mar-Apr	—
Sugar Maple	<i>Acer saccharum</i>	60'-75'	green/red	April	—
White Pine	<i>Pinus strobus</i>	80'-110'	green	May-June	—
Quaking Aspen	<i>Populus tremuloides</i>	35'-50'	green/yellow	April-May	—
Pine Cherry	<i>Prunus pennsylvanica</i>	35'-50'	green/yellow/red	May	—
Bur Oak	<i>Quercus macrocarpa</i>	40'-100'	green/yellow	April	—
Northern Red Oak	<i>Quercus rubra</i>	75'-100'	green/orange	April	—

Zone 5 - Constructed Wetland					
Common Name	Species Name	Mature Plant Height	Flower Color	Bloom Time	Spacing From Adjacent Plants
<b>Grasses</b>					
Bluejoint Grass	<i>Calamagrostis canadensis</i>	2'-4'	Brown	June-Aug	1'
Woolly Sedge	<i>Carex lasiocarpa/lasiocarpa</i>	2'-3'	Green	May-Aug	1'
Fox Sedge	<i>Carex vulpinoidea</i>	2'-3'	Green	May-June	1'
Tule Rush	<i>Cladium mariscoides</i>	1'-2'	Brown	May-Oct	1'
Elliptic Spike Rush	<i>Eleocharis elliptica</i>	1'-2'	Brown	May-Aug	1'
Fowl Manna Grass	<i>Glyceria striata</i>	1'-5'	Green	May-June	1'
Baltic Rush	<i>Junco ballous</i>	1'-3'	Brown	June	1'
Dark Green Bulrush	<i>Scirpus pungens/americanus</i>	3'-5'	Brown	May-Sept	1'
Three-square	<i>Scirpus pungens/americanus</i>	2'-4'	Brown	May-Sept	1'
Heath Cord Grass	<i>Spartina pectinata</i>	3'-7'	Green	July-Aug	1'
<b>Forbs</b>					
Purple Gerardia	<i>Agalinis purpurea</i>	1'-3'	Purple	Aug-Sept	1'
Swamp Milkweed	<i>Asclepias incarnata</i>	3'-5'	Pink	June-Sept	1'
Redstem Aster	<i>Aster puniceus</i>	3'-6'	Pale Blue	Aug-Oct	1'
Nodding Blue Aster	<i>Bidens cernua</i>	1'-4'	Yellow	June-Oct	1'
Common Boneset	<i>Eupatorium perfoliatum</i>	3'-5'	White	July-Oct	1'
Goldenweed	<i>Euthamia graminifolia</i>	1'-4'	Yellow	July-Oct	1'
Sneezeweed	<i>Helenium autumnale</i>	3'-5'	Yellow	July-Nov	1'
Kalm's Lobelia	<i>Lobelia alata</i>	4'-16'	Deep blue to white	July-Sept	1'
Monkey Flower	<i>Minulus rigens</i>	2'-4'	Purple	June-Sept	1'
Ohio Goldenrod	<i>Solidago ohioensis</i>	2'-4'	Yellow	Aug-Sept	1'
Blue Vervain	<i>Verbena hastata</i>	3'-6'	Purple	July-Oct	1'

Zone 6 - Enhanced Wetland					
Common Name	Species Name	Mature Plant Height	Flower Color	Bloom Time	Spacing From Adjacent Plants
<b>Grasses</b>					
Bluejoint Grass	<i>Calamagrostis canadensis</i>	2'-4'	Brown	June-Aug	1'
Unspiculated Tussock Sedge	<i>Carex aquatica</i>	2'-3'	Green	Apr-June	1'
Woolly Sedge	<i>Carex lasiocarpa/lasiocarpa</i>	2'-3'	Green	May-Aug	1'
Fox Sedge	<i>Carex stricta</i>	2'-3'	Green	Apr-June	1'
Fox Sedge	<i>Carex vulpinoidea</i>	2'-3'	Green	May-June	1'
Elliptic Spike Rush	<i>Eleocharis elliptica</i>	1'-2'	Brown	May-Aug	1'
Fowl Manna Grass	<i>Glyceria striata</i>	1'-5'	Green	May-June	1'
Baltic Rush	<i>Junco ballous</i>	1'-3'	Brown	June	1'
Three-square	<i>Scirpus pungens/americanus</i>	2'-4'	Brown	May-Sept	1'
Salt Marsh Bulrush	<i>Scirpus robustus</i>	27'-7'	Brown	May-July	1'
Great Bulrush	<i>Scirpus validus</i>	4'-8'	Brown	May-Aug	1'
River Bulrush	<i>Scirpus fluviatilis</i>	2'-5'	Brown	May-July	1'
<b>Forbs</b>					
Swamp Milkweed	<i>Asclepias incarnata</i>	3'-5'	Pink	June-Sept	1'
Nodding Blue Aster	<i>Aster puniceus</i>	3'-6'	Pale Blue	Aug-Oct	1'
Nodding Blue Aster	<i>Bidens cernua</i>	1'-4'	Yellow	June-Oct	1'
Common Boneset	<i>Eupatorium perfoliatum</i>	3'-5'	White	July-Oct	1'
Sneezeweed	<i>Helenium autumnale</i>	3'-5'	Yellow	July-Nov	1'
Kalm's Lobelia	<i>Lobelia alata</i>	4'-16'	Deep blue to white	July-Sept	1'
Tufted Loosestrife	<i>Lysimachia thyrisiflora</i>	1'-3'	Yellow	May-June	1'
Monkey Flower	<i>Minulus rigens</i>	2'-4'	Purple	June-Sept	1'
Great Water Duck	<i>Rumex crispifolius</i>	4'	Green	June-Aug	1'
Common Arrowweed	<i>Sagittaria latifolia</i>	1'-4'	White	June-Sept	1'
Common Bur Reed	<i>Sparganium eurycarpum</i>	2'-6'	Green	May-Aug	1'

