May 12, 2017

Ms. Kerrie J. Hauser
U.S. Army Corps of Engineers
250 N. Sunnyslope Road, Suite 296
Brookfield, WI 53005

Re: *Lake Belle View Restoration Project – 2016 Monitoring Report*
MARS Project Number: 1428-011

VIA: US MAIL

Dear Ms. Hauser:

Montgomery Associates: Resource Solutions (MARS) has prepared this letter and enclosures to update the U.S. Army Corps of Engineers (USACE) on the progress-to-date for the 2016 Monitoring Report submitted for the Lake Belle View Restoration Project. The project was originally covered under the USACE permit No. 2009-01035-ADJ. The purpose of the monitoring report is to satisfy the compliance criteria described in the original USACE permit. The project was constructed in 2010-2011 and 2016 is the fifth year of restoration activities.

Restoration activities are outlined in the document *Mitigation and Restoration Plan for the Lake Belle View Restoration Project* as *Revised April 2010* known henceforth as the "Plan". To demonstrate compliance with the special conditions listed in the original USACE permit authorization and criteria described in Sections 8 and 9 of the Plan, MARS has prepared the "Lake Belle View Permit Compliance Table for 2016" enclosed with this letter.

Monitoring and restoration activities conducted over 2016 include the following:

- Vegetation Maintenance by NES Ecological Services
- Evaluation of Tree Planting by Eco-Resource Consulting, Inc. (ERC)
- Vegetation Assessment by ERC
- Lake Level Monitoring by MARS

Findings of the various assessments are included as enclosures to this letter. Evaluations pertaining to water quality, aquatic vegetation, and fish assessments for Lake Belle View that are outlined in the Plan will be completed in Fall of 2017. Reporting on these monitoring criteria will be submitted to the USACE under separate cover.

In summary, all performance criteria listed in the permit special conditions are met except for Permit Item #13. The meander survey conducted by ERC showed that non-native species at the Site exceeded the 20% limit required by the permit. The area consisted of 27% non-native species during the survey. The Village will consider further mitigation plans to manage the non-native species.

Please feel free to contact me at 608-839-4422 should you have any questions or comments.

Sincerely,

Montgomery Associates: Resource Solutions, LLC

Christian Burnson
Water Resources Engineer

Enclosures: Lake Belle View Permit Compliance Table for 2016
2016 Lake Water Levels – Continuous Monitoring
2016 Monitoring Report Lake Belle View Restoration Project by ERC
Evaluation of Tree Planting Letter Report by ERC

Cc: Roger Hillebrand, Village of Belleville
Brian Wilson, Village of Belleville

Permit Item No.	Summary	Condition Met?	Notes:
1	The permittee is responsible for insuring that whoever performs, supervises or oversees any portion the physical work associated with the construction of the project has a copy of, is familiar with, and complies with all the terms and conditions of this permit.	Y	
2	The permittee shall insure that none of the work performed to construct, operate or maintain this project (including preparatory work, staging, site clean-up and mitigation work) causes impacts (including non-jurisdictional impacts such as drainage or non-point source sedimentation) to other waters or wetlands except those impacts expressly allowed by this (or a subsequent) Corps permit. Prior to initiating any physical work on the project site, the wetland areas that are to remain undisturbed shall be clearly marked in the field so that the boundaries are visible to equipment operators. For example, you may use appropriate signage and orange construction fencing, silt fencing, or continuous strands of flagging to mark the boundaries.	Y	No construction activities in 2016
3	To prevent the spread of non-native and/or invasive plant species, the permittee shall ensure that all equipment used to complete the authorized work is cleaned before arriving on site and prior to mobilizing to another site. Wash water shall not be discharged into any wetland, waterway, or other surface water conveyances.	Y	No construction activities in 2016
4	An as-built report shall be submitted within one month of the completion of construction. If the project is phased, an as-build report shall be submitted within one month of completion of each phase. This report shall summarize the construction activities, describe any changes to the original plan, describe any corrective actions needed, and provide an as-built survey showing a minimum of 1 foot elevation contours or spot elevations. This survey shall be prepared by a licensed surveyor and certified by the licensed surveyor or by a registered professional engineer to conform to the design plans and specifications.	Y	As-built drawings submitted in March of 2012
5	The annual median lake stage shall remain at 858 feet +/- 0.5 feet, or within +/- 0.5 feet of the Sugar River annual median stage at the dam	Y	See 2016 Lake Water Levels - Continuous Monitoring
6	Submergent, floating-leaved, and emergent aquatic communities in Lake Belle View shall be established or enhanced, and monitored in accordance with the final *Mitigation and Restoration Plan for the Lake Belle View Restoration Project, as Revised April 2010,* prepared by Montgomery Associates.	Y	See 2016 Monitoring Report from ERC. Plant community was originally established but lake drawdowns to eliminate carp impacted the emergent zone. 10 emergent plant species were observed in this zone with 70% being native. Carp management is ongoing.
7	The enhancement of 0.51 acre of floodplain forest wetland, restoration/creation of 11.6 acres of floodplain forest wetland, and creation of 6.6 acres of floodplain forest, wet-mesic to mesic prairie, and forest shall be in accordance with applicable Special Conditions contained below and in accordance with the final *Mitigation and Restoration Plan for the Lake Belle View Restoration Project, as Revised April 2010,* prepared by Montgomery Associates.	Y	Creation of floodplain forest wetland occurred when dredge spoils were moved and graded. See previously submitted monitoring reports and Evaluation of Tree Planting by ERC performed in Summer 2016.
8	As compensatory mitigation to offset the unavoidable loss of 3.94 acres of open water and 0.41 acre of floodplain forest; 4.56 acres of restored/created floodplain forest shall be protected in perpetuity by covenants or conservation easement that prohibits incompatible uses. The protected area shall be in a contiguous area and shall be selected in coordination with and receive prior approval from the Corps of Engineers. The approved covenants or easement shall be recorded within 60 days of the completion of the earthwork and construction, and a certified copy of the recorded covenant shall be returned to this office.	Y	Conservation easement was prepared, submitted, and recorded in 2012
9	Wetland enhancement activities within the 0.51 acre floodplain forest shall be conducted in a manner that does not remove (dead or alive) existing tree species present. Any dredged or fill material placed in the 0.51-acre wetland enhancement area shall be placed in manner that does not change the area from wetland to dry land.	Y	See previously submitted monitoring reports
10	Wetland enhancement, restoration, and creation activities shall begin within one year of start of construction of the authorized project. All earthwork and construction on the mitigation area shall be completed no later than 1 year after the work authorized by this permit is completed.	Y	See previously submitted monitoring reports

