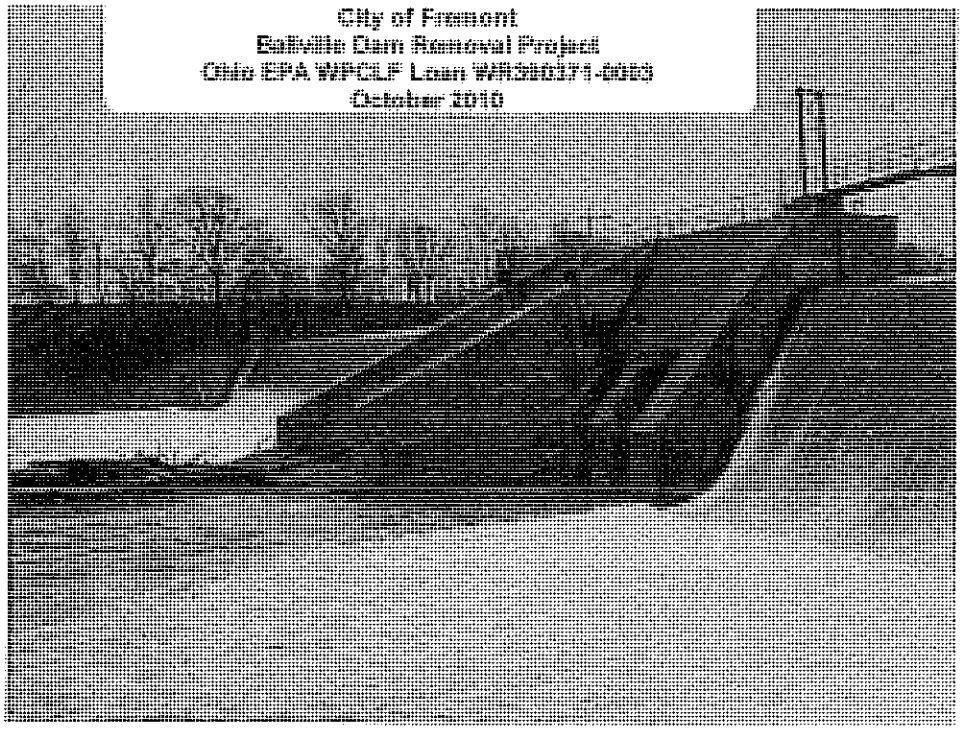
DAM SAFETY INSPECTION REPORT

Ballville Dam
Class I
Sandusky County, Ballville Township
File Number: 1231-003
Inspection Date: December 10, 2003

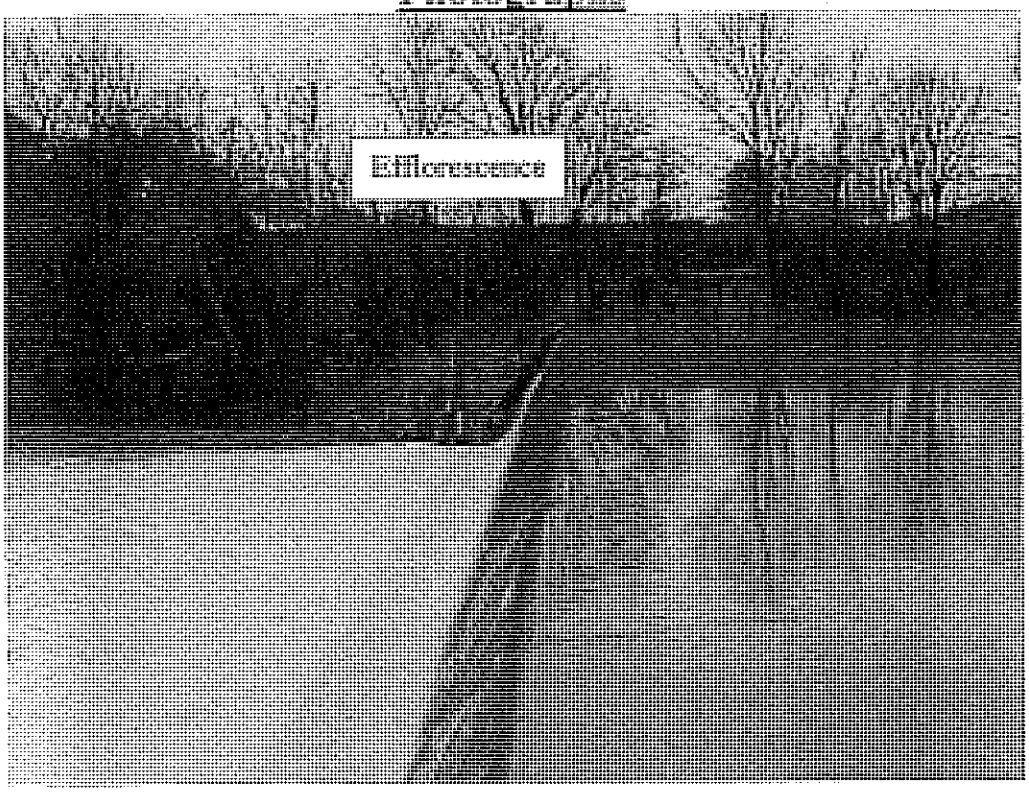


In accordance with Ohio Revised Code Section 1521.062, the owners of dams must monitor, maintain and operate their dams safely. Negligence of owners in fulfilling these responsibilities can lead to the development of extremely hazardous conditions to downstream residents and properties. In the event of a dam failure, owners can be subject to liability claims.

The Division of Water, Dam Safety Engineering Program, has the responsibility to ensure that human life, health and property are protected from the failure of dams. Conducting periodic safety inspections and working with dam owners to maintain and improve the overall condition of Ohio dams are vital aspects of achieving this purpose.

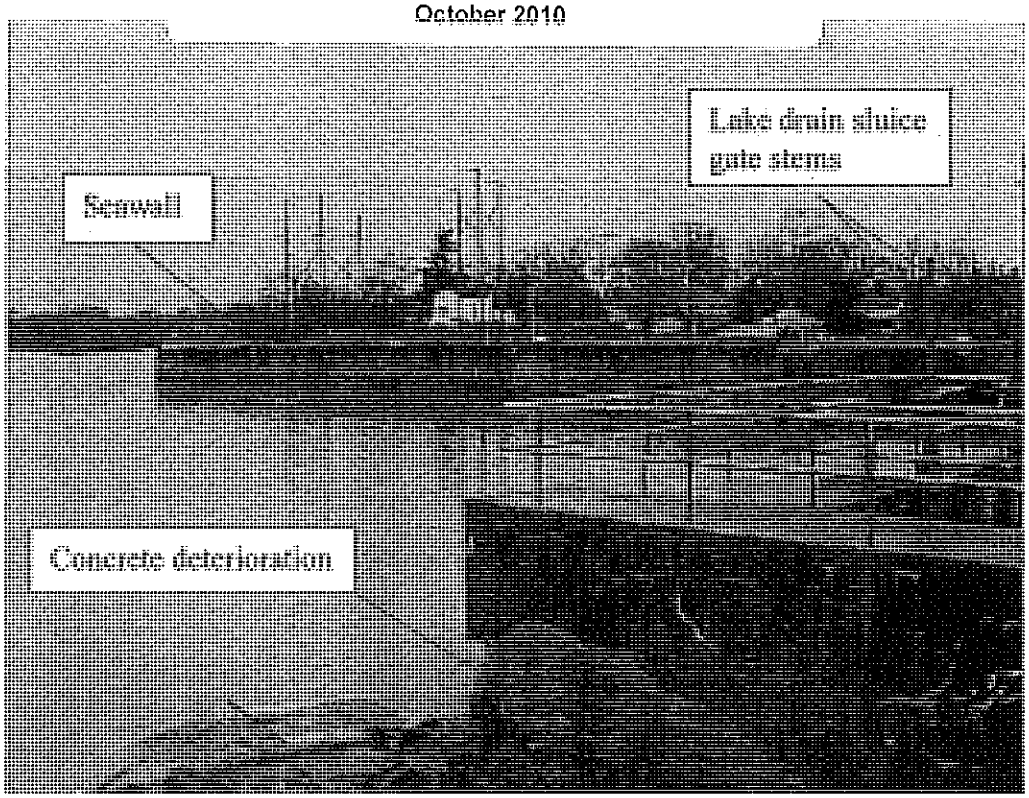
This inspection was conducted to evaluate the condition of the dam and its appurtenances under authority of Section 1521.062 of the Ohio Revised Code. In accordance with Ohio Administrative Code Rule 1501:21-21-03, the owners of dams must implement all remedial measures listed in the enclosed report.