- TURF GRASS
  - PINIC TABLE
  - BENCH
  - BIRD HOUSE
- SCENIC OVERLOOKS SHOWN ON PLAN ARE TO INCLUDE INTERPRETIVE SIGNS THAT WILL BE DESIGNED AND POSITIONED BY OTHERS

Common Name	Species Name	Mature Plant Height	Flower Color	Bloom Time	Spacing From Adjacent Plants
<b>Grasses</b>					
Bluejoint Grass	<i>Calamagrostis canadensis</i>	2'-4'	Brown	June-Aug	1'
Unspiculated Tussock Sedge	<i>Carex aquatica</i>	2'-3'	Green	Apr-June	1'
Woolly Sedge	<i>Carex lasiocarpa/lasiocarpa</i>	2'-3'	Green	May-Aug	1'
Fox Sedge	<i>Carex stricta</i>	2'-3'	Green	Apr-June	1'
Fox Sedge	<i>Carex vulpinoidea</i>	2'-3'	Green	May-June	1'
Elliptic Spike Rush	<i>Eleocharis elliptica</i>	1'-2'	Brown	May-Aug	1'
Fowl Manna Grass	<i>Glyceria striata</i>	1'-5'	Green	May-June	1'
Baltic Rush	<i>Junco ballous</i>	1'-3'	Brown	June	1'
Three-square	<i>Scirpus pungens/americanus</i>	2'-4'	Brown	May-Sept	1'
Salt Marsh Bulrush	<i>Scirpus robustus</i>	27'-7'	Brown	May-July	1'
Great Bulrush	<i>Scirpus validus</i>	4'-8'	Brown	May-Aug	1'
River Bulrush	<i>Scirpus fluviatilis</i>	2'-5'	Brown	May-July	1'
<b>Forbs</b>					
Swamp Milkweed	<i>Asclepias incarnata</i>	3'-5'	Pink	June-Sept	1'
Nodding Blue Aster	<i>Aster puniceus</i>	3'-6'	Pale Blue	Aug-Oct	1'
Nodding Blue Aster	<i>Bidens cernua</i>	1'-4'	Yellow	June-Oct	1'
Common Boneset	<i>Eupatorium perfoliatum</i>	3'-5'	White	July-Oct	1'
Sneezeweed	<i>Helenium autumnale</i>	3'-5'	Yellow	July-Nov	1'
Kalm's Lobelia	<i>Lobelia alata</i>	4'-16'	Deep blue to white	July-Sept	1'
Tufted Loosestrife	<i>Lysimachia thyrisiflora</i>	1'-3'	Yellow	May-June	1'
Monkey Flower	<i>Minulus rigens</i>	2'-4'	Purple	June-Sept	1'
Great Water Duck	<i>Rumex crispifolius</i>	4'	Green	June-Aug	1'
Common Arrowweed	<i>Sagittaria latifolia</i>	1'-4'	White	June-Sept	1'
Common Bur Reed	<i>Sparganium eurycarpum</i>	2'-6'	Green	May-Aug	1'