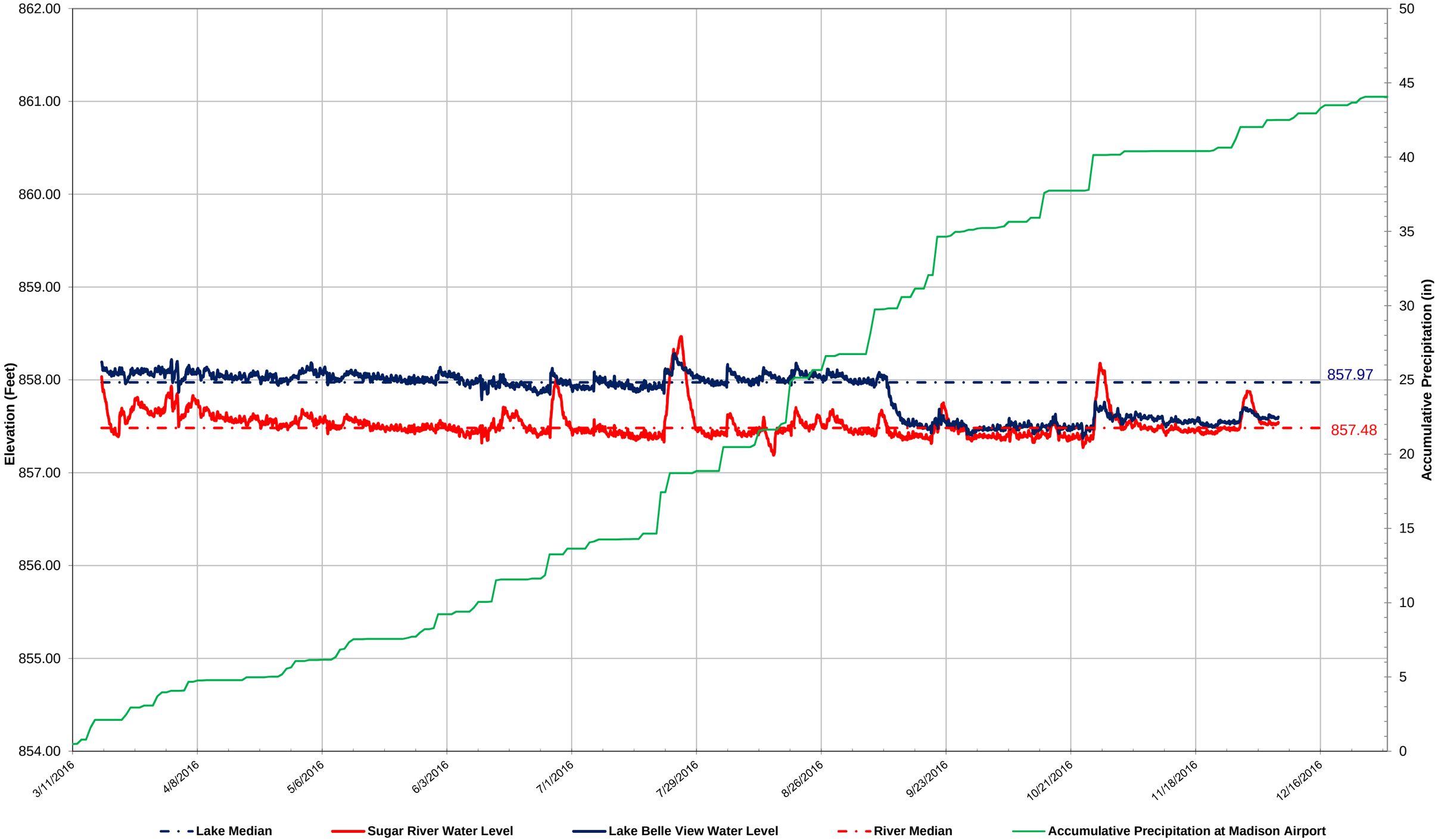
Permit Item No.	Summary	Condition Met?	Notes:
11	Monitoring reports are required: Mitigation monitoring reports shall be submitted in accordance with the *final* *Mitigation and Restoration Plan for the Lake Belle View Restoration Project,* *as* *Revised April 2010,* prepared by Montgomery Associates. The reports shall be submitted by December 31 of years identified in the plan referenced. The reports shall be forwarded to: Waukesha Field Office, Army Corps of Engineers at 1617 East Racine Avenue - Room 101, Waukesha, Wisconsin 53186.	Y	Corps was notified in advance that 2016 report would be arriving after December 31, 2016
12	By October 1, 2013, a minimum of 11.6 acres of wetlands shall be established and 0.51 acre of forested wetland shall be enhanced. A wetland delineation of the sites applying the current *Corps of Engineers Wetlands Delineation Manual* and applicable regional supplement shall be conducted and submitted by that date. This delineation shall be prepared by a wetland professional.	Y	Wetland delineation completed by ERC in 2014 and report was included in 4th Annual Montioring Report (June 2015)
13	Control of Invasive and/or Non-Native Species: Control of invasive and/or non-native plant species shall be carried out for 10 full growing seasons (5 years for herbaceous communities) on the mitigation area as defined in Special Condition 7. Control may consist of mowing, burning, disking, mulching, biocontrol and/or herbicide treatments. By the third growing season, any areas one-quarter acre in size or larger that have greater than 50 percent areal cover of invasive and/or non-native species shall be treated (e.g., herbicide) and/or cleared (e.g., disked) and then reseeded. Follow-up control of invasive and/or non-native species shall be implemented as stated above. At the end of the tenth growing season (5 years for herbaceous communities), the vegetative communities shall not contain greater than 20 percent areal cover of invasive and/or non-native species, including but not limited to: reed canary grass *(Phalaris arundinacea),* Canada thistle *(Cirsium arvense),* bull thistle *(Cirsium vulgare),* smooth brome grass *(Bromus inermis),* giant ragweed *(Ambrosia bifida),* common ragweed *(Ambrosia artemisiifolia),* quack grass *(Elytrigia repens),* black locust *(Robinia pseudoacacia),* sweet clovers *(Melilotus alba* and *M officinalis),* non-native honeysuckles (e.g., *Lonicera* x *bella),* and non-native buckthorns *(Rhamnus cathartica* and *R. frangula).* The mitigation area shall have no purple loosestrife *(Lythrum salicaria)* present at the end of the monitoring period. Failure to meet any of the above criteria shall extend the permittee's responsibility for monitoring and control of invasive/non-native species within the mitigation area.	N	Ongoing. 2016 Monitoring Report prepared by ERC found that the mitigation area contained 27% invasive and/or non-native species. Additional vegetation management measures are underway for the 2017 growing season.
14	If the performance criteria outlined above are not met at any time during the monitoring period, the permittee shall provide the Corps with a proposal detailing corrective actions and/or maintenance actions proposed (if any) and an implementation schedule for those actions. The permittee shall implement the necessary corrective measures following review and approval/modification of those measures by the Corps. Upon completion of corrective measures, the permittee shall provide a written summary of the work to the Corps. Additional remedial actions may be required if the corrective measures do not result in satisfaction of the performance criteria during the next growing season.	N	Belleville (permitee) to provide Corps with proposal to continue to mitigate profliferation of invasives
15	The permittee shall assume all liability for accomplishing corrective work should the District Engineer determine that the compensatory mitigation has not been completed satisfactorily. Remedial work may include regrading and/or replanting the mitigation site.	N	In progress
16	Your responsibility to complete the compensatory mitigation as set forth in these Special Conditions will not be considered fulfilled until you have demonstrated mitigation success and have received written verification from the U.S. Army Corps of Engineers.	N	In progress

Section 8 - Performance Standards		Standard Met?	Notes:
8.1 Hydrology	*Normal pool:* The annual median lake stage shall remain at 858 ft +/- 0.5 ft, or within +/- 0.5 ft of the Sugar River annual median stage at the dam.	Y	See 2016 Lake Water Levels - Continuous Monitoring
	Overtopping of the separation berm: The river shall not overtop the berm and flow into the lake for events more frequent than the 25-year event.	Y	See 2016 Lake Water Levels - Continuous Monitoring
8.2 Wetlands	*Post-construction soil stabilization* . Newly created wetlands will be seeded with a mix of a temporary oat cover crop, permanent native grasses and fast growing forbs. These areas shall be considered stabilized when 70% or more of the ground surface is covered by the permanent grasses and forbs.	Y	See 1st Annual Monitoring Report (2011)
	After 1 growing season, areas seeded with the native cover crop shall have 70% total plant cover with no bare areas larger than 10 square feet. After two full growing seasons, seeded areas shall have 80% total plant cover and 20% cover by native species. After three full growing seasons, seeded areas shall have 40% total cover by native species, at least 30% of the installed species shall be present. This requirement is not applicable if the prescribed burn is conducted after the 2nd growing season.	Y	See 2nd Annual Monitoring Report (2013), 3rd Annual Monitoring Report (2014), and Lake Belle View Restoration Project - 2015 Monitoring Summary
	Prescribed burn and native forb seeding , One full growing season after the prescribed burn and seeding of the native forbs mix, seeded areas shall have 70% total plant cover, seedlings of five installed native species shall be present and widely distributed, and seeded areas shall have no bare areas larger than 10 square feet. Two full growing seasons after the prescribed burn and seeding of the native forbs mix, seeded areas shall have 80% total plant cover and 20% cover by native species, and at least 20% of the installed species shall be present. Three full growing seasons after the prescribed burn and seeding of the native forbs mix, seeded areas shall have 40% total cover by native species, and at least 30% of the installed species shall be present.	N	Ongoing. Prescribed burn performed in Spring 2015. Standard has been met for the first growing season (See 2016 Monitoring Report by ERC).
	Shoreline protection . The current shoreline protection function of wetlands in Lake Belle View is ranked as low, based on the WDNR Rapid Assessment Methodology for Evaluating Wetland Functional Values. Wetlands created by this project shall be evaluated for improvement from rankings of low to at least medium, using the WDNR method, as vegetation becomes established.	Y	Shoreline Protection is rated medium. See WRAM as part of 2016 Monitoring Report completed by ERC.
	Floral diversity . The post-construction cover crop will be a mix of oats, native grass and forbs species. It is expected that floral diversity immediately following construction will be low. Over the first 5 years, wetlands created in this project will be evaluated for increasing trends in native species coverage and diversity. Meander surveys will be used to ascertain increasing trends in the Floristic Quality Index, Mean Wetness Coefficient and Prevalence Index.	Y	Floral Diversity is rated medium. See WRAM as part of 2016 Monitoring Report completed by ERC.
	Tree establishment . Native trees will be planted following the first prescribed burn, which is expected to occur after either the second or third growing season. planted trees will be observed qualitatively to verify that their health and growth rates are consistent with the long-term goal of forested wetland establishment. Five years after trees are planted; the survival rate shall be at least 70%, based on a stem count of both planted trees and naturally recruited native tree species in the restored area.	N	Ongoing. Trees planted in 2015 after prescribed burn. ERC observed that >70% of the tree were surviving. See Evaluation of Tree Planting by ERC performed in Summer 2016.
	Wildlife and fishery habitat . Using the WDNR Rapid Assessment Methodology, wildlife and fishery habitat function of existing wetlands have been ranked as high and medium, respectively. It is expected that wetlands created by this project have low habitat values immediately after construction, and that these functions will improve to values similar to those for existing wetlands as native vegetation communities are established. The WDNR Rapid Assessment Methodology will be used to verify that this improvement in habitat functional value is indeed occurring.	Y	Wildlife and Fishery Habitat are rated high and medium, respectively. See WRAM as part of 2016 Monitoring Report completed by ERC.