Photographs

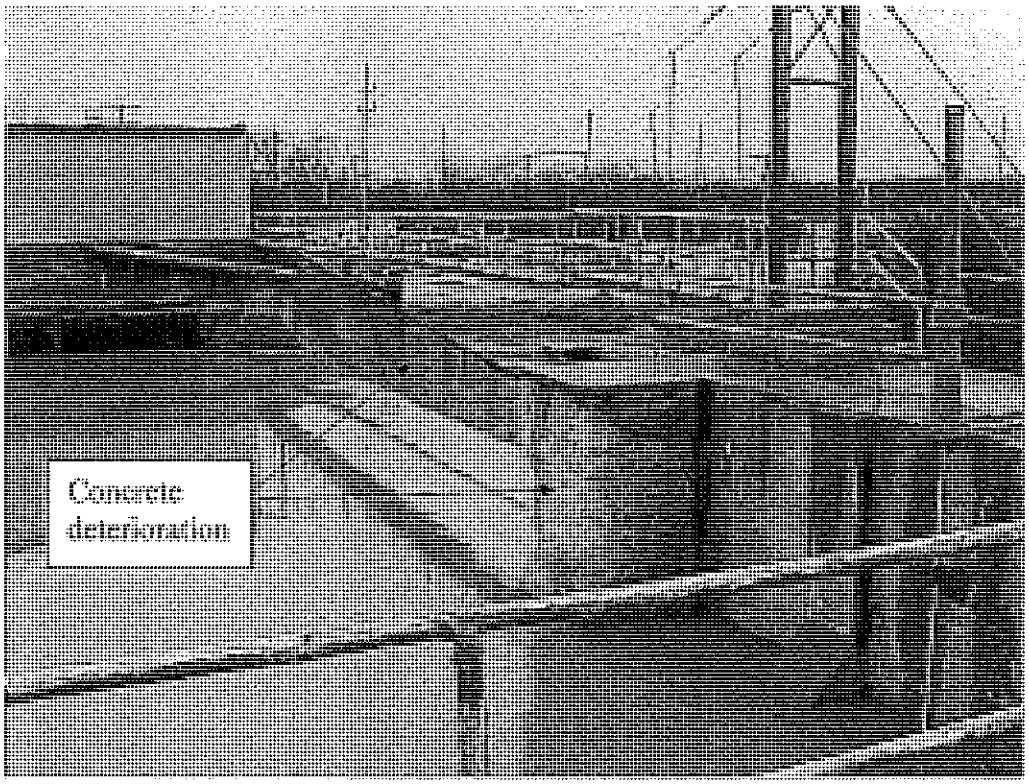


The principal spillway and right abutment. Note the effloreseence.

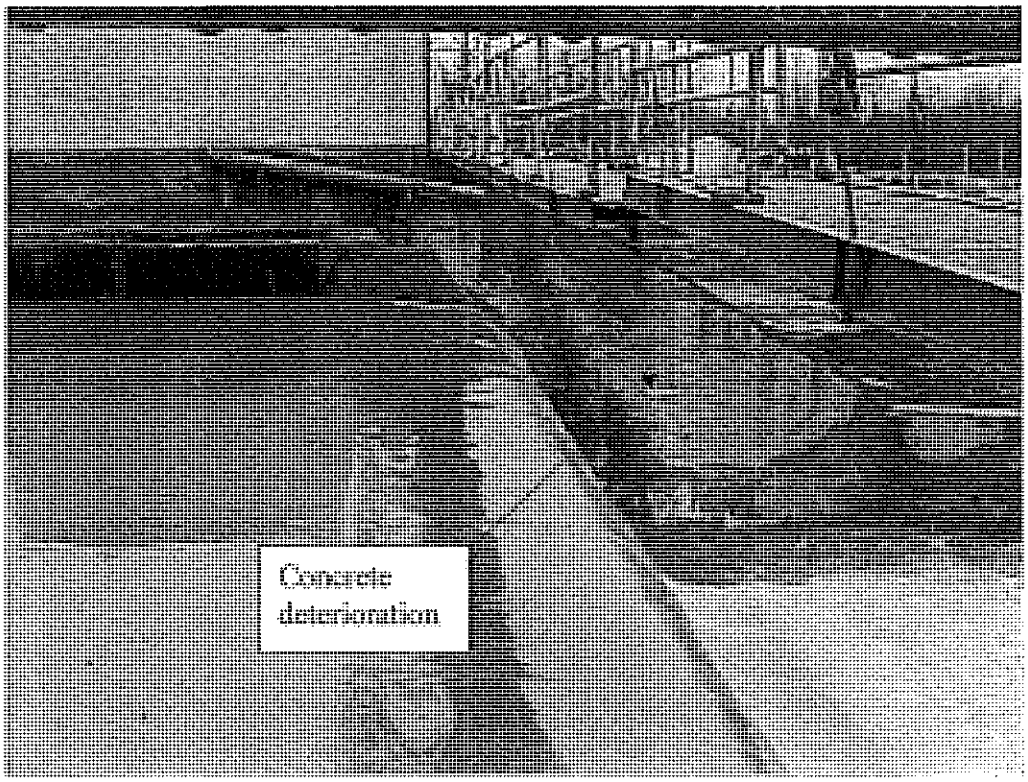
Upstream view of the center dam section and auxiliary spillway.



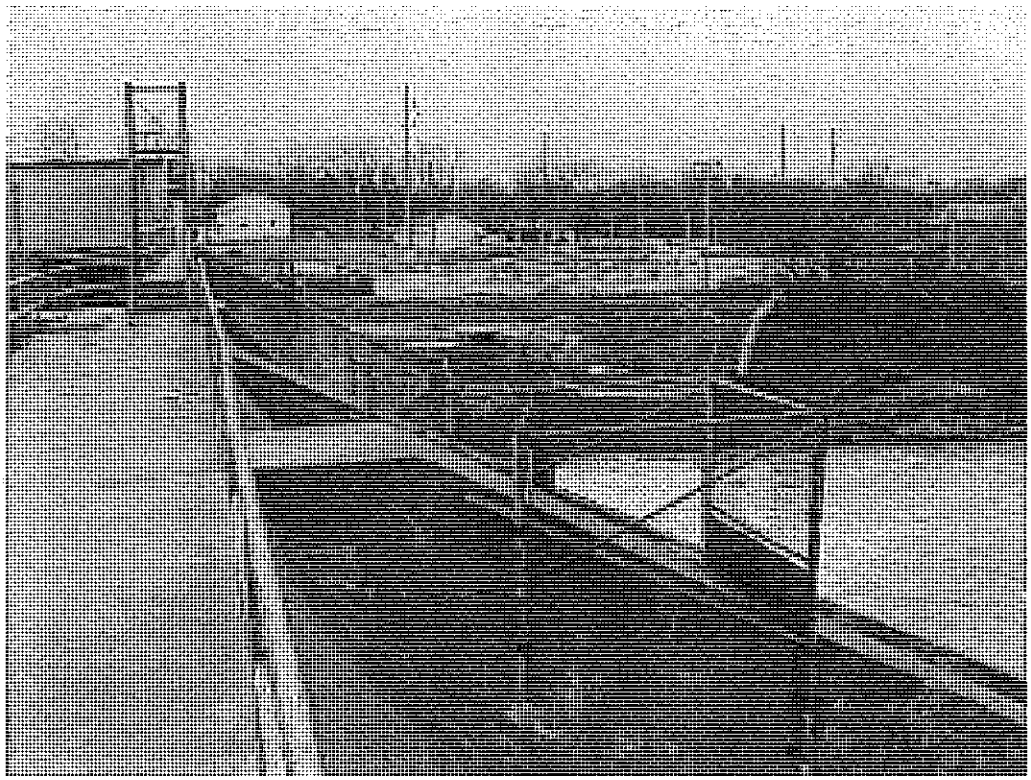
The center dam section. Note the concrete deterioration. Also note the concrete seawall in the background and the lake drain sluice gate stems.



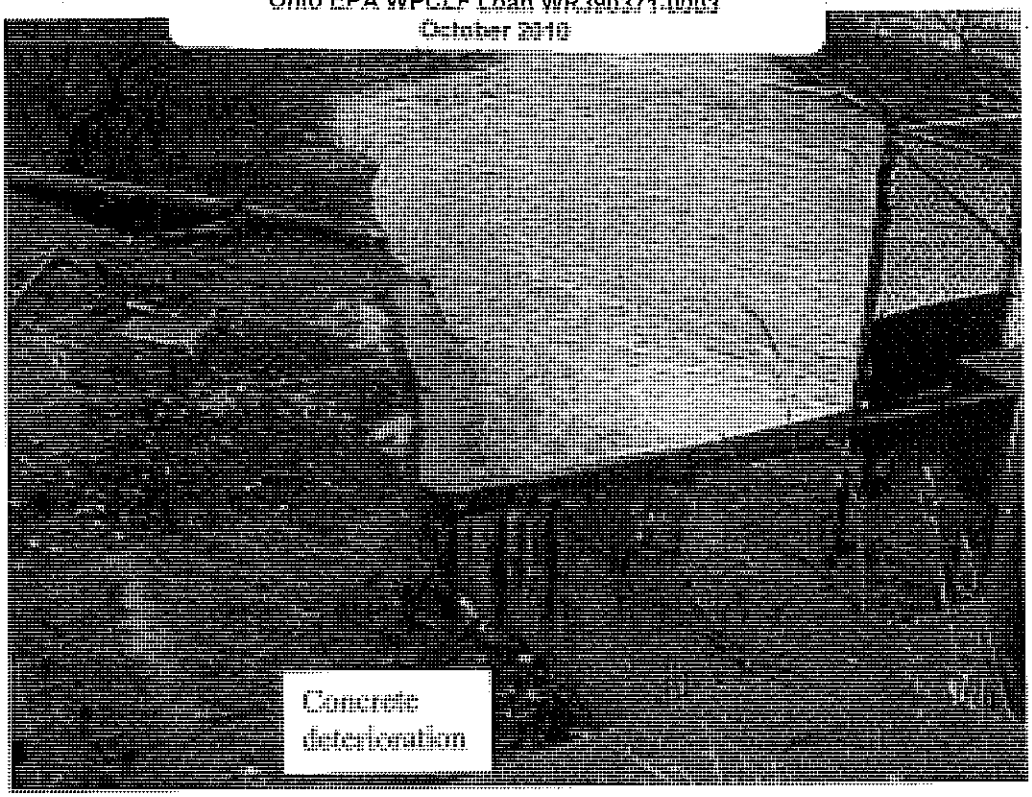
Upstream view of the center dam section, auxiliary spillway, and left abutment. Note the concrete deterioration.