- NOTES**
- TOPSOIL - ALL TOPSOIL SHALL MEET THE TOPSOIL SPECIFICATIONS OUTLINED ON SHEET 2 (GRADING PLAN). A MINIMUM OF 6 INCHES OF TOPSOIL SHOULD COVER ZONES 3 AND 4.
  - MULCHING - WOOD CHIP OR BARK MULCH SHALL BE PLACED OVER ZONES 3 AND 4 TO A DEPTH OF 2" TO 4" IMMEDIATELY AFTER PLANTING. MATERIALS AND APPLICATION SHALL MEET THE REQUIREMENTS PRESENTED IN WISCONSIN DEPARTMENT OF NATURAL RESOURCES CONSERVATION PRACTICES STANDARD WORK MANUALS FOR CONSTRUCTION SITES.
  - A FIBER BLANKET SHALL BE PLACED OVER ZONES 1, 2 AND 5 AFTER FINAL GRADING IS COMPLETED. THE FIBER BLANKET SHALL BE A THICK AMERICAN ORIGIN FIBER OR APPROVED EQUIVALENT. LANDSCAPE CONTRACTOR SHALL FOLLOW MANUFACTURER'S INSTRUCTIONS FOR THE INSTALLATION AND STRAPPING OF ALL FIBER BLANKETS. ALL FIBER BLANKETS AND STRAPS SHALL BE BIODEGRADABLE PER PROJECT SPECIFICATIONS.
  - ZONE 1 PLANTING - ZONE 1 SHALL BE PLANTED WITH MARRAM GRASS ON 1 FOOT CENTERS. LANDSCAPE CONTRACTOR SHALL FOLLOW SUPPLIER'S RECOMMENDATIONS FOR PLANTING THE MARRAM GRASS. MARRAM GRASS SHALL BE PLANTED AS LIVE PLANTS OR BARE ROOTS AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF THE FIBER BLANKET DURING THE PLANTING PROCESS. SHRUB SPECIES SHALL BE PLANTED IN ADDITION TO MARRAM GRASS AS SPECIFIED IN THE PLAN. CHOOSE A MINIMUM OF THREE SHRUB SPECIES.
  - ZONE 2 AND 3 PLANTING - GRASSES AND FORBS PLANTED IN ZONES 2 AND 3 SHOULD BE A MIXTURE OF THE SPECIES CHOSEN FROM THE LIST OF APPROPRIATE SPECIES PROVIDED ON THE PLAN. FOR ZONE 2 PLANTING, CHOOSE A MINIMUM OF 2 GRASS SPECIES, 6 FORB SPECIES AND 3 SHRUB SPECIES. FOR ZONE 3 PLANTING, CHOOSE A MINIMUM OF 3 GRASS SPECIES, 15 FORB SPECIES, 3 SHRUB SPECIES AND 5 TREE SPECIES.
  - ZONE 4 PLANTING - WETLANDS PLANTED IN ZONE 4 SHOULD BE ONE OR MORE SPECIES CHOSEN FROM THE LIST OF APPROPRIATE SPECIES PROVIDED ON THE PLAN. CHOOSE A MINIMUM OF 15 FORB SPECIES.
  - ZONE 5 AND 6 PLANTING - ANY INVASIVE SPECIES ENCOUNTERED IN ZONES 5 AND 6 SHALL BE REMOVED. GRASSES AND FORBS PLANTED IN ZONES 5 AND 6 SHOULD BE A MIXTURE OF THE SPECIES CHOSEN FROM THE LIST OF APPROPRIATE SPECIES PROVIDED ON THE PLAN. CHOOSE A MINIMUM OF 3 GRASS SPECIES AND 8 FORB SPECIES.
  - TIMING OF PLANTING - THE PLANTING OF ALL SHRUBS AND TREES SHALL BE COMPLETED PRIOR TO THE PLANTING OF GRASSES AND FORBS. PLANTING SCHEDULES MUST BE COORDINATED WITH THE SUPPLIERS OF VARIOUS PLANT MATERIALS.
  - GENERAL PLANTING NOTES - PLANT GRASS AND FORB SPECIES IN GROUPS OF 3, 4, OR 6 PLANTS. ALL SHRUBS AND TREES SHALL BE PLANTED ACCORDING TO AMERICAN NURSERYMAN'S STANDARDS. WHEN PLANTING IN AREAS WITH A FIBER BLANKET, AN "X" PATTERN SHALL BE CUT IN THE BLANKET AND REPLACED UNDER THE PLANTS.
  - FENCING - PLANTING TEMPORARY FENCING SHALL BE PLACED ALONG EDGES OF ALL PLANTED AREAS, INCLUDING CORNWALKS, AFTER PLANTING.
  - WARRANTY AND MAINTENANCE - ALL TREES, SHRUBS, WETLANDS AND GRASSES SHALL BE WATERED AND MAINTAINED DURING THE 12 MONTH WARRANTY PERIOD. MULCH AND FIBER BLANKET STRAPS SHALL ALSO BE MAINTAINED AS DESIGNATED DURING THE 12 MONTH WARRANTY PERIOD. TEMPORARY FENCING MUST BE MAINTAINED FOR ONE GROWING SEASON AFTER PLANTING. SEE MAINTENANCE PLAN FOR SPECIFICATIONS.
  - PLANT HEIGHT CONSIDERATIONS - PLANTS ARE EXPECTED TO GROW TO HEIGHTS AT THE LOWER END OF THE RANGES PROVIDED ON THE PLANS. DUE TO THE HARDSHIP OF THE LOCAL ENVIRONMENT, THE HEIGHT OF GRASSES GROWN MAY INCLUDE THE SEED HEADS, WHICH MAY BE TALLER THAN THE FOLIAGE. ALL SHRUB SPECIES MAY BE PRUNED TO CONTROL HEIGHT IN THE FUTURE.

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**MILLER**  
 ENGINEERS  
 SCIENTISTS

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