	Carp Management, We anticipate that establishment of a viable fishery including predator species will provide sufficient management of carp populations. Additionally, secchi transparency measurements will be performed annually, and aquatic vegetation point-intercept surveys will be conducted in years 2 and 5. Degradation of the transparency and aquatic vegetation density along with qualitative observations of carp populations may indicate carp overpopulation. If carp populations become a nuisance, the lake could be drawn down and the carp could be physically removed.	N	Carp management ongoing. Secchi transparency and aquatic point-intercept surveys to be performed and reports submitted to Corps in Fall of 2017.
8.4 River and Dam	The Village intends to maintain the dam and will continue to comply with regulations regarding ownership of the dam. The dam will be operated in the same manner as in the past, and the water level of Lake Belle View will be maintained at the same elevation as in the past.	Y	See 2016 Lake Water Levels - Continuous Monitoring
	It is anticipated that sediment trapping within the restored Lake Belle View will be substantially the same as for current conditions. It is difficult to determine the trapping efficiency of the existing or proposed scenarios since the dynamics of sediment transport within a relatively small impoundment, compared to the watershed size, are complex and include both deposition and scour of sediment. However, a simplified analysis utilizing the procedure for determining detention basin trapping efficiency noted in the Dane County Erosion Control and Stormwater Management Manual was conducted for the 2-yr peak discharge of 2,598 cfs. The analysis indicates that the existing impoundment, without considering re-suspension, traps the 13-micron particle while the proposed river impoundment would trap the 20-micron particle. Assuming Plano silt loam as a representative distribution of sediment particle size, the trapping efficiency of the impoundment would be minimally reduced from 51% to 44%.	Y	Components of restoration project constructed per Plan

Section 9 - Monitoring Plan				
Monitoring Parameter:	Method:	Completed?	Frequency	Comments
Hydrology				
Lake & river stage	Stage monitoring stations to be established with continuously recording water-level probes or manually observed staff gages on Lake Belle View & Sugar River.	Y	March – November for years 1-5	See 2016 Lake Water Levels - Continuous Monitoring
Berm overflow & wetland inundation	Visual observations. Estimate of flood recurrence interval for berm overtopping based on USGS gage for Sugar River at Brodhead.	Y	As events occur	Berm overtopping did not occur. See 2016 Lake Water Levels - Continuous Monitoring.
Wetlands				
Post-construction erosion control	Visual inspection for vegetative cover and soil erosion indicators	Y	Weekly until 70% permanent vegetation cover established	See 2016 Monitoring Report by ERC
Wetland functional values	WDNR Rapid Assessment Methodology for Evaluation of Wetland Functional Values	Y	July during years 1 – 5	WRAM attached to 2016 ERC report
Plant species & diversity	Floristic Quality Assessment meander survey	Y	July and September during years 1 and 2, August in years 3 - 5	See 2016 Monitoring Report by ERC
Forest establishment	Qualitative assessment of health of trees planted in this project	N	Annual years 1 – 5; Every 5 years for years 5 - 20	Ongoing. Standard on track to being met. See Evaluation of Tree Planting by ERC performed in Summer 2016.
Lake				
Water quality	Trophic State Index method: total phosphorus, chlorophyll-a, secchi transparency	N	Annual (late summer)	To be performed and reports submitted to Corps in Fall of 2017
	Vertical profiles of dissolved oxygen, temperature, pH & specific conductance	N	Semi-annual (late summer & late winter)	To be performed and reports submitted to Corps in Fall of 2017
Aquatic vegetation	Point-intercept survey	N	Years 2 & 5	To be performed and reports submitted to Corps in Fall of 2017
Fish	Mini-boom shocking surveys	N	Years 2 & 5	To be performed and reports submitted to Corps in Fall of 2017
	Creel surveys (angler interviews)	N	Annual: Years 3 - 5	To be performed and reports submitted to Corps in Fall of 2017

Lake Belle View Restoration Project
2016 Lake Water Levels - Continuous Monitoring



2016 MONITORING REPORT
LAKE BELLE VIEW RESTORATION PROJECT

Prepared for:
The Village of Belleville
24 West Main Street
Belleville, Wisconsin

Prepared by:
Eco-Resource Consulting, Inc.
2554 County Road N
Stoughton, WI 53589

August 2016

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1.0 Introduction

Eco-Resource Consulting, Inc. (ERC), conducted a field investigation of the native plant community restoration project around Lake Belle View on July 11, 2016. The areas surveyed included the emergent aquatic bed, an area from two feet below water level to the shoreline (-2 to 0 feet elevation), the wet meadow area from the shoreline to two feet of elevation above the shoreline (0 to + 2 feet elevation), the wet mesic prairie area from two feet to five feet elevation above the shoreline (+2 to + 5 feet elevation), and the mesic prairie area greater than five feet in elevation above the shoreline (> 5 feet elevation). The original plan called for the emergent aquatic bed to occupy 9.4 acres of shallow water, the wet meadow, 11.1 acres of wetland, the wet prairie, 4.1 acres, and the mesic prairie 3.9 acres of upland (Figure 1).

The restoration area is composed of dredge spoils from the construction of Lake Belle View. The area was dredged in September 2010 and March 2011, and grading activities were completed in November 2011. The emergent area was seeded in June 2011 and a dormant seeding using native plant seed appropriate to the community type was conducted in December 2011. ERC was assigned the task of evaluating the success of the restoration during the growing seasons from 2012 – 2016 pursuant to State and Federal Permit conditions. This survey focuses on the plant species and communities the fifth year after seeding, and a taxa comparison was compiled for all four plant communities from 2012 through the 2016 sampling period.

2.0 Methods

To assess the vegetation, a meander survey of the entire restoration area was conducted on July 11, 2016. ERC Senior Ecologists Tara Davenport and Scott Sauer traveled along the meander survey path(s) (Figure 2), and recorded all plant species observed. Although the meander path was continuous, it was conducted so all habitat types are included. Each species observed was assigned a vegetative cover class within each habitat type.

The 2009 survey (Montgomery Associates, 2009) defined vegetative cover class as an estimated percent cover of a species in a habitat zone based on visual observation over the entire habitat zone. Below is an outline of the ranges of percent cover and the cover class value or ranking.

Ranges of Percent Cover and Cover Class Values

Cover Class	% Cover
1	1 – 10%
2	11 – 25%
3	26 – 50%
4	51 – 75%
5	76 – 90%
6	91 – 100%

Percent cover assigns every species observed a cover class rating of one to six. A cover class rating of six indicates a species was found and was dominant or co-dominant in the habitat zone. A cover rating of one indicates the species was found in low density throughout the habitat zone. Table 1 includes our estimates of cover class and descriptions of the plant communities in the four habitat types and two loop surveys.

3.0 Performance Standards

As a condition of the USACE permit, after one growing season, areas seeded with the native cover crop shall have 70% total plant cover with no bare areas larger than 10 square feet. After two full growing seasons, seeded areas shall have 80% total plant cover and 20% cover by native species. After three full growing seasons, seeded areas shall have 40% total cover by native species, at least 30% of the installed species shall be present (Montgomery Associates, 2010).

4.0 Discussion

4.1 2016 Survey

A species list was compiled within each community type to estimate plant species coverage. Table 1 lists species found and coverage in the meander survey and loops one and two. A total of 91 species were encountered with 25 species being non-native. This compares with 67 species found in 2015 with 18 (27%) species being non-native. The reasons for the increase in species number could be many. As a restoration matures, many annual and biennial species drop out of the vegetation and are replaced by perennial species. At this point in the restoration more perennial species have likely replaced the shorter life-cycle species. Also, a burn followed by an inter-seeding was conducted in spring of 2015. These two activities could increase species richness as burns release nutrients into the soil and remove plant litter while seeding increases native seed in the seed bank. There were no bare soil areas larger than 10 square feet.

4.2 Overall Trend

The overall trend for species richness at Lake Belle View is relatively constant across years and vegetation zones, except for drops in species number in 2013 and a large increase in total species in 2016. The total species number was 74 in the July sampling of 2012, 67 in June of 2013, 53 in July of 2014, 67 in July of 2015, and 91 in July 2016 (Table 2). Overall there has been an increase in native species from 59% in July 2012 to 73% in 2016. More details are given in the next section.

4.3 Community Details

To keep comparisons consistent, the community type species coverage compares information from early season sampling as only one sampling, as was done in July of 2014, 2015, and 2016 (Tables 3-6). In previous years (2012 and 2013), two samplings were done, one in June/July and one in September. This caused some differences in vegetation as late-season plants were more predominant in the September sampling as compared to the earlier sampling.

Emergent Zone

A little more than half of species found in previous surveys returned in the 2016 survey (Table 3). During the mid-years, carp and drawdowns for carp control impacted this zone so that some of the truly aquatic plants disappeared and emergent plants ended up in the wet-meadow zone. Curly pondweed, sago pondweed, and floating leaf pondweed are all indicators of turbid water conditions, which match conditions seen on site. Many of the true emergent species can survive in shallow water or in wet-meadow conditions and their predominance varied between the two community types depending on water level fluctuation. Water levels appeared higher in 2016 than 2015.

Wet-Meadow Zone

The wet-meadow is a “transition” habitat between the emergent and wet-mesic prairie so it supports species from both wetter and drier habitats. This habitat expanded under drawdown conditions and apparent erosion along the north shore of the lake. The “newly” opened habitat allowed for invasion of both native and non-native plants. This habitat zone continually had the second highest percentage of native plants of all the habitats between 2012 and 2015. However, this zone saw a decrease in native plant percentage from 86% in 2015 to 72% in 2016 (Table 2). Rice cut grass has always been a dominant member of this plant community (Table 4), followed by black eyed Susan and blue vervain. There is also a broad strip of broad-leaved cattail along the northern edge of this habitat type.

Wet-Mesic Prairie Zone

The total species number rose dramatically in 2016 to 54 from a total of 22 in 2015 (Table 2). The reason for this appears to be a dramatic drop in short-lived species, many of them "weedy." Much more prominent in the 2016 survey are asters and boneset, with black-eyed susan, sneezeweed, and vervain continuing to be prominent in this community type (Table 5).