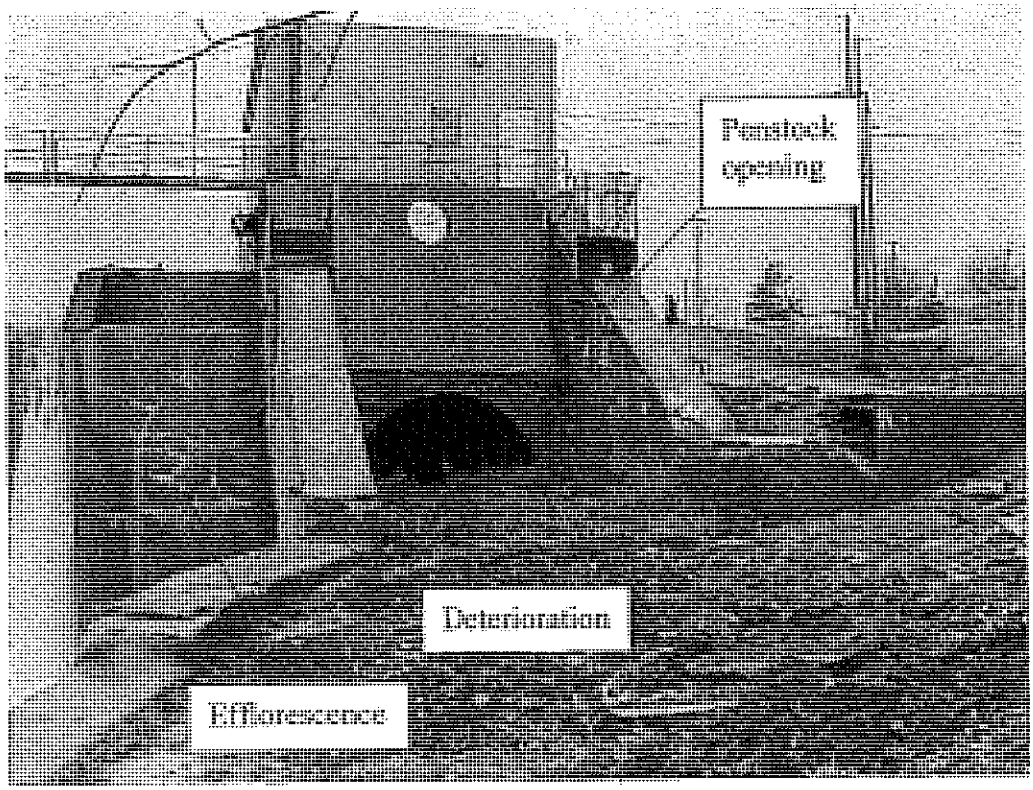
The left auxiliary spillway sidewall. Note the concrete deterioration.



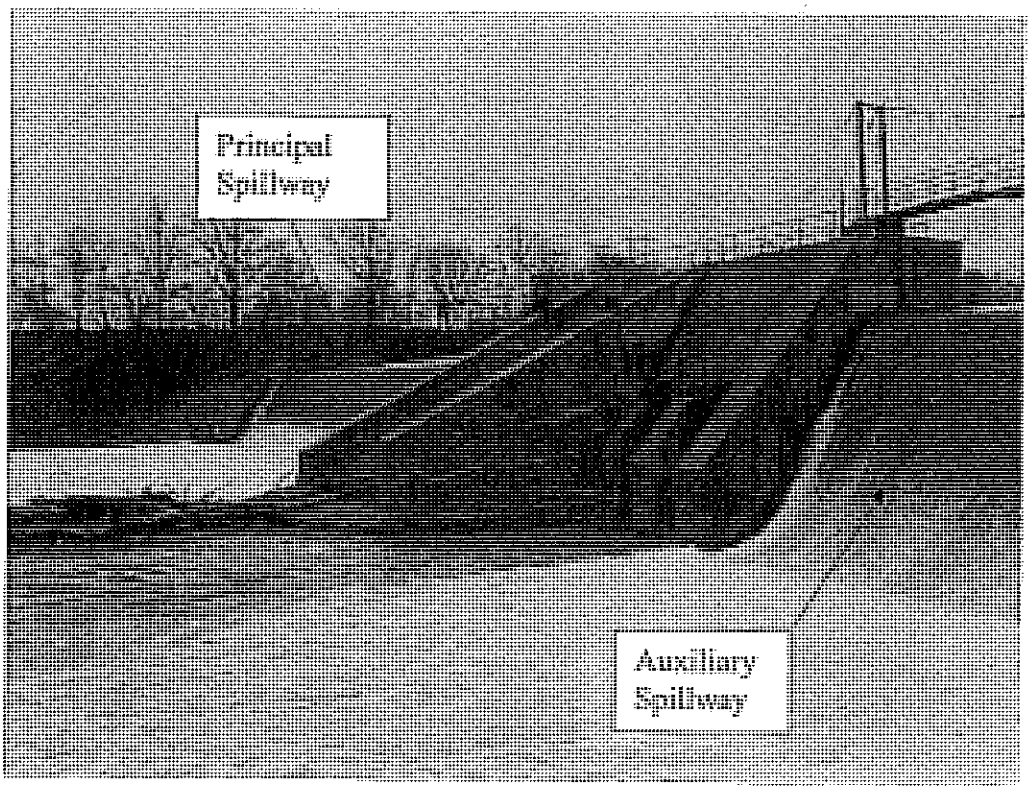
View of the left abutment seen from the center dam section.



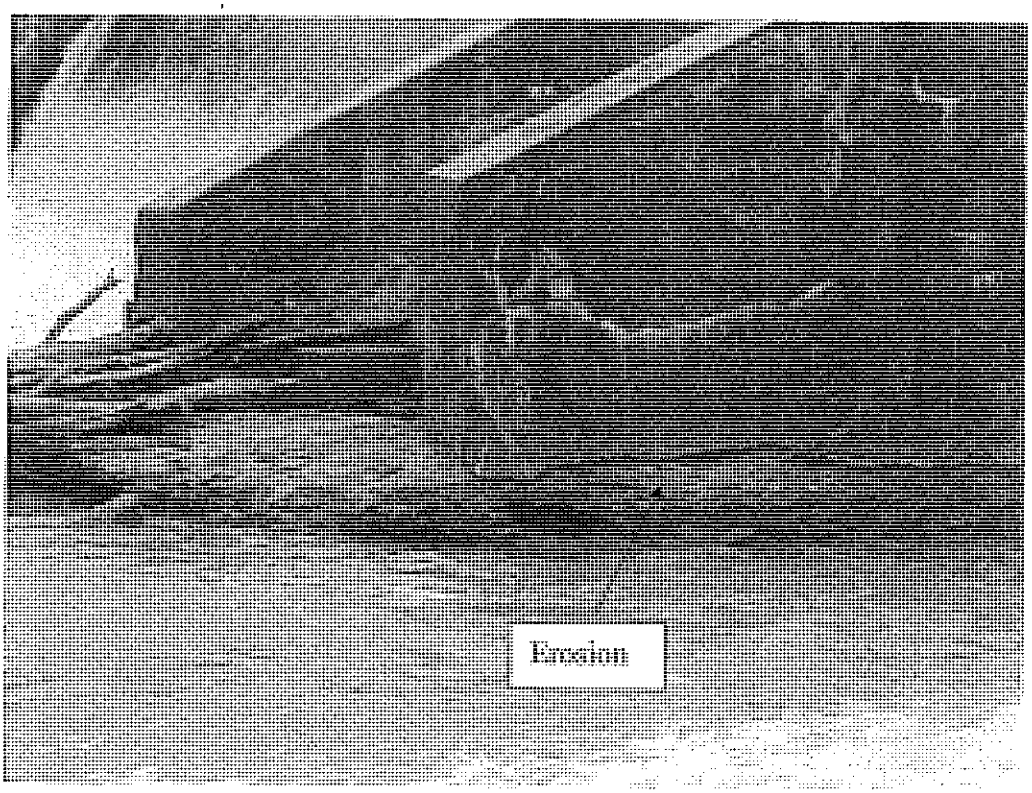
The left auxiliary spillway sidewall. Note the concrete deterioration.



The left abutment. Note the efflorescence, deterioration, and penstock opening.



The downstream face of the dam. Note the principal and auxiliary spillways.



The two longest buttress walls on the non-overflow section of the dam. Note the erosion of the bedrock at the base of the wall.

OHIO HISTORY

NOV 10 2010

November 2, 2010

Joseph R. Jellick
OEPA - DEFA
P.O. Box 1049
Columbus, OH 43216-1049

Re: Ballville Dam Demolition
Fremont, (Ballville), Ballville Township, Sandusky County, Ohio

Dear Mr. Jellick,

This is in response to correspondence from your office dated October 4, 2010 (received October 13) regarding the above referenced project. The comments of the Ohio Historic Preservation Office (OHPO) are submitted in accordance with provisions of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 [36 CFR 800]).

The project involves the demolition of Ballville Dam. Additional information is needed for us to continue with the Section 106 review for this project.

We do not agree with the Area of Potential Effects that has been delineated for this undertaking. We recommend further consideration of the APE. The project will result in the removal of a large, visible structure. In many ways this structure is a landmark that helps give a sense of place to people living in this area. It would be helpful for you to consider a much broader APE and to provide an extensive discussion of the current views where the dam is visible and how these views will appear after the removal of the dam.

We do not agree that sufficient effort has been initiated to identify consulting parties. We recommend that the consulting party list should be increased to include local historical societies and also to make available for the public the inclusion of meaningful comments from the local, state, and federal agencies that will be involved in this undertaking. It would be helpful to specifically seek out persons who have a demonstrated interest in the preservation of these kinds of structures and invite their participation in the consultation.

We do not agree that sufficient effort has been made to identify historic properties. We recommend that an archaeological survey is needed. The archaeological survey must be carefully designed to make certain that areas at the north and south end of the dam where there will be ground disturbance extending beyond the limits of the structure do not contain significant and sensitive archaeological deposits. Archaeological site 33-SA-175 has been identified in this area. This site is described as though it might extend to within in a few meters of the dam. This site does contain significant and sensitive archaeological deposits.

OHIO HISTORICAL SOCIETY
Ohio Historic Preservation Office
1982 Velma Avenue, Columbus, Ohio 43211-2497 ph: 614.298.2000 fx: 614.298.2037
www.ohiohistory.org

We recommend that additional documentation on the architecture of the dam is needed. This documentation should provide completed inventory forms so that consulting parties may participate meaningfully in the consultation. The documentation should present a thoughtful argument evaluating the significance of the dam. Does the dam meet one or more National Register eligibility criterion? We recommend that it would be helpful to make sure that the documentation and eligibility evaluation look to establish that the dam does meet National Register eligibility criteria. We recommend that it is helpful to use the National Register nomination form and National Park Service guidance on applying National Register eligibility criteria as a fundamental part of the organization for preparing documentation to evaluate National Register eligibility. That is, prepare documentation within a meaningful context at an appropriate professional level, conduct consultation, and then, only if good efforts to recognize the dam as meeting National Register eligibility criteria aren't successful will you conclude that the dam isn't eligible.

Any questions concerning this matter should be addressed to David Snyder at (614) 298-2000, between the hours of 8 am. to 5 pm. Thank you for your cooperation.

Sincerely,

David Snyder

David Snyder, Ph.D., Archaeology Reviews Manager
Resource Protection and Review

DMS/ds (OHPO Serial Number 1035730)

xc: Sam Derr, Service Director, City of Fremont, 323 S. Front Street, Fremont, OH 43420-3065

ASC Group, Inc., has conducted cultural resource investigations for the removal of the Ballville Dam south of Fremont, Sandusky County, Ohio. The Area of Potential Effect (APE) encompasses land along the dam pool (from the dam to approximately 800 feet north of the Tindall Bridge at Rice Road), including parcels abutting the dam pool, directly facing onto the dam pool, or abutting the American Electric Power (AEP) equipment yard north of the dam. Although not within the APE, the former hydroelectric plant downstream of the dam also was recorded and evaluated as part of the survey due to its historical functional association with the dam. The APE is considered preliminary and subject to change until concurrence is reached between the lead Federal agency (U.S. Army Corps of Engineers) and the consulting parties, including the Ohio Historic Preservation Office. The history/architecture survey examined the entire APE, while the archaeology survey was limited to areas where ground-disturbing activities are anticipated, including areas on the north and south ends of the dam and a 365-m (1,200-ft) section of riverbank about 1,200 m (4,000 ft) upstream of the dam. The purpose of this investigation is to provide information for compliance with Section 106 of the National Historic Preservation Act of 1966.

The literature review identified no properties listed in or previously determined eligible for listing in the National Register of Historic Places (NRHP) in the APE, as well as no previously inventoried history/architecture resources. Previously inventoried archaeological sites are located adjacent to, but not within, the archaeological survey areas. ASC's archaeological survey encountered one archaeological site (33SA598). The site could not be dated and the remains are very ephemeral (three small flake fragments). The site was recommended not eligible for inclusion in the NRHP. The history/architecture survey identified a total of 33 aboveground buildings, structures, and sites greater than 50 years of age in the APE. The former hydroelectric plant and the Ballville Dam (SAN-545-10 and SAN-546-10) are recommended as eligible for listing in the NRHP under Criteria A for their association with early electricity production and the development of a regional power grid in north-central Ohio. Removal of the dam will be an adverse effect to these resources. A farmhouse located along South River Road (SAN-568-10) is recommended as eligible for the NRHP under Criterion C as an excellent example of Queen Anne-style design. This house will not be impacted by the project.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

5600 American Boulevard West, Suite 990
Bloomington, MN 55437-1458

IN REPLY REFER TO
FWS/AF

FEB 03 2012

Mr. Sam Derr
City of Fremont
323 South Front
Fremont, Ohio 43420

RE: **Section 106 Review**: Sandusky River Fish Passage Project, Township of Ballville, Sandusky County, Ohio

Dear Mr. Derr:

The U.S. Fish and Wildlife Service (Service) is helping to fund, through the Great Lakes Restoration Initiative and Great Lakes Fish and Wildlife Restoration Act, a project to provide fish passage for migratory fish species such as walleye, white bass and greater redhorse along the Sandusky River in Sections 4, 5, 8, 9, and 17, T4N, R15E, the Township of Ballville in Sandusky County, Ohio. The potential that this project will affect cultural resources eligible for listing on the National Register of Historic Places (NRHP) prompts our consultation with you under Section 106 of the National Historic Preservation Act (NHPA). The service is inviting you to be a consulting party for this project.

The Service, along with Stantec Consulting Services (STANTEC), the City of Fremont, the Ohio Department of Natural Resources (ODNR), and the Ohio Environmental Protection Agency (OEPA), are working to prepare a Draft Environmental Impact Statement (DEIS) to restore the Sandusky River to its natural flow conditions through the proposed removal of the extant Ballville Dam, built in 1912. Removing the dam would facilitate the restoration of aquatic organism passage and habitat connectivity both upstream and downstream of the dam site, the elimination of safety hazards and liability associated with the dam, the improvement of water quality, the management of impounded sediments, and an increase in recreational use of the river.

The dam no longer impounds water for hydroelectric energy production. The dam's current main function, as creating a drinking water supply, will become obsolete once the nearby City of Fremont is done constructing an up ground drinking water reservoir, scheduled to be completed Spring of 2012. Although the DEIS will examine the issues and concerns related to this complex project, it is believed by some that repairing and maintaining the deteriorating dam would be cost prohibitive for the city and its residents. In addition, the dam is currently out of compliance with the State of Ohio dam safety regulations. Furthermore, the Sandusky River is currently not meeting its designated beneficial uses upstream of the dam. In conjunction with the preparation of this document to

investigate the ramifications of the proposed removal, the service is investigating the historic nature of the proposed project site and what effect this may have on the dam.

The Area of Potential Effects (APE) for the project is somewhat subjective but is considered the dam pool itself and surrounding parcels within the dam's viewshed. It is 89.3 acres in size, but, the direct APE is only 12.2 acres. The ASC Group, Inc. (ASC) was subcontracted by STANTEC to conduct a cultural resources management survey of the entire APE. However, an archaeological survey was conducted only on the direct APE. The entire APE was field reviewed for standing structures.

A map of the APE and ASC's findings and recommendations are found in their final report entitled "Cultural Resources Management Survey for the Proposed Removal of the Ballville Dam, Ballville Township, Sandusky County, Ohio" by Douglas Terpstra, Chuck Mustain and Alan Tonetti, September 2011. Enclosed please find a copy of the final report for your review.

ASC's archaeological survey discovered only one archaeological site, 33SA598, which was a sparse prehistoric lithic scatter. It was found on the surface in a plowed field. ASC considers this site not to be eligible for inclusion on the NRHP. Their architectural survey recorded 33 buildings, structures and a historic cemetery more than 50 years of age within the APE. Of these, only three are recommended to be eligible for inclusion on the NRHP. These include the Ballville Dam (SAN-546-10), its associated Hydroelectric Plant (SAN-545-10), and the Jacob King Farmhouse (SAN-568-10) at 2022 South River Road.

We agree with ASC's recommendations on all three of these properties. The Ballville Dam and the Hydroelectric Plant are both considered by the Service to be eligible for listing under Criteria A and C. They could be thought of as contributing elements of a possible discontinuous historic district. The Jacob King Farmhouse (but not any associated land or outbuildings) is considered by the Service to be eligible under Criterion C. The Service determines that the proposed removal of the Ballville Dam will constitute an Adverse Effect on the Ballville Dam. However, the Service also determines that the removal will have No Adverse Effect on the Hydroelectric Plant or the Jacob King Farmhouse.

To mitigate the Adverse Effect to the Ballville Dam, the Service is proposing to enter into a Memorandum of Agreement (MOA) with you and the other the consulting parties. The consulting parties include the City of Fremont, the ODNR, the OEPA, the Ohio State Historic Preservation Office (OHPO), and the U.S. Army Corps of Engineers (USACE). The Sandusky County Historical Society and the Rutherford B. Hayes Presidential Center are considered to be interested parties. As such, although they would be consulted, they would not be signatories to the MOA. All are receiving similar consultation letters. Some mitigation options within the MOA may include an extensive Historic Architectural and Engineering Record (HAER) recordation of the Ballville Dam (satisfying Criterion C) and the writing of a publicly accessible history book on the Ballville Dam and its place in Ohio hydroelectrical history (satisfying Criterion A).

There is one other issue that may need to be addressed in the MOA. It is the question of the possible remnants of the Tucker Dam, located approximately 4,500 feet upstream from the Ballville Dam. Soundings from a hydrographic survey noted an anomaly in the riverbed at the possible location of

the remnant timber structure eight feet below the waterline and encased in sediment (see pages 66-67 in the report). The lowering of the waterline may expose this feature. In lieu of an expensive underwater survey, this could be dealt with as part of an MOA after (or while) the proposed removal of the Ballville Dam is carried out.

If you have any questions about these determinations, please contact my Regional Historic Preservation Officer, James Myster, at (612) 713-5439 or james_myster@fws.gov.

Sincerely,

Charles M. Wooley
Acting Regional Director

Enclosure

cc: James Myster, USFWS Regional Historic Preservation Officer

5.4 OHIO ENVIRONMENTAL PROTECTION AGENCY

Stantec

BALLVILLE DAM REMOVAL
SECTION 401 WQC
PRE-APPLICATION MEETING
SIGN-IN SHEET

Wood County, Ohio
Bowling Green, OH
April 11, 2013
1:00 PM

PLEASE PRINT

Name	Street Address City, State, Zip	Affiliation	Phone Number	Email Address
1. Heather Allamon	Ohio EPA - NWDO		419-373-3024	heather.allamon@epa.ohio.gov
2. Cody Fleece	11687 LEBANON RD STANTEC	STANTEC	513-842-8238	cody.fleece@stantec.com
3. [illegible]	ODNR-Wildlife		419-625-8062	jeff.tyson@dnr.state.oh.us
4. Joey Seamands	Stantec	11687 Lebanon Rd.	513-842-8239	joey.seamands@stantec.com
5. Brian Karcheski	Stantec			
6.				
7.				
8.				
9.				