Mesic Prairie Zone

Species number in the mesic prairie zone increased again in 2016 to 53 total species compared to 42 in 2015 (Table 2). Asters, black-eyed susan, common goldenrod, sneezeweed, boneset, switchgrass, bee balm, and blue vervain were the most dominant species, again replacing many shorter-lived species (Table 6). Tree seedlings of green ash, black walnut, swamp white oak, and bur oak are present in the upland areas and red osier dogwood is present along the edges.

4.4 Meeting the Performance Standard

By the fifth year after planting, based on species number, all habitat areas exceed the performance standard of having 40% native species. The wet meadow and mesic prairie habitat had the highest native species percentages with 72% and the emergent and wet-mesic prairie habitat had the lowest with 70%. The total restoration (including the two loop surveys, not included in the individual communities) contained 73% native species in the 2016 survey (Tables 1-2). Based on the species observed in the 2016 survey, 32% of the installed species were present. Twenty-two tree and shrub species (10 of which were on the original installation list) were planted in the spring of 2015 but their protective coverings did not allow for positive identification of species. There were no unvegetated areas except where herbicides were used to control non-native species and those bare soil areas were not larger than 10 square feet.

4.5 Species of Concern

Since 2012, there have been a number of non-native species in the restoration area, reaching a high of 68% in the early 2013 sampling of the wet-mesic prairie. Many of these species are of little concern as habitat areas become stabilized and native perennial species dominate. Two species, purple loosestrife and reed canary grass, presently found at low levels, are of concern because they are very aggressive and can quickly become problem species for continued management. A particular species of concern in 2016 is white sweet clover as it currently dominates a large area between the berm and turtle enclosure. This species likely had a positive

response to the fire in April 2015 and should be mowed or cut and bagged off site to minimize further dominance.

4.6 Wildlife and Other Notes

Vegetation was the primary purpose of this survey however several wildlife species were observed include: robin, great blue heron, red winged black bird, frogs, and deer tracks were noted.

5.0 References

Montgomery Associates – Resource Solutions. 2009. Wetland and aquatic plant assessment for the Lake Belle View/Sugar River Restoration Project. Cottage Grove, WI. 8 pg.

Montgomery Associates-Resource Solutions. 2010. Mitigation and Restoration Plan for the Lake Belle View Restoration Project (revised). Cottage Grove, WI. 46 pg.

Wetter, M.A., T.S. Cochrane, M.R. Black, H.H. Iltis, and P.E. Berry. 2001. Checklist of the Vascular Plants of Wisconsin. Technical Bulletin No. 192. Wisconsin Department of Natural Resources, Madison, Wisconsin. 258 pg.

TABLES

Table 1. Lake Belle View Species Coverage, July 2016[1,2]							
Latin Name	**Common Name**	**Emergent Zone**	**Wet-Meadow Zone**	**Wet-Mesic Prairie Zone**	**Mesic Prairie Zone**	**Loop 1**	**Loop 2**
Achillea millefolium	**yarrow**	1	1				
Ambrosia artemisiifolia	**common ragweed**		1				
Ambrosia trifida	giant ragweed		1				
Andropogon gerardii	big blue-stem		2	3			
Arctium sp.	**burdock**				1		
Asclepias incarnata	swamp milkweed		2	2	1	1	1
Asclepias syriaca	common milkweed			1		1	
Asclepias tuberosa	butterfly milkweed				1		
Aster novae-angliae	New England aster		1	1	1	1	1
Brassica nigra	**black mustard**			1			
Carex comosa	longhair sedge		1	1			
Ceratophyllum demersum	coon's-tail	2					
Cirsium arvense	**Canada thistle**		1	1	3		
Cirsium vulgare	**bull thistle**				3	1	1
Convolvulus arvensis	**field bindweed**			1			
Conyza canadensis	horseweed			1	1		1
Cornus stolonifera	red osier dogwood					1	1
Cyperus esculentus	**field nut sedge**	1	1				
Dalea purpurea	purple prairie clover			1			
Daucus carota	**Queen Anne's lace**		1	1	1		
Echinacea purpurea	purple coneflower				1		
Echinocystis lobata	wild-cucumber		1				
Eleocharis acicularis	needle spike-rush	1					
Elymus canadensis	wild rye			2	2		2
Erigeron annuus	daisy fleabane		1	2	2	1	1
Eupatorium altissimum	tall boneset				1		1
Eupatorium maculatum	joe-pye-weed		2	2	2	1	
Eupatorium perfoliatum	boneset		3	4	3	1	
Euthamia graminifolia	grass-leaved goldenrod			1			
Fragaria sp.	strawberry				1		
Fraxinus pennsylvanica	green ash				1		1
Geum canadense	white avens			1			
Hackelia virginiana	stick seed				1		
Helenium autumnale	common sneezeweed		3	4	4	3	2
Helianthus grosseratus	sawtoothed-sunflower				1		
Heliopsis helianthoides	ox-eye sunflower			1	1		
Hypericum ascyron	talll St. John's wort		1				1
Impatiens capensis	jewelweed		2				
Juglans nigra	black walnut			1	2		
Juncus effusus	common rush		2				
Lactuca canadensis	wild lettuce			1			
Leersia oryzoides	rice cut grass		5	4		1	6
Lycopus americanus	American water horehound		2				
Lythrum salicaria	**purple loosestrife**		1	1			
Medicago lupulina	**black medick**			1	1		
Melilotus alba	**white sweet clover**		3	3	3	1	1
Melilotus officinalis	**yellow sweet clover**				1		
Monarda fistulosa	bee balm			2	3		
Oenothera biennis	evening prmrose		2	2	3	1	2
Ostrya virginiana	ironwood						1
Panicum virgatum	switch grass		2	3	3		
Pastinaca sativa	**wild parsnip**				1		
Phalaris arundinacea	**reed canary grass**		2	2	1	2	1
Plantago lanceolata	narrow leaved plantain			1	1		1
Plantago major	broad leaved plantain			1	1		

Table 1 Continued

Latin Name	Common Name	Emergent Zone	Wet-Meadow Zone	Wet-Mesic Prairie Zone	Mesic Prairie Zone	Loop 1	Loop 2
Poa palustris	marsh bluegrass			1	1		1
Polygonum pensylvanicum	Pennsylvania smartweed	3					
Polygonum punctatum	dotted smartweed	2					
Potamogeton natans	floatingleaf pondweed	2					
Quercus bicolor	swamp white oak				1		
Quercus macrocarpa	bur oak				1		
Ratibida pinnata	yellow coneflower			2	1		
Rosa multiflora	**multiflora rose**			1			
Rubus sp.	**raspberry**			1		1	1
Rudbeckia hirta	black-eyed susan		2	4	3	4	1
Rumex crispus	**curly dock**			2	1	1	1
Salix interior	sandbar willow			2	2		1
Schoenoplectus tabernaemontani	soft-stem bulrush	2					
Schizachyrium scoparium	little bluestem			2			
Scirpus atrovirens	black bulrush			1	1	1	1
Scirpus cyperinus	wool grass					1	
Senna hebecarpa	wild senna				1		
Silphium perfoliatum	cup-plant			1	1		
Solanum dulcamara	**deadly nightshade**						1
Solidago canadensis	common goldenrod			2	4		2
Solidago gigantea	giant goldenrod			3	2	3	1
Solidago rigida	stiff goldenrod			1	1		
Sorghstrum nutans	indian grass			1			
Stuckenia pectinata	sago pondweed	1					
Symphyotrichum puniceum	red-stemmed aster		1	4	4	3	5
Symphyotrichum laeve	smooth aster			1			
Symphyotrichum lanceolatum	panicled aster		2	4	4	3	3
Taraxacum officinale	**dandelion**			1	1		
Trifolium pratense	**red clover**			1	1	1	
Trifolium repens	**white clover**			1	1		
Typha angustifolia	**narrow-leaved cattail**	1					
Typha latifolia	broad-leaved cattail		5				
Urtica dioica	**stinging nettle**			2	3	2	
Verbascum thapsus	**mullein**			2	2	1	
Verbena hastata	blue vervain			3	4	2	1
Zizia aurea	golden alexander				1		
Total Species	91	10	29	54	53	25	29
Native Species %	73%	70%	72%	70%	72%	68%	79%
Total Native	66	7	21	38	38	17	23
Total Non-native	25	3	8	16	15	8	6
1. Naming follows Wetter et al. 2001							
2. Species in bold are non-native							

Table 2. Lake Belleview Comparison of Species Number and Percentage of Native Species between 2012-2016														
Plant Community	Jul 2012		Sep 2012		Jun 2013		Sep 2013		Jul 2014		Jul 2015		Jul 2016	
	Total Species Number	% Native	Total Species Number	% Native	Total Species Number	% Native	Total Species Number	% Native	Total Species Number	% Native	Total Species Number	% Native	Total Species Number	% Native
Emergent	14	86%	11	82%	12	92%	5	92%	9	89%	11	82%	10	70%
Wet Meadow	41	66%	40	75%	19	63%	20	70%	33	85%	35	86%	29	72%
Wet-Mesic Prairie	36	39%	40	43%	31	32%	20	55%	20	70%	22	82%	54	70%
Mesic Prairie	29	48%	30	57%	43	44%	29	72%	31	68%	42	74%	53	72%
Total Area	74	59%	125*	66%*	67	48%	75	60%	53	70%	67	73%	91	73%
* Total for 2012, not just '9/12 values														