Pre-Application Meeting Request Form

Office Use Only	
Date Received:	
Coordinator:	
Ohio EPA ID #:	
USACE PN #:	
Site Visit (Y/N):	

Instructions

Filling out a pre-application form is an informal first step in the Section 401 WQC and/or Isolated Wetland Permitting process. It provides the opportunity to present and discuss details of your project while it is in its early planning stages. **At a minimum**, you must indicate your meeting purpose and complete Sections 1, 2 and 3. Please fill out Section 4 to the degree possible given your unique constraints on time and resources. More detailed instructions are provided at the end of this form.

Meeting Purpose

Please state what you hope to accomplish at the pre-application meeting:

1. To provide a general project overview
2. To discuss information related to wetland mitigation and alternatives analysis

Mail or E-mail completed request form and supporting information to:
Ohio EPA
DSW/401 Section
P.O. Box 1049
Columbus, OH 43216-1049
401Webmail@epa.ohio.gov

SECTION 1: Contact Information		
Part A. Applicant		
Applicant Contact Name and Title *(President, Chair or other person in charge of Organization):*		
Name: Jim Ellis	Title: Mayor of the City of Fremont	
Phone: (419) 334-5900	Fax: (419) 334-8434	
Alternate phone: ( )		
E-mail:		
Street: 323 South Front Street		
City: Fremont	State Ohio	Zip: 43420
Statement of Authorization: I hereby designate and authorize the below-named consultant/agent to act in my behalf in the processing of this Pre-Application Meeting Request, and to furnish supplemental information in support of the meeting request.		
Signature of Applicant:	Date:	
Part B. Consultant/Agent (if applicable)		
Consultant/Agent Contact Name and Title *(Project Manager or other person in charge of authorizing contracts for 401/Isolated Wetlands permitting):*		
Name: Cody Fleece	Title: Associate Ecologist	
Phone: (513) 842-8238	Fax: (513) 842-8250	
Alternate phone: (513) 262-3994		
E-mail: Cody.Fleece@stantec.com		
Street: 11687 Lebanon Road		
City: Cincinnati	State: Ohio	Zip: 45241

Click to clear all entered information (on all 4 pages of this form) CLEAR

SECTION 2: Project Location

Site Name: Ballville Dam

Location on land where activity is proposed. *(Indicate coordinates of a fixed reference point at the impact site (if known) in decimal degrees. For projects with stream impacts, use River Mile. For Lake Erie shoreline projects, use Shoreline Mile):* River Mile 18

Coordinates: 41.32627 -87.13584

Street: 323 South Front Street	County: Sandusky
Nearest City and/or Township: Fremont	Zip: 43420

Watershed: Sandusky

HUC 8: 04100011

Identify the criteria used to select the project site, including stream and wetland impact avoidance and minimization:
This is a dam removal project. The project site was selected based on the location of the dam.

Attachments *(please place a checkmark next to each item below to indicate that the following attachments are being submitted):*

A. ____ Site Map with boundaries
B. ____ Site maps for alternative locations considered during site selection
C. ✓ Site identified on USGS topographic map
D. ____ Proposed project footprint (including proposed construction limits)

SECTION 3: Project Information

Please read the Section 401 Water Quality Certification and Isolated Wetlands Guide book before completing Section 3.

Description of Project:
See attached Section 3 Description of Project

Description of Project Purpose and Need:
See attached Section 3 Project Purpose and Need

Proposed Project Schedule *(Include construction start date and other dates pertinent to the project)*:
See attached Section 3 Proposed Project Schedule

SECTION 4: Investigation of Water Resources and Permitting Considerations	
Please check Yes or No next to each item below to indicate that it (Y) has or (N) has not been completed AND place a checkmark to indicate (where appropriate) that it is being provided as an attachment:	
1. Have you taken photographs of the site? Yes ☑ No ☐	☐ Photographs attached
2. Did you review a NRCS Soil Survey for this project? Yes ☑ No ☐	☐ NRCS Soil Survey attached
3. Did you review USGS Stream Stats for this project? Yes ☑ No ☐	☐ USGS Stream Stats attached
4. Did you review a National Wetlands Inventory Map (NWI) for this project? Yes ☑ No ☐	☐ NWI Map attached
5. Have you delineated the water resources on the site? Yes ☑ No ☐	☐ Wetland Delineation attached
6. Have you submitted the delineation to the U.S. Army Corps of Engineers? Yes ☑ No ☐	☐ When was delineation submitted? 03 / 31 / 2011
7. Have you received a Jurisdictional Determination? Yes ☑ No ☐	☐ Jurisdictional Determination attached
8. Did you review OAC rules 3745-1-08 to 3745-1-32 and/or 3745-1-53 for each of the water bodies on site to determine if it has a designated use? Yes ☑ No ☐	☐ Appropriate page(s) from OAC rules or similar indicating designated use for each water body attached
9. Have you performed habitat assessments (QHEIs or HHEIs) on the streams on site? Yes ☑ No ☐	☐ QHEI and/or HHEI Score Sheets attached
10. Have you conducted ORAM assessments and made proposed category assignments for the wetlands on site? Yes ☑ No ☐ The 10-page ORAM form must be filled out for each wetland (Background Information, Scoring Boundary Worksheet, Narrative Rating, Field Form, Qualitative Rating, ORAM Summary Worksheet, and Wetland Category Worksheet)	☐ 10-page ORAM form attached for each wetland on site
11. Have you performed any other analysis (e.g., biological)? Yes ☑ No ☐ Please list: QHEI and HHEI for Streams 1-3 (5/22/2013) Freshwater Mussel Survey (9/1/2011 - 9/2/2011) Sediment Transport Modelling Sediment Volumetric Analysis Hydrologic Analysis	☐ Other Analysis attached
12. Do you have an Avoidance and Minimization Plan? Yes ☑ No ☐	☐ Avoidance / Minimization Plan attached
13. Have you selected a Mitigation Site? Yes ☑ No ☐	☐ Mitigation Site Map attached
14. Do you have a conceptual Mitigation and Monitoring Plan? Yes ☑ No ☐	☐ Conceptual Mitigation & Monitoring Plan attached

SECTION 4: Investigation of Water Resources and Permitting Considerations

15. Have you read Ohio EPA's Section 401 Water Quality Certification Application requirements? Yes ☑ No ☐

16. Have you read Ohio EPA's Section 401 and Isolated Wetlands Guidance Manual? Yes ☑ No ☐

17. Have you read Ohio EPA's *Integrated Wetland Assessment Program.Part 6: Standardized Monitoring Protocols and Performance Standards for Ohio Mitigation Wetlands.* 2004? Yes ☑ No ☐

18. Are you familiar with the Wetland Water Quality Standards, Ohio Administrative Code rules 3745-1-50 to 54 and the Isolated Wetland Statute, Ohio Revised Code §6111.02 to §6111.029? Yes ☑ No ☐

19. Have you determined if other permits are necessary for this project? Yes ☑ No ☐
    Please list if known:

Ohio State Historic Preservation Office - Section 106
US Fish and Wildlife Service - Section 7
US Army Corps of Engineers - Section 404
FEMA Floodplain
Ohio Department of Natural Resources - Scenic River Environmental Review
Ohio EPA / Department of the Interior - Records of Decision / NEPA
Ohio EPA - NDPES Permit (need to verify requirement)

20. Please list any specific questions you have :

10e. Other related projects

1.) What agencies and organizations should we contact to create a list of environmental and recreational projects for the affected surface water (i.e. Lower Sandusky River)?

2.) Should we ask the same organizations and agencies about any projects or development targeted for the local region? Or what other agencies/organizations should we contact to collect this information?

3.) What is the timeframe that should be used for determining wetland mitigation success (monitoring time period)?

4.) Alternatives Analysis discussion

Notes:
The information requested in this form is based on the requirements in Ohio Revised Code §6111.30 and §6111.021, and Administrative Code Chapter 3745-32. Applicants should be familiar with the contents of these laws and regulations prior to completing this request form. Additional information is available at http://www.epa.ohio.gov/dsw/401/index.aspx or by calling (614) 644-2001.

SECTION 3: DESCRIPTION OF PROJECT
Ballville Dam Removal and Sandusky River Restoration Project
City of Fremont
Ballville Township
Sandusky County, Ohio

The City of Fremont seeks to remove the Ballville Dam from the Sandusky River. Since removal of the dam will dramatically change the water surface elevation of the reservoir, stream bank stabilization activities are proposed. In addition to the removal of Ballville Dam, the City also proposes to install an ice control structure (ICS) as a result of historical accounts of winter ice jams. The proposed project design will be divided into three separate construction phases.

Phase I

In the first phase of the project the existing south spillway will be notched to draw-down the reservoir. An access road will be built through an adjacent high terrace to access the south abutment for this activity.

Phase II

Following draw-down, the exposed area will be seeded with vegetation. An access road and causeway will be constructed on the north bank and downstream of the dam for demolition access. The ICS will be installed following construction of the causeway. Demolition of the dam will commence only upon completion of the ICS. Once the dam is demolished, the causeway will be removed and the adjacent floodplain bench will be graded.

Phase III

Phase III includes removing the Seawall and stabilizing the adjacent slopes, as well as stabilizing banks and stream confluences throughout the former impoundment.

Since the purchase of the Ballville Dam by the City of Fremont in 1959, the impounded area has been used as a source of public water. In February 2008, the Ohio Environmental Protection Agency (OEPA) issued a Findings and Orders notification to the City citing numerous Ohio Administrative Code (OAC) Rule violations related to the operation of the Public Water System (PWS) and water quality of the City's PWS. Among the violations were elevated nitrate levels documented from samples taken over a period from June 1999 to June 2007. Within the Findings and Orders, the OEPA ordered the City to prepare plans for construction of an off-stream reservoir that would hold approximately 750 million gallons of raw water to address the nitrate violations. Based on its design specifications, once the reservoir is operational, the Ballville Dam and the impounded area are expected to be unnecessary as a PWS.

Progressive deterioration of the dam and associated sea wall has been noted in successive inspections beginning in 1980, however the last known maintenance performed on the structure occurred in 1969. The ODNR informed the City in 2004 that if a remediation schedule for the dam was not submitted and approved by December 1, 2007 legal enforcement actions could result. In August 2007, the ODNR issued a Notice of Violation (NOV) to the City stating that, as a result of its poor condition, the dam was being operated in violation of the law. In June 2011, the ODNR extended timeframes for bringing the dam into compliance (ODNR 2011) in recognition that a new PWS reservoir was being completed. This letter noted that extension of the schedule for compliance did not remedy concerns regarding the condition of the dam.

Water bodies within the State of Ohio have, by law, designated beneficial uses that are protected by water quality standards. Within the project area, the Sandusky River's Aquatic Life Use Standard is Warm Water Habitat (WWH). The Sandusky River has also been designated for Public Water Supply, Agricultural Water Supply, Industrial Water Supply, and Primary Contact Recreation. The Sandusky River was sampled at five locations between river mile (RM) 5.5 and 18.05 in 2009. The Sandusky River at the Ballville Dam (RM 18.05) was found to be in non-attainment of the WWH designation due to siltation and direct habitat alteration.

The Sandusky River is one of Ohio's largest tributaries to Lake Erie, about 210-km in length with a watershed encompassing 3,680 km^2 that drains into the 14,692-hectare, estuarine-like, Sandusky Bay before entering the lake proper. In 1970 approximately 70 miles of the Sandusky River was designated as the state of Ohio's second scenic river. Designation starts upstream at Route 30 Bridge in Upper Sandusky to Roger Young Memorial Park in Fremont, Ohio. River connectivity is disrupted by a low-head dam near the City of Tiffin, Ohio (64 river km from Sandusky Bay) and by the Ballville Dam (29 river km from Sandusky Bay).

The Sandusky River is a tributary to Lake Erie and provides important habitat for many aquatic species. Numerous species of fish and mussels utilize the Sandusky River for a variety of life stages, including spawning, prey resources, and predator evasion. The expansion of available habitat would benefit many species of fish and mussels that use the Sandusky River.

Ballville Dam divides the aquatic ecology of the lower Sandusky River, altering biological functions and impacting both riparian and aquatic habitats otherwise provided by a historically connected Sandusky River watershed. One major ecological impact is that Ballville Dam represents an impassable barrier to upstream movement of all aquatic organisms and to downstream movement of many aquatic organisms. Ballville Dam has an impact on habitat accessibility, habitat conditions, and the overall ecology of its impounded area and the downstream reaches for all species which utilize those areas. This includes year round resident species, as well as migratory species moving into the system during spawning life stages. It was reported that more than half of the fish species in the Sandusky River have decreased in numerical abundance since 1850. These include species prevented from migrating upstream to spawn because of dams; those whose spawning habitat has been largely destroyed by agricultural practices, ditching and draining; those who require considerable aquatic vegetation; and/or those intolerant to turbidity. Many species of former economic importance, such as sturgeon, muskellunge and walleye, have been largely or entirely eliminated.

Additionally, Ballville Dam has altered natural hydrologic and sediment transport functions in the Sandusky River. Notably the dam currently traps coarse sediment in the upper portion of the impoundment as water velocities are reduced. These coarse sediments would, be transported to downstream reaches in an unobstructed system. The supply of such coarse sediments is necessary for the long-term maintenance of downstream spawning habitat, which is important for many native aquatic species utilizing these areas during a series of life stages. Currently, few clays or fine sediments are trapped by the dam, but travel over the structure within the water column and are transported to areas downstream. The restriction of coarse sediments, while conveying fine sediment downstream, can negatively impact important habitats, including spawning areas, by filling in interstitial spaces.

The proposed project will remove the Ballville Dam, restore surrounding stream bank stability, and install a flood control structure. Removing the Ballville Dam will restore natural hydrological processes over a 40-mile stretch of the Sandusky River. The benefits of project are summarized below:

- Provide fish passage opportunities in the Sandusky River at the Ballville Dam site in both the upstream and downstream directions
- Restore system connectivity and natural hydrologic processes between the impounded area upstream of Ballville Dam and the lower Sandusky River, which would restore riverine fish and wildlife habitat, resulting in a net gain in the amount of free-flowing riverine habitat.
- Eliminating flood risks to the City of Fremont.
- Eliminating liabilities associated with the Ballville Dam including potential threats to private properties both upstream and downstream of Ballville Dam.
- Managing downstream movement of reservoir sediments.
- Achieving Use-Attainment (as defined by OEPA) for the lower Sandusky River.

- Improving and increasing aquatic habitat availability in the lower Sandusky River downstream of the Ballville Dam site.

SECTION 3: PROPOSED PROJECT SCHEDULE
Ballville Dam Removal and Sandusky River Restoration Project
City of Fremont
Ballville Township
Sandusky County, Ohio

Phase 1: (September, 2014)

a. Access to south abutment (September, 2014)
b. Notch in Spillway to Elevation 615: resulting in WSE 618 (September 2014)

Phase 2:

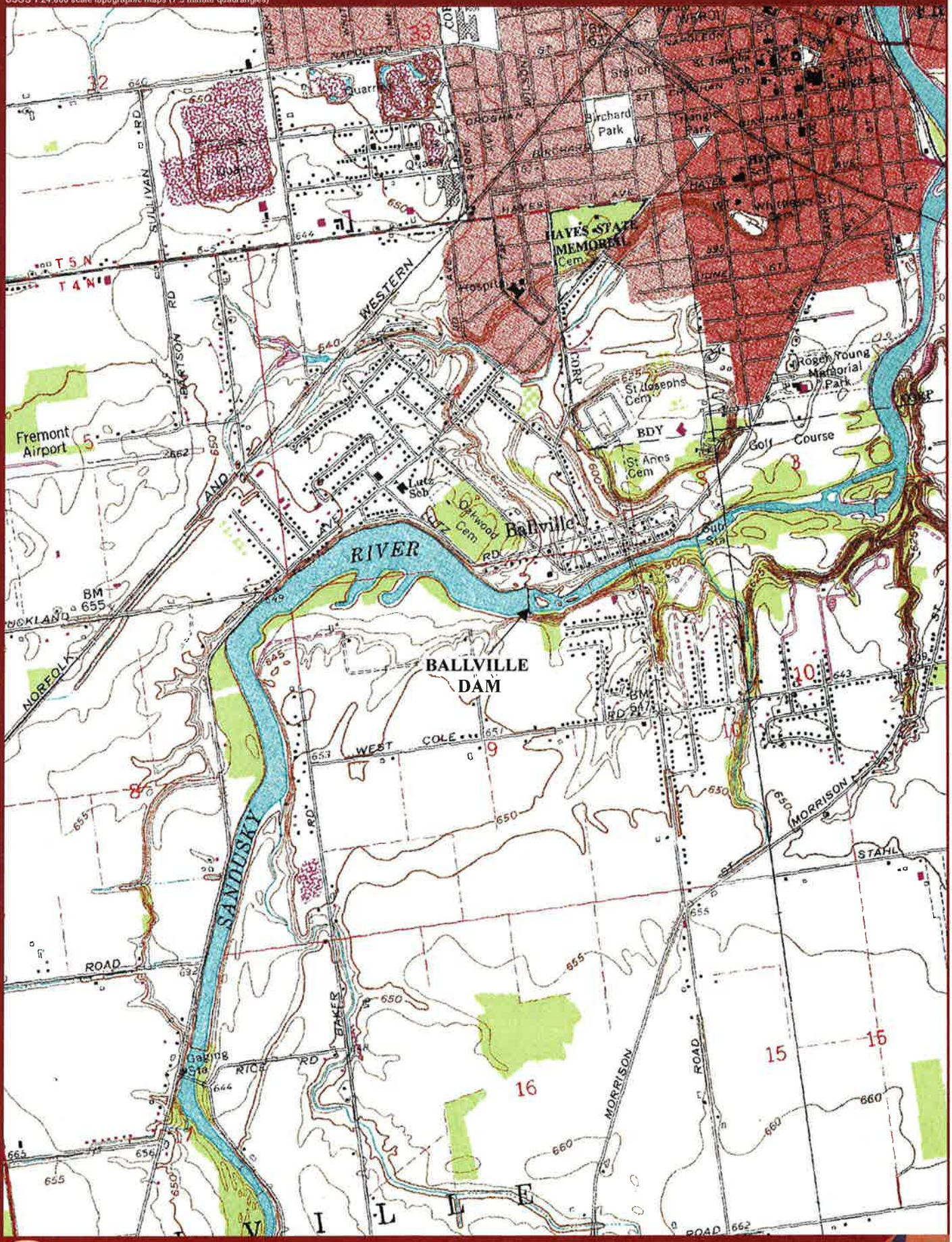
a. Sediment Stabilization (March, 2015)
b. Construct Causeway (May-June, 2015)
c. Construct Ice Control Structure (July-October, 2015)
d. Remove Ballville Dam (September-November, 2015)
e. Create floodplain bench (November-December, 2015)

Phase 3:

a. Bank stabilization/planting/in stream work (Summer, 2016)
b. Remove any remaining dam designated for removal and modify seawall (August - November, 2016)

ATTACHMENT

Fremont West & Fremont East
USGS 1:24,000 scale topographic maps (7.5 minute quadrangles)