Table 3. Emergent Zone Coverage Comparison 2012-2016 [1,2]						
Latin Name	**Common Name**	**2012**	**2013**	**2014**	**2015**	**2016**
Achillea millefolium	**yarrow**					1
Alisma subcordatum	water-plantain	3			1	
Ceratophyllum demersum	coon's-tail	3	3		2	2
Cyperus esculentus	**field nut sedge**					1
Eleocharis acicularis	needle spike-rush				2	1
Eleocharis obtusa	blunt spike-rush	1				
Elodea canadensis	common waterweed	2				
Epilobium coloratum	willow-herb		3			
Eupatorium perfoliatum	boneset		1	2		
Leersia oryzoides	rice cut grass	2	4	4		
Lemna minor	small duckweed	5	2	2	3	
Nymphaea odorata	white water-lily	1	1		2	
Phalaris arundinacea	**Reed canary grass**	1			1	
Polygonum lapathifolia	dock-leaved smartweed			4	1	
Polygonum pensylvanicum	Pennsylvania smartweed					3
Polygonum punctatum	dotted smartweed					2
Potamogeton crispus	**curly pondweed**				2	
Potamogeton natans	floatingleaf pondweed	2	2	1	2	2
Sagittarria latifolia	common arrowhead	3				
Schoenoplectus tabernaemontani	soft-stem blurush	1	1	2		2
Scirpus atrovirens	black blurush			2		
Scirpus cyperinus	wool grass		1			
Scirpus fluviatilis	river bulrush			1	1	
Stuckenia pectinata	sago pondweed	1	1		2	1
Typha angustifolia	**narrow-leaved cattail**	5	3	1		1
Typha latifolia	broad-leaved cattail	5	2			5
1. Naming follows Wetter et al. 2001						
2. Species in bold are non-native						

Table 4. Wet-Meadow Zone Coverage Comparison 2012-2016 [1,2]						
Latin Name	**Common Name**	**2012**	**2013**	**2014**	**2015**	**2016**
Achillea millefolium	**yarrow**					1
Ajuga genevensis	**blue bugle**	2				
Amaranthus retroblexus	pigweed	1				
Ambrosia artemisiifolia	**common ragweed**		1	1	1	1
Ambrosia trifida	giant ragweed	1				1
Andropogon gerardii	big bluestem			1		2
Asclepias incarnata	swamp milkweed	1			3	2
Aster novae-angliae	New England aster			1	5	1
Aster sp.	aster	1				
Bidens frondosa	beggars tick	1				
Carex comosa	longhair sedge					1
Carex lacustris	lake sedge	1				
Carex sp.	sedge	1				
Chenopodium album	**lamb's-quarters**	2				
Cirsium arvense	**Canada thistle**		1	1	1	1
Convolvulus arvensis	**bindweed**	1				
Conyza canadensis	horseweed	3	3	1		
Cyperus esculentus	**field nut sedge**	1			1	1
Daucus carota	**Queen Anne's lace**					1
Decodon verticillatus	**swamp loosestrife**	1				
Echinacea purpurea	purple coneflower	1		1	1	
Echinocochloa crusgalli	**barnyard grass**	1				
Echinocystis lobata	wild-cucumber					1
Eleocharis acicularis	needle spike-rush				1	
Eleocharis obtusa	**blunt spikerush**	1				
Elymus virginicus	Virginia wild rye			2		
Epilobium coloratum	willow-herb		1	2		
Erigeron annuus	daisy fleabane	1		1	1	1
Eupatorium maculatum	joe-pye-weed	1		1	1	2
Eupatorium perfoliatum	boneset	1	1	2		3
Fraxinus pennsylvanica	green ash				1	
Glyceria borealis	mana grass	1				
Hackelia virginiana	stickseed			1		
Helenium autumnale	common sneezeweed			4		3
Hypericum ascyron	talll St. John's wort					1
Impatiens capensis	jewel weed	1	1	2	5	
Iris virginica	blue flag	1				
Juncus effusus	common rush					2
Laportea canadensis	Canadian wood-nettle	1				
Leersia oryzoides	rice cut grass	5	5	5	5	5
Lycopus americanus	American water horehound				1	2
Lythrum salicaria	**purple loosestrife**	1	1			1

Table 4 (Wet-) Continued

Latin Name	Common Name	2012	2013	2014	2015	2016
Medicago sativa	**alfalfa**			1		
Melliotus alba	**white sweet-clover**			1		3
Mentha arvensis	field mint			1		
Monarda fistulosa	bee balm			1	3	
Mullugo verticillata	**carpetweed**	1				
Oenothera biennis	evening prmrose					2
Panicum virgatum	switch grass			1	2	2
Phalaris arundinacea	**reed canary grass**	1	3	2	2	2
Poa palustris	marsh bluegrass			2	2	
Poa pratensis	**Kentucky bluegrass**	2	1			
Polygonum hydropiper	**water-pepper**	1	1			
Polygonum lapathifolia	dock-leaved smartweed			3		
Polygonum pensylvanicum	Pennsylvania smartweed	5	1	2	3	
Polygonum persicaria	**lady's thumb**	3				
Polygonum punctatum	dotted smartweed				2	
Populus deltoides	**cottonwood**	1				
Portulaca oleracea	**purslane**				3	
Rudbeckia hirta	black-eyed susan	3	3	1	4	2
Rumex crispus	**curly dock**			1	2	
Salix nigra	willow		1	1	1	
Schoenoplectus tabernaemontani	soft-stem bulrush	1			1	
Scirpus atrovirens	black bulrush	1		3	4	
Scirpus cyperinus	wool grass	1	1	1	1	
Silphium perfoliatum	cup-plant				1	
Solanum dulcamara	**black nightshade**	1				
Solidago canadensis	common goldenrod			1	3	
Solidago gigantea	giant goldenrod				4	
Symphyotrichum lanceolatum	panicled aster					2
Symphyotrichum puniceum	red-stemmed aster					1
Taraxacum officinale	**dandelion**	1				
Thlaspi arvense	**penny cress**	1				
Trifolium pratense	**red clover**	1				
Typha angustifolia	**narrow-leaved cattail**				1	
Typha latifolia	broad-leaved cattail			2	5	
Urtica dioica	**Stinging nettle**			3	2	
Verbascum thapsus	**mullein**				1	
Verbena hastata	blue vervain	2	2	5	3	
Vitis riparia	river bank grape	1				
1. Naming follows Wetter et al. 2001						
2. Species in bold are non-native						

Table 5. Wet-Mesic Prairie Zone Coverage Comparison 2012-2016[1,2]						
Latin Name	**Common Name**	**2012**	**2013**	**2014**	**2015**	**2016**
Abutilon theophrasti	**velvet-leaf**	1				
Agropyron repens	**quackgrass**		2			
Alopercurus carolinianus	**foxtail**	1				
Ambrosia artemisiifolia	**common ragweed**				1	
Andropogon gerardii	big blue-stem					3
Arctium minus	**burdock**	1	1			
Asclepias incarnata	swamp milkweed			1		2
Asclepias syriaca	common milkweed					1
Aster novae-angliae	New England aster			1	5	1
Barbarea vulgaris	**yellow rocket**	1	1			
Bidens frondosa	beggars tick	1				
Brassica nigra	black mustard					1
Carex comosa	longhair sedge					1
Carex sp.	sedge	1				
Chenopodium album	**lamb's-quarters**	4				
Cirsium arvense	**Canada thistle**		2	2		1
Cirsium vulgare	**bull thistle**	2	1	1		
Convolvulus arvensis	**bindweed**	1	1			1
Conyza canadensis	horseweed	1	3			1
Dactylis glomerata	**orchard grass**	1				
Dalea purpurea	purple prairie clover					1
Daucus carota	**Queen Anne's-lace**	1	1			1
Echinacea purpurea	purple coneflower	1	1	1		
Echinochloa crusgalli	**barnyard grass**	1				
Elymus canadensis	Canadian wild rye	1				2
Elymus virginicus	Virginia wild rye			1		
Epilobium coloratum	willow-herb		2			
Erigeron annuus	daisy fleabane				2	2
Eupatorium maculatum	joe-pye-weed					2
Eupatorium perfoliatum	boneset	1	1	2	2	4
Euthamia graminifolia	grass-leaved goldenrod					1
Festuca pratensis	**rye grass**	1				
Fraxinus pennsylvanica	green ash				2	
Geum canadense	white avens					1
Helenium autumnale	common sneezeweed			5	3	4
Heliopsis helianthoides	ox-eye sunflower					1
Impatiens capensis	jewel weed				1	
Iris virginica	blue flag	1				
Juglans nigra	black walnut					1
Lactuca canadensis	wild lettuce					1
Leersia oryzoides	rice cut grass	1	1	3	1	4
Lythrum salicaria	**purple loosestrife**				1	1