0 1,000 2,000 Feet

1 in = 2,000 ft

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Ballville Dam

Fremont, Ohio

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

Meeting: 04/11/2013 1:00-3:00pm Ohio EPA Office in Bowling Green, Ohio

Purpose: 401 Water Quality Certification (WQC) Pre-Application Meeting

Attendees:

Heather Allamon, Ohio EPA

Cody Fleece, Stantec

Brian Karczewski, Stantec (by phone)

Joey Seamands, Stantec

Jeff Tyson, ODNR

Follow up phone call: 4/17/2013 at 10:00-10:30am (between Heather Allamon and Joey Seamands)

Project Overview

- Agencies involved in project
- Funding
    - Grant of $2 million from USFWS will run out in 2014
    - OEPA WRRSP
- Project Goals
- Dam Impoundment
    - Impounded sediment is at equilibrium
- Safety Concerns and Water Quality
- Watershed Characteristics
- Flooding
    - Ice Jamming History and installation of Ice Control Structures (ICS)
- Local Ecology and Invasive Species
    - No real issues with T and E (mussels, bats)
    - Eastern Prairie Fringed Orchid will be surveyed in Summer of 2013
    - Sea Lamprey not an issue due to thermal requirements
    - River provides suitable habitat for Asian Carp but dam removal doesn't impact this issue either way
- Design and Phasing
- Other Permits required : Section 106 issues, Floodplain permit, NEPA

Project schedule and submittals

- The public hearings for the EIS and the 404/401 will be scheduled separately
- EPA has a 120 day internal goal for application processing
- Permit is valid for 5 years

- Current schedule is to have 404/401 permitted by June of 2014. Stantec will be pushing to complete this process earlier if possible.
- It is OK to submit the 404/401 together but a 401 will be marked incomplete until the 404 is public noticed.
- In order to make a decision on 401 permit application, a decision on the Draft EIS is not required.

Alternative Analysis (401 WQC)

- Preferred Alternative: This was defined as our current project scope of incremental phased dam removal and installation of ICS structure. In the follow up phone call, Heather Allamon guided Joey Seamands to make a statement in the permit application that this is the desired alternative.
- Minimal Degradation Alternative: This was defined as the processes involved in repairing the dam and bringing it up to current safety standards. In the follow up phone call, Heather Allamon guided Joey Seamands to state in the permit that this alternative is not desired because it does not meet our defined project goals.
- Non-Degradation Alternative: This was defined as the No Action or No build Alternative. Stantec was guided to state in the permit that this is not the desired alternative because the dam must be repaired to meet existing safety liability issues.

Wetland Mitigation and Monitoring

- A statement was made by Stantec about the overall quality and function of the restored river habitat will compensate for the loss of wetlands and improve the existing system and function as whole.
- During the follow up call between Joey Seamands (Stantec) and Heather Allamon (OEPA), Heather stated we would only be required to mitigate for wetlands that will be filled as a result of the project. Therefore, compensatory mitigation will not be required for wetlands upstream of the dam that will be indirectly lost due to the drawdown of the reservoir.
- A minimum of 10 year monitoring program will be implemented
    - possible VIBI
- A final update was provided by Heather Allamon stating that even though total ecological functions may improve, for regulatory purposes, river restoration is not acceptable mitigation for wetland fill impacts.

Specific Questions Asked on Pre-Application form

1. What agencies and organizations should we contact to create a list of environmental and recreational projects for the affected surface water (Lower Sandusky River)?

   Answer: Heather Allamon of the OEPA provided this information in a follow up email.

2. Should we ask the same organizations and agencies about any projects or development targeted for local region? Or what other agencies/organizations should we contact to collect this information?

   Answer: Heather Allamon of the OEPA provided this information in a follow up email.

5.5 U.S. ARMY CORP OF ENGINEERS

Conference Call: 04/25/2013 10:30am-12:00 Teleconference

Purpose: For Stantec to explain to the Corp their <u>Conceptual Mitigation Plan</u> for the Ballville Dam Removal Project

<u>Attendees</u>:

Joe Krawczyk, USACE Buffalo-District (Corp)

Cody Fleece, Stantec

Brian Karczewski, Stantec

Joey Seamands, Stantec

General Discussion about the Ballville Dam project:

- Agencies involved in project
- Funding
    - Grant of $2 million DNR-GLRI Grant from USFWS will expire in September, 2014
    - OEPA-DEFA

Discussion about Wetland Mitigation:

- Existing Wetland Conditions
- General Project Construction
- Impacts the project will have on the wetlands
    - Direct Impacts (fill to wetlands)
        - Discussed that OEPA only requires mitigation for direct fill to wetlands
    - Indirect Impacts (hydrology alteration)
        - Presentation of the existing 6000cfs model and the future 6000cfs model
        - Existing model matches jurisdictional wetlands
        - Considered secondary impacts by the Corp
        - The Corp stated that compensatory mitigation would be required
- The mitigation ratio required for secondary impacts remains uncertain
    - Joe Krawczyk asked for a conceptual mitigation plan to assist with deliberation regarding the appropriate ratio
    - Joe Krawczyk expressed that there would be some degree of latitude when determining this ratio with his colleagues
- Stantec Presented the Conceptual Mitigation Plan
    - 54 acres will be lost to secondary impacts
    - 33 acres will be formed (considered habitat remaining by Corp)
        - Fringe, In-stream, and forested floodplain wetland types to be formed
        - Will seed in these areas to enhance the development of these wetlands
- While pre/post acreage will not be the same, functionality improvements will be realized for water quality, aquatic macroinvertebrate assemblages, fish assemblages, habitat connectivity, sediment transport, and river based recreation among others.

- Stantec was guided by Joe Krawczyk to characterize the functionality change for the entire ecosystem so that the Corp can better understand the benefits of the project and would which would in turn help them to rationalize an appropriate mitigation ratio for secondary impacts to wetlands
    - Present a functional assessment of existing conditions
    - Define the functional replacement as a result of the project

- Stantec was also guided by the Corp to better define financial constraints the City of Fremont has for mitigation
    - USFWS grant cannot be used for mitigation and other GLRI awards have similar restrictions. No funds have been specifically allocated for mitigation.

- Order of Preference of Mitigation briefly discussed by Joe-USACE
    - Mitigation bank credits
    - In-lieu fees
    - Offsite in-kind
    - Onsite mitigation

Other discussion involving NEPA document -Record of Decision and the timeline to submit the permit application:

- It was discussed that project needed to be permitted by September of 2014 or USFWS $2 million grant would lost
- Joe Krawczyk requested that the 404 application be submitted such that it could be public noticed concurrent with the Draft EIS. He was concerned that the USACE public notice period would end before EIS could be finished.
- A follow up phone conversation by Joe Krawczyk to Stantec-(Cody-Stantec point of contact) was proposed regarding these matters

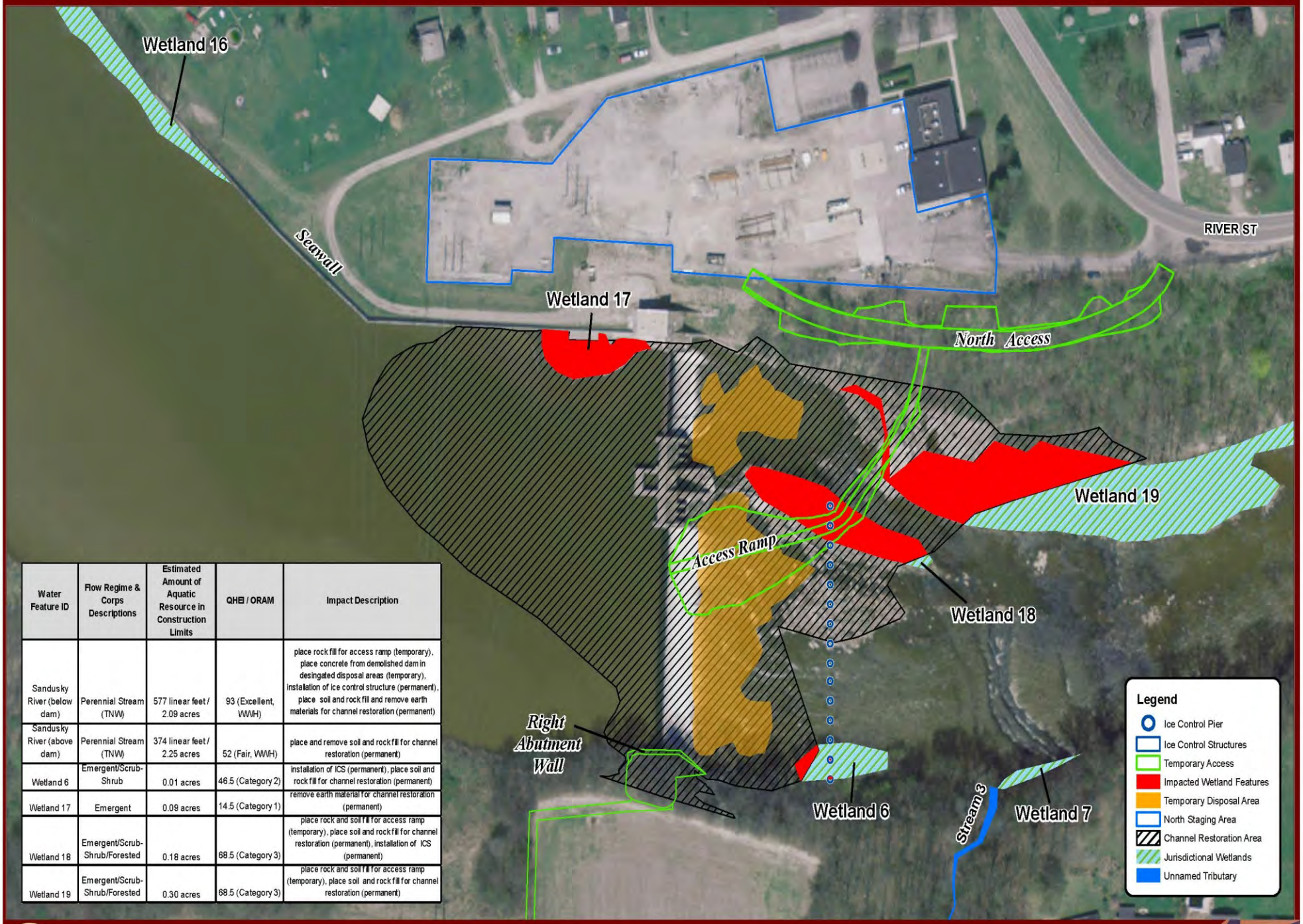
6.0 Impact Tables and Figures

6.1 DIRECT IMPACTS

The direct impacts to WUS are the JD water features that will receive direct fill or removal (excavation) as a result of the project construction activities (Table 6-1). A majority of these direct impacts will occur surrounding the dam (Figure 6-1) and, if needed, there may be some additional impacts upstream of the dam near the upground reservoir intake (Figure 6-2). The total direct impacts acreage including 4.38 to the Sandusky River and 0.67 to wetlands are permanent (Table 6-1). The temporary impacts to JWUS (Sandusky River, W18 and W19) cover the access ramp and the disposed dam areas. These same areas will also be permanently graded in development of the channel restoration area (Figure 6-1).