Table 5 (Wet-Mesic Prairie) Continued

Latin Name	Common Name	2012	2013	2014	2015	2016
Medicago lupulina	**black medic**		2			1
Medicago sativa	**alfalfa**		2			
Melilotus alba	**white sweet-clover**		2			3
Mentha arvensis	field mint	1	1	1		
Mollugo verticillata	**carpetweed**	4				
Monarda fistulosa	bee balm				2	2
Oenothera biennis	evening primrose					2
Panicum virgatum	switch grass			1	3	3
Phalaris arundinacea	**reed canary grass**	1	3	1	1	2
Phleum pratense	**timothy**		1	1		
Plantago lanceolata	narrow leaved plantain					1
Plantago major	broad leaved plantain					1
Poa palustris	marsh bluegrass			2		1
Poa pratensis	**Kentucky bluegrass**	2				
Polygonum hydropiper	**water-pepper**	1				
Polygonum pensylvanicum	Pennsylvania smartweed	5			5	
Polygonum persicaria	**ladys thumb**	1				
Polygonum punctatum	dotted smartweed		1			
Potentilla simplex	**common cinquefoil**	1	1			
Ratibida pinnata	yellow coneflower					2
Rosa multiflora	**multiflora rose**					1
Rubus sp.	**raspberry**					1
Rudbeckia hirta	black-eyed susan	3	3	1	4	4
Rumex crispus	**curly dock**	2	3		1	2
Salix interior	sandbar willow					2
Salix nigra	willow	2			1	
Schizachyrium scoparium	little bluestem					2
Scirpus atrovirens	black bulrush				2	1
Silphium perfoliatum	cup-plant				1	1
Solidago canadensis	common goldenrod			1	3	2
Solidago gigantea	giant goldenrod		1	1	2	3
Solidago rigida	stiff goldenrod					1
Sonchus arvensis	**sow-thistle**	1	1	1		
Sorghstrum nutans	indian grass					1
Symphyotrichum laeve	smooth aster					1
Symphyotrichum lanceolatum	panicled aster					4
Symphyotrichum puniceum	red-stemmed aster					4
Taraxacum officinale	**dandelion**	1	1			1
Thlaspi arvense	**penny cress**	3				
Trifolium pratense	**red clover**	1	1			1
Trifolium repens	**white clover**	1	1			1
Urtica dioica	**stinging nettle**				2	2
Verbascum thapsus	**mullein**	1	1	1		2
Verbena hastata	blue vervain	3	2	5	5	3
1. Naming follows Wetter et al. 2001						
2. Species in bold are non-native						

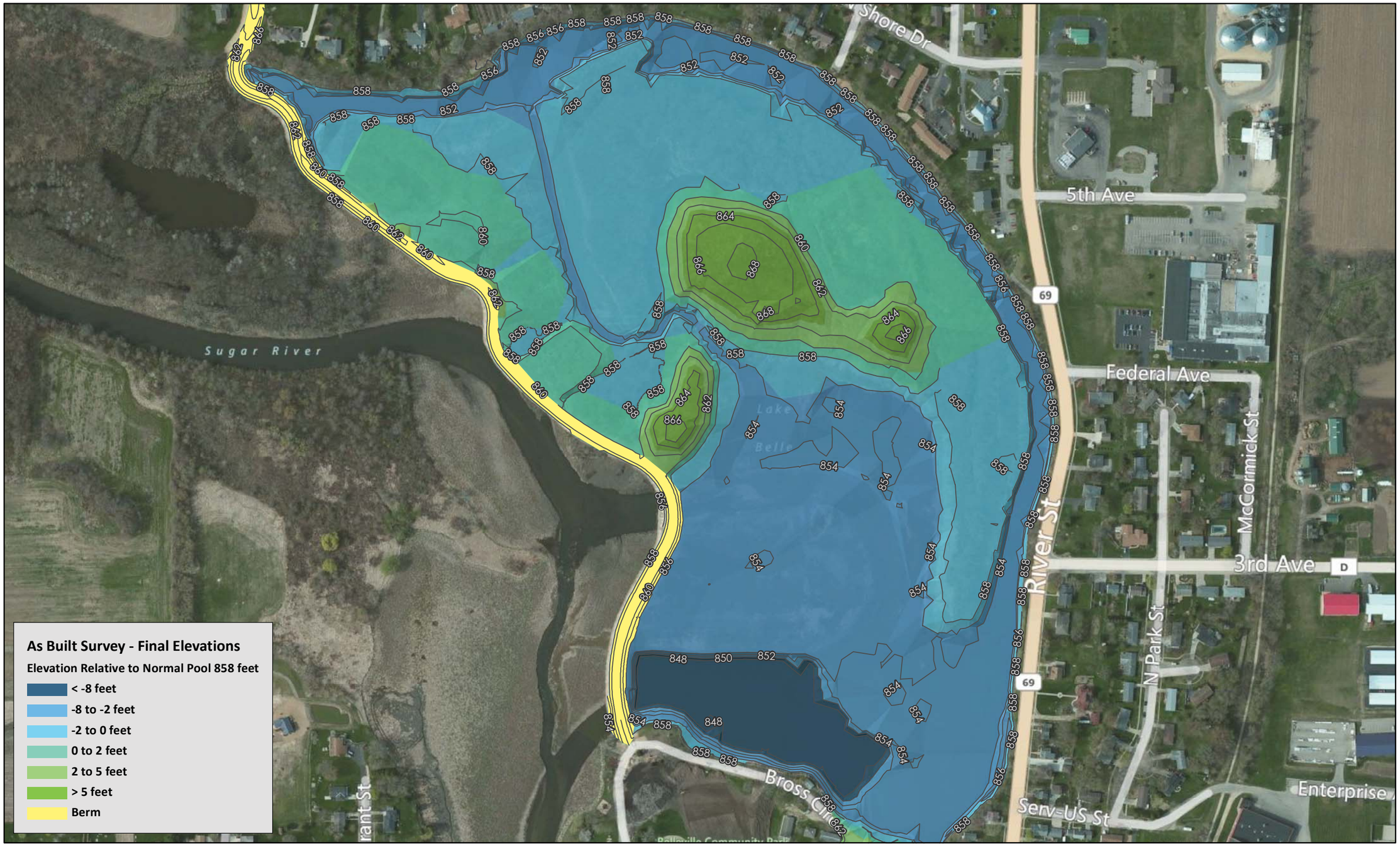
Table 6. Mesic Prairie Zone Coverage Comparison 2012-2016 [1,2]						
Latin Name	**Common Name**	**2012**	**2013**	**2014**	**2015**	**2016**
Amaranthus retroflexus	**pigweed**	1	1			
Ambrosia artemisiifolia	**common ragweed**	1	1			
Andropogon gerardii	big blue-stem				1	
Arctium sp.	**burdock**					1
Asclepias incarnata	swamp milkweed			1	1	1
Asclepias syriaca	common milkweed				1	
Asclepias tuberosa	butterfly milkweed					1
Asparagus officinalis	**asparagus**	1				
Aster novae-angliae	New England aster		1	1	5	1
Barbarea vlugaris	**yellow rockets**		1			
Bromus inermis	**smooth brome grass**	1				
Carex sp.	sedge				1	
Cerastium fontanum	**mouse-ear chickweed**		1			
Chenopodium album	**lamb's-quarters**	4	2		1	
Chenopodium ambrosioides	**Mexican tea**				1	
Cirsium arvense	**Canada thistle**			1		3
Cirsium vulgare	**bull thistle**			1	1	3
Convolvulus arvensis	**bindweed**		1	1		
Conyza canadensis	horseweed	3	3	2	2	1
Cornus stolonifera	red osier dogwood				1	
Cuscuta gronovii	dodder	1				
Daucus carota	**Queen Anne's lace**		1			1
Echinacea purpurea	purple coneflower	1	1		1	1
Echinochloa crusgalli	**barnyard grass**			1	1	
Echinocystis lobata	wild-cucumber		1		1	
Elymus canadensis	Canadian wild rye			1		2
Elymus virginicus	Virginia wild rye			2		
Epilobiium coloratum	cinnamon willow-herb		1			
Erigeron annuus	daisy fleabane		1	1	2	2
Eupatorium altissimum	tall boneset					1
Eupatorium maculatum	joe-pye-weed				1	2
Eupatorium perfoliatum	boneset	1	1	2	2	3
Fragaria sp.	strawberry					1
Fraxinus pennsylvanica	green ash			1	2	1
Hackelia virginiana	stickseed			1		1
Helenium autumnale	common sneezeweed			5	3	4
Helianthus grosseratus	sawtoothed-sunflower					1
Heliopsis helianthoides	ox-eye sunflower					1
Hordeum jubatum	**squirrel tail**		1			
Impatiens capensis	jewel weed				1	
Juglans nigra	black walnut				2	2
Leersia oryzoides	rice cut grass	3	1	3		
Lythrum salicaria	**purple loosestrife**	1				

Table 6 (Mesic Prairie) Continued

Latin Name	Common Name	2012	2013	2014	2015	2016
Matricaria discoidea	**pineapple-weed**		1			
Medicago lupulina	**black medic**		2			1
Medicago sativa	**alfalfa**		2		1	
Melilotus alba	**white sweet-clover**		1			3
Melilotus officinalis	**yellow sweet clover**					1
Menispermum canadense	**moonseed**		1			
Mentha arvensis	field mint		1	1	2	
Monarda fistulosa	bee balm		1	3	3	3
Mullugo verticillata	**carpetweed**	2	1			
Nepeta cataria	**catnip**				1	
Oenothera biennis	evening-primrose	1				3
Panicum virgatum	switch grass			1	4	3
Pastinaca sativa	**wild parsnip**					1
Pedicularis canadensis	lousewort				1	
Phalaris arundinacea	**reed canary grass**	1	3	1	2	1
Plantago lanceolata	English plantain		1			1
Plantago major	common plantain		1	1		1
Poa palustris	marsh bluegrass			1	1	1
Poa pratensis	**Kentucky bluegrass**	3	3			
Polygonum hydropiper	**water-pepper**	2				
Polygonum pensylvanicum	Pennsylvania smartweed	5		1	5	
Polygonum persicaria	**lady's thumb**	1	1			
Potentilla simplex	common cinquefoil		1			
Quercus bicolor	swamp white oak				1	1
Quercus macrocarpa	bur oak					1
Ratibida pinnata	yellow coneflower					1
Rudbeckia hirta	black-eyed susan	3	3	1	5	3
Rumex crispus	**curly dock**	2	2	1	2	1
Salix interior	sandbar willow					2
Salix nigra	willow	1				
Scirpus atrovirens	black bulrush					1
Senna hebecarpa	wild senna					1
Silene latifolia	**white campion**	1				
Silphium perfoliatum	cup-plant			1	1	1
Solanum dulcamara	**deadly nightshade**		1			
Solidago canadensis	common goldenrod				5	4
Solidago gigantea	giant goldenrod		1	2	2	2
Solidago rigida	stiff goldenrod					1
Sonchus arvensis	**sow-thistle**	1	1		1	
Symphyotrichum lanceolatum	panicled aster					4
Symphyotrichum puniceum	red-stemmed aster					4

Table 6 (Mesic Prairie) Continued

Latin Name	Common Name	2012	2013	2014	2015	2016
Taraxacum officinale	dandelion		1			1
Thlaspi arvense	**penny cress**	3	1			
Tragopogon pratensis	**goats-beard**		1			
Trifolium pratense	**red clover**		1	1	1	1
Trifolium repens	**white clover**		1	1	1	1
Typha angustifolia	**narrow-leaved cattail**	1				
Urtica dioica	Stinging nettle	1	1	2	2	3
Verbascum thapsus	**mullein**	1	1	2	1	2
Verbena hastata	blue vervain	3	3	5	5	4
Zizia aurea	golden alexander					1
1. Naming follows Wetter et al. 2001						
2. Species in bold are non-native						



Main Map Projection: Dane County Coordinate System | Locator Map Not to Scale

DRAWN BY	CHECKED BY
DYL	SJH

MONTGOMERY ASSOCIATES:
RESOURCE SOLUTIONS, LLC
119 South Main Street | Cottage Grove, WI 53527
(608) 839-4422 | www.ma-rs.org

AS BUILT ELEVATIONS
HABITAT ZONES

Lake Belle View Lake Restoration
Village of Belleville
Dane County, WI

N
W E
S

0 150 300 Feet

SCALE
1 inch = 300 feet

PROJECT NO.	DATE
1428-011	Sept 4, 2012

SHEET NO.

Figure 1

Drawn By:
Daniel Fuhs

Date:
8/3/2016

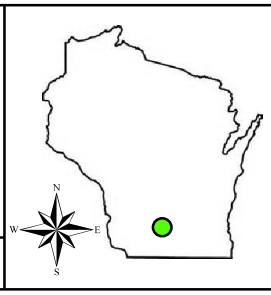
Project Number:
11006

Figure 2

ERC
ECO-RESOURCE CONSULTING, INC
2554 County Rd N Stoughton, WI 53589
www.eco-resource.net

2016 Meander Survey
Lake Belle View Lake Restoration
Village of Belleville
Dane County, Wisconsin

Image Source: USDA FSA 2015



January, 2001

File or Docket Number

Wisconsin Department of Natural Resources

RAPID ASSESSMENT METHODOLOGY FOR EVALUATING WETLAND FUNCTIONAL VALUES

GENERAL INFORMATION

Name of Wetland/Owner:
Location: County Dane; ¼, ¼, Section 34 , Township 5E , Range 8N
Project Name: Lake Belle View Restoration
Evaluator(s): Tara Davenport, PhD and Scott Sauer
Date(s) of Site Visit(s): July 11, 2016

Description of seasonality limitations of this inspection due to time of year of the evaluation and/or current hydrologic and climatologic conditions (e.g. after heavy rains, snow or ice cover, during drought year, during spring flood, during bird migration):

WETLAND DESCRIPTION

Wisconsin Wetlands Inventory classification:
Wetland Type: shallow open water deep marsh **shallow marsh** seasonally flooded basin bog **floodplain forest** alder thicket **sedge meadow** coniferous swamp fen **wet meadow** shrub-carr low prairie hardwood swamp
Estimated size of wetland in acres: 20.5 acres

SUMMARY OF FUNCTIONAL VALUES

Based on the results of the attached functional assessment, rate the significance of each of the functional values for the subject wetland and check the appropriate box. Complete the table as a summary.

FUNCTION	SIGNIFICANCE				
	Low	Medium	High	Exceptional	N/A
Floral Diversity	☐	✔	☐	☐	☐
Wildlife Habitat	☐	☐	✔	☐	☐
Fishery Habitat	☐	✔	☐	☐	☐
Flood/Stormwater Attenuation	☐	✔	☐	☐	☐
Water Quality Protection	☐	✔	☐	☐	☐
Shoreline Protection	☐	✔	☐	☐	☐
Groundwater	✔	☐	☐	☐	☐
Aesthetics/Recreation/Education	☐	☐	✔	☐	☐

List any Special Features/"Red Flags":

SITE DESCRIPTION

I. HYDROLOGIC SETTING

A. Describe the geomorphology of the wetland:

- [ ] Depressional (includes slopes, potholes, small lakes, kettles, etc.)
- [ ] Riverine
- [x] Lake Fringe
- [ ] Extensive Peatland

B. **Y** (**N**) Has the wetland hydrology been altered by ditching, tiles, dams, culverts, well pumping, diversion of surface flow, or changes to runoff within the watershed (circle those that apply)?

C. **Y** (**N**) Does the wetland have an inlet, outlet, or both (circle those that apply)?

D. (**Y**) **N** Is there any field evidence of wetland hydrology such as buttressed tree trunks, adventitious roots, drift lines, water marks, water stained leaves, soil mottling/gleying, organic soils layer, or oxidized rhizospheres (circle those that apply)?

E. (**Y**) **N** Does the wetland have standing water, and if so what is the average depth in inches? 4-12 "
Approximately how much of the wetland is inundated? 10 %

F. How is the hydroperiod (seasonal water level pattern) of the wetland classified?

- [ ] Permanently Flooded
- [x] Seasonally Flooded (water absent at end of growing season)
- [x] Saturated (surface water seldom present)
- [ ] Artificially Flooded
- [ ] Artificially Drained

G. (**Y**) **N** Is the wetland a navigable body of water or is a portion of the wetland below the ordinary high-water mark of a navigable water body? List any surface waters associated with the wetland or in proximity to the wetland (note approximate distance from the wetland and navigability determination). Note if there is a surface water connection to other wetlands.

The wetland restoration is a created wetland resulting from dredging construction. This wetland area is part of the former Belleville millpond that was a reservoir of the Sugar River. It is navigable in fact.

II. VEGETATION

A. Identify the vegetation communities present and the dominant species.

	floating leaved community dominated by: Lemna minor & Nymphea odorata
	submerged aquatic community dominated by: C. demersum, P. natans, & S. pectinata
	emergent community dominated by: Bolboschoenus fluviatilis
	shrub community dominated by:
	deciduous broad-leaved tree community dominated by: Populus deltoides & Fraxinus pennsylvanica
	coniferous tree community dominated by:
	open sphagnum mat or bog
	sedge meadow/wet prairie community dominated by: Eleocharis acicularis
	other (explain)

B. Other plant species identified during site visit:
All species identified are listed in Table 1 of attached report.

III. SOILS

A. NRCS Soil Map Classification: No soils data collected but soils are dredged spoils and are mineral soils.

B. Field description:

☐ Organic (histosol)? If so, is it a muck or a peat?

☑ Mineral soil?

- Mottling, gleying, sulfidic materials, iron or manganese concretions, organic streaking (circle those that apply)
- Soil Description: _____
- Depth of mottling/gleying: _____
- Depth of A Horizon: _____
- Munsell Color of matrix and mottles
  - -Matrix below the A horizon (10"depth): _____
  - -Mottles: _____

V. SURROUNDING LAND USES

A. What is the estimated area of the wetland watershed in acres? 172

B. What are the surrounding land uses?

LAND-USE	ESTIMATED % OF WETLAND WATERSHED
Developed (Industrial/Commercial/Residential)	10
Agricultural/cropland	70
Agricultural/grazing	5
Forested	5
Grassed recreation areas/parks	5
Old field	2
Highways or roads	2
Other (specify)	1

VI. SITE SKETCH

Please see attached report, Figure 1 and Figure 2.

FUNCTIONAL ASSESSMENT

The following assessment requires the evaluator to examine site conditions that provide evidence that a given functional value is present and to assess the significance of the wetland to perform those functions. Positive answers to questions indicate the presence of factors important for the function. The questions are not definitive and are only provided to guide the evaluation. After completing each section, the evaluator should consider the factors observed and use best professional judgement to rate the significance. The ratings should be recorded on page 1 of the assessment.

SPECIAL FEATURES/"RED FLAGS"

1. (Y) **N** Is the wetland in or adjacent to an area of special natural resource interest (NR 103.04, Wis. Adm. Code)? If so, check those that apply:

- ☐ Cold water community as defined in s. NR 102.04(3)(b), Wis. Adm. Code, including trout streams, their tributaries, and trout lakes
- ☐ Lakes Michigan and Superior and the Mississippi River
- ☐ State or federal designated wild and scenic river
- ☐ Designated state riverway
- ☐ Designated state scenic urban waterway
- ☐ Environmentally sensitive area or environmental corridor identified in an area-wide water quality management plan, special area management plan, special wetland inventory study, or an advanced delineation and identification study
- ☐ Calcareous fen
- ☐ State park, forest, trail or recreation area
- ☐ State and federal fish and wildlife refuges and fish and wildlife management areas
- ☐ State or federal designated wilderness area
- ☐ Designated or dedicated state natural area
- ☐ Wild rice water listed in ch. NR 19.09, Wis. Adm. Code
- ☑ Surface water identified as an outstanding or exceptional resource water in ch. NR 102, Wis. Adm. Code

✓ 2. (Y) **N** According to the Natural Heritage Inventory (Bureau of Endangered Resources) or direct observations, are there any rare, endangered, or threatened plant or animal species in, near, or using the wetland or adjacent lands? If so, list the species of concern:

Previously reported glade mallow (Napaea dioica) found in area, State Special Concern Species in 2009.

3. **Y** (N) Is the project located in an area that requires a State Coastal Zone Management Plan consistency determination?

Floral Diversity

1. (Y) **N** Does the wetland support a variety of native plant species (i.e. not a monotypic stand of cattail or giant reed grass and/or not dominated by exotic species such as reed canary grass, brome grass, buckthorn, purple loosestrife, etc.)?

2. (Y) **N** Is the wetland plant community regionally scarce or rare? Existing floodplain forest is regionally scarce.

Wildlife and Fishery Habitat

1. List any species observed, evidenced (e.g. tracks, scat, nest/burrow, calls), or expected to utilize the wetland:

   American bald eagle, sandhill cranes, great blue herons, songbirds, dragonflies, damselflies, rabbits, deer tracks and scat, raccoon tracks.

2. (**Y**) **N** Does the wetland contain a number of diverse vegetative cover types and a high degree of interspersion of those vegetation types?

3. (**Y**) **N** Is the estimated ratio of open water to cover between 30 and 70 percent? What is the estimated ratio? _____% water = 60% land = 40%

4. (**Y**) **N** Does the surrounding upland habitat likely support a variety of animal species?

5. (**Y**) **N** Is the wetland part of or associated with a wildlife corridor or designated environmental corridor?

6. (**Y**) **N** Is the surrounding habitat and/or the wetland itself a large tract of undeveloped land important for wildlife that requires large home ranges (e.g. bear, woodland passerines)?

7. (**Y**) **N** Is the surrounding habitat and/or the wetland itself a relatively large tract of undeveloped land within an urbanized environment that is important for wildlife?

8. (**Y**) **N** Are there other wetland areas near the subject wetland that may be important to wildlife?

9. (**Y**) **N** Is the wetland contiguous with a permanent waterbody or periodically inundated for sufficient periods of time to provide spawning/nursery habitat for fish?

10. (**Y**) **N** Can the wetland provide significant food base for fish and wildlife (e.g. insects, crustaceans, voles, forage fish, amphibians, reptiles, shrews, wild rice, wild celery, duckweed, pondweeds, watermeal, bulrushes, bur reeds, arrowhead, smartweeds, millets...)?

11. **Y** (**N**) Is the wetland located in a priority watershed/township as identified in the Upper Mississippi and Great Lakes Joint Venture of the North American Waterfowl Management Plan?

12. (**Y**) **N** Is the wetland providing habitat that is scarce to the region?

Flood and Stormwater Storage/Attenuation

1. (**Y**) **N** Are there steep slopes, large impervious areas, moderate slopes with row cropping, or areas with severe overgrazing within the watershed (circle those that apply)?

2. (**Y**) **N** Does the wetland significantly reduce run-off velocity due to its size, configuration, braided flow patterns, or vegetation type and density?

3. **Y** (**N**) Does the wetland show evidence of flashy water level responses to storm events (debris marks, erosion lines, stormwater inputs, channelized inflow)?

4. (**Y**) **N** Is there a natural feature or human-made structure impeding drainage from the wetland that causes backwater conditions?

5. (Y) **N** Considering the size of the wetland area in relation to the size of its watershed, at any time during the year is water likely to reach the wetland's storage capacity (i.e. the level of easily observable wetland vegetation)? [For some cases where greater documentation is required, one should determine if the wetland has capacity to hold 25% of the run-off from a 2 year-24 hour storm event.]

6. (Y) **N** Considering the location of the wetland in relation to the associated surface water watershed, is the wetland important for attenuating or storing flood or stormwater peaks (i.e. is the wetland located in the mid or lower reaches of the watershed)?

Water Quality Protection

1. **Y** (N) Does the wetland receive overland flow or direct discharge of stormwater as a primary source of water (circle that which applies)?

2. (Y) **N** Do the surrounding land uses have the potential to deliver significant nutrient and/or sediment loads to the wetland?

3. (Y) **N** Based on your answers to the flood/stormwater section above, does the wetland perform significant flood/stormwater attenuation (residence time to allow settling)?

4. (Y) **N** Does the wetland have significant vegetative density to decrease water energy and allow settling of suspended materials?

5. (Y) **N** Is the position of the wetland in the landscape such that run-off is held or filtered before entering a surface water?

6. (Y) **N** Are algal blooms, heavy macrophyte growth, or other signs of excess nutrient loading to the wetland apparent (or historically reported)?

Shoreline Protection

1. (Y) **N** Is the wetland in a lake fringe or riverine setting? If NO, STOP and enter "not applicable" for this function. If YES, then answer the applicable questions.

2. (Y) **N** Is the shoreline exposed to constant wave action caused by long wind fetch or boat traffic?

3. (Y) **N** Is the shoreline and shallow littoral zone vegetated with submerged or emergent vegetation in the swash zone that decrease wave energy or perennial wetland species that form dense root mats and/or species that have strong stems that are resistant to erosive forces?

4. (Y) **N** Is the stream bank prone to erosion due to unstable soils, land uses, or ice floes?

5. **Y** (N) Is the stream bank vegetated with densely rooted shrubs that provide upper bank stability?

Groundwater Recharge and Discharge

1. **Y** (N) Related to discharge, are there observable (or reported) springs located in the wetland, physical indicators of springs such as marl soil, or vegetation indicators such as watercress or marsh marigold present that tend to indicate the presence of groundwater springs?

2. **Y** (N) Related to discharge, may the wetland contribute to the maintenance of base flow in a stream?

3. **Y** (N) Related to recharge, is the wetland located on or near a groundwater divide (e.g. a topographic high)?

Aesthetics/Recreation/Education and Science

1. (Y) N Is the wetland visible from any of the following kinds of vantage points: (roads, public lands, houses, and/or businesses?) (Circle all that apply.)

2. (Y) N Is the wetland in or near any population centers?

3. (Y) N Is any part of the wetland is in public or conservation ownership?

4. (Y) N Does the public have direct access to the wetland from (public roads or waterways)? (Circle those that apply.)

5. Is the wetland itself relatively free of obvious human influences, such as:

   a. (Y) N Buildings?
   b. (Y) N Roads?
   c. (Y) N Other structures?
   d. Y (N) Trash?
   e. Y (N) Pollution?
   f. (Y) N Filling?
   g. Y (N) Dredging/draining?
   h. (Y) N Domination by non-native vegetation?

6. Is the surrounding viewshed relatively free of obvious human influences, such as:
   a. Y (N) Buildings?
   b. Y (N) Roads?
   c. Y (N) Other structures?

7. (Y) N Is the wetland organized into a variety of visibly separate areas of similar vegetation, color, and/or texture (including areas of open water)?

8. (Y) N Does the wetland add to the variety of visibly separate areas of similar vegetation, color, and/or texture (including areas of open water) within the landscape as a whole?

9. Does the wetland encourage exploration because any of the following factors are present:
   a. (Y) N Long views within the wetland?
   b. (Y) N Long views in the viewshed adjacent to the wetland?
   c. (Y) N Convoluted edges within and/or around the wetland border?
   d. (Y) N The wetland provides a different (and perhaps more natural/complex) kind of environment from the surrounding land covers?

10. (Y) N Is the wetland currently being used for (or does it have the potential to be used for) the following recreational activities? (Check all that apply.)

ACTIVITY	CURRENT USE	POTENTIAL USE
Nature study/photography	✔	☐
Hiking/biking/skiing	✔	☐
Hunting/fishing/trapping	✔	☐
Boating/canoeing	✔	☐
Food harvesting	✔	☐
Others (list)	☐	☐

11. (Y) N Is the wetland currently being used, and/or does it have the potential for use for educational or scientific study purposes (circle that which applies)?

ECO-RESOURCE CONSULTING, INC

July 21, 2016

Mr. Christian Burnson
Montgomery Associates: Resource Solutions
119 South Main Street
Cottage Grove, WI 53527

RE: Evaluation of Tree Planting Conducted by NES in 2015

Mr. Burnson,

This letter provides our findings with regards to the Tree Survey ERC conducted at the Lake Belle View Restoration site from July 12-15, 2016. NES planted 2,642 trees in 2015. Of the 1,182 trees that ERC surveyed, approximately 32% of them were found to be dead or dying (see table below). Figure 1 (attached) shows locations of dead trees at the Lake Belle View Restoration site. Each red dot represents an individual dead tree or a cluster of dead trees. Dead trees did not appear to be location or species specific.

Lake Belle View Restoration, Belleville WI	
Tree Survival Monitoring	
Conducted by ERC, 7/12/16 - 7/15/16	
Total Number of Trees Planted by NES	2642
Total Number of Trees Surveyed by ERC	1182
Total Number of Dead/Dying Trees	373
Mortality Rate	32%

Please contact the undersigned with any further questions or comments.

Respectfully submitted,

ECO-RESOURCE CONSULTING, INC

Tara Davenport

Tara Davenport
Senior Biologist

Drawn By:
Daniel Fuhs

Date:
7/15/2016

Project Number:
11006

Figure 1

ERC
ECO-RESOURCE CONSULTING, INC
2554 County Rd N Stoughton, WI 53589
www.eco-resource.net

2016 Tree Installation Survey
Lake Belle View Lake Restoration
Village of Belleville
Dane County, Wisconsin

Image Source: USDA FSA 2015