Table 6-1. Preferred Design Direct Impacts to WUS

Water Feature ID	Flow Regime & Corps Descriptions	Estimated Amount of Aquatic Resource in Construction Limits	QHEI / ORAM	Impact Description
Sandusky River (below dam)	Perennial Stream (TNW)	577 linear feet / 2.09 acres	93 (Excellent, WWH)	place rock fill for access ramp (temporary), place concrete from demolished dam in designated disposal areas (temporary), installation of ice control structure (permanent), place soil and rock fill and remove earth materials for channel restoration (permanent)
Sandusky River (above dam)	Perennial Stream (TNW)	589 linear feet / 2.29 acres	52 (Fair, WWH)	place and remove soil and rock fill for channel restoration (permanent); pilot channel (if needed)
Wetland 6	Emergent/Scrub-Shrub	0.01 acres	46.5 (Category 2)	installation of ICS (permanent), place soil and rock fill for channel restoration (permanent)
Wetland 14	Emergent/Scrub-Shrub/Forested	0.06 acres	75 (Category 3)	place soil fill (permanent) for bank stabilization (if needed) near intake for raw water reservoir
Wetland 15	Emergent/Scrub-Shrub/Forested	0.03 acres	75 (Category 3)	place soil fill (permanent) for bank stabilization (if needed) near intake for raw water reservoir
Wetland 17	Emergent	0.09 acres	14.5 (Category 1)	remove earth material for channel restoration (permanent)
Wetland 18	Emergent/Scrub-Shrub/Forested	0.18 acres	68.5 (Category 3)	place rock and soil fill for access ramp (temporary), place soil and rock fill for channel restoration (permanent), installation of ICS (permanent)
Wetland 19	Emergent/Scrub-Shrub/Forested	0.30 acres	68.5 (Category 3)	place rock and soil fill for access ramp (temporary), place soil and rock fill for channel restoration (permanent)
Totals	**Sandusky River**	**1,166 (lin.ft.) / 4.38 (ac.)**	WWH = Warm Water Habitat	
Totals	**Wetlands**	**0.67 acres**		



Water Feature ID	Flow Regime & Corps Descriptions	Estimated Amount of Aquatic Resource in Construction Limits	QHEI / ORAM	Impact Description
Sandusky River (below dam)	Perennial Stream (TNW)	577 linear feet / 2.09 acres	93 (Excellent, WWH)	place rock fill for access ramp (temporary), place concrete from demolished dam in desingated disposal areas (temporary), installation of ice control structure (permanent), place soil and rock fill and remove earth materials for channel restoration (permanent)
Sandusky River (above dam)	Perennial Stream (TNW)	374 linear feet / 2.25 acres	52 (Fair, WWH)	place and remove soil and rock fill for channel restoration (permanent)
Wetland 6	Emergent/Scrub-Shrub	0.01 acres	46.5 (Category 2)	installation of ICS (permanent), place soil and rock fill for channel restoration (permanent)
Wetland 17	Emergent	0.09 acres	14.5 (Category 1)	remove earth material for channel restoration (permanent)
Wetland 18	Emergent/Scrub-Shrub/Forested	0.18 acres	68.5 (Category 3)	place rock and soil fill for access ramp (temporary), place soil and rock fill for channel restoration (permanent), installation of ICS (permanent)
Wetland 19	Emergent/Scrub-Shrub/Forested	0.30 acres	68.5 (Category 3)	place rock and soil fill for access ramp (temporary), place soil and rock fill for channel restoration (permanent)

Feet
0 50 100 200
1 in = 100 ft

NOT TO SCALE

N

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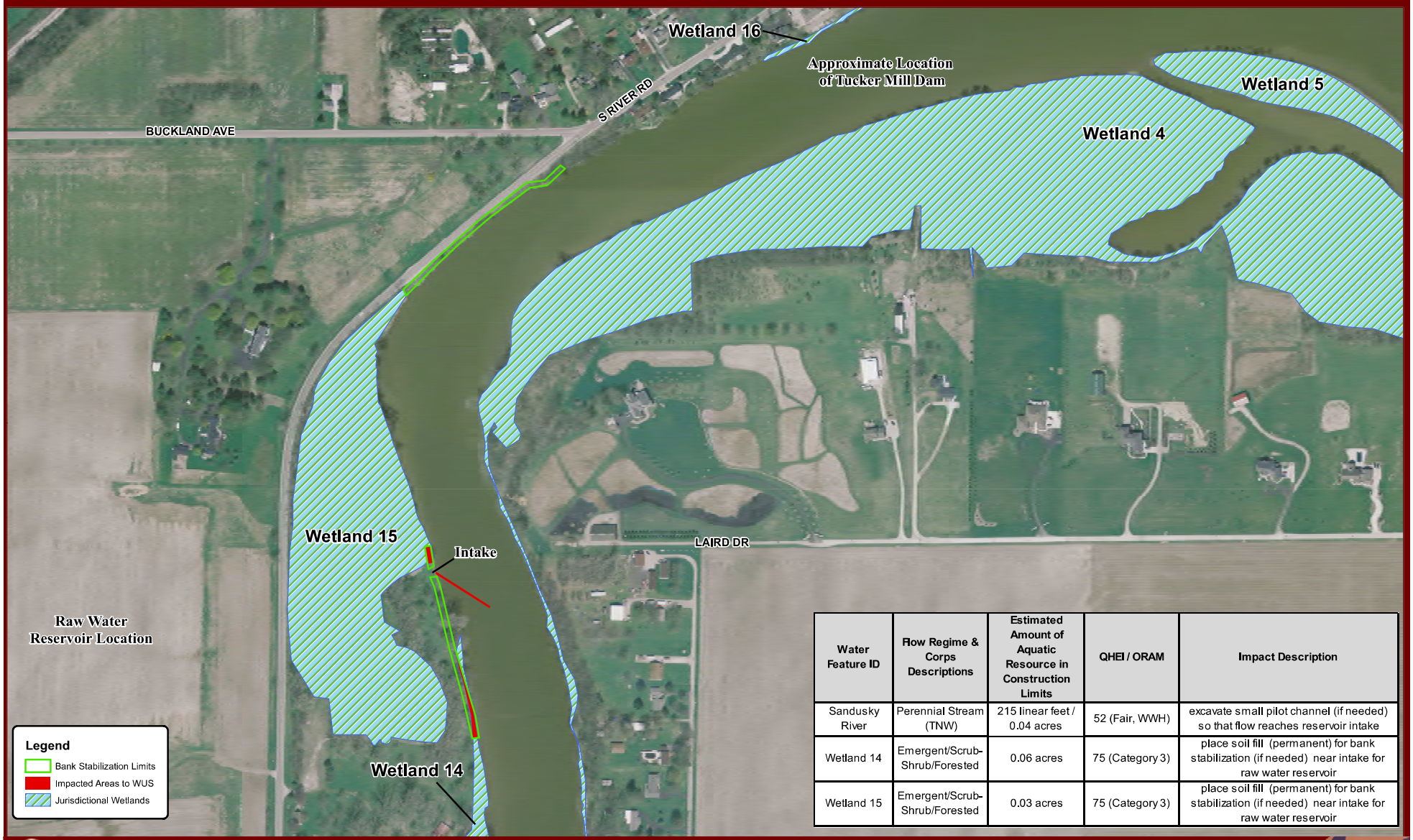
Figure 6-1. Direct Impacts to WUS Surrounding Ballville Dam

Ballville Dam Removal and River Restoration Project
Fremont, OH



Water Feature ID	Flow Regime & Corps Descriptions	Estimated Amount of Aquatic Resource in Construction Limits	QHEI / ORAM	Impact Description
Sandusky River	Perennial Stream (TNW)	215 linear feet / 0.04 acres	52 (Fair, WWH)	excavate small pilot channel (if needed) so that flow reaches reservoir intake
Wetland 14	Emergent/Scrub-Shrub/Forested	0.06 acres	75 (Category 3)	place soil fill (permanent) for bank stabilization (if needed) near intake for raw water reservoir
Wetland 15	Emergent/Scrub-Shrub/Forested	0.03 acres	75 (Category 3)	place soil fill (permanent) for bank stabilization (if needed) near intake for raw water reservoir

Feet
0 150 300 600
1 in = 300 ft

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Figure 6-2. Direct Impacts to WUS near Reservoir Intake

Ballville Dam Removal and River Restoration Project
Fremont, OH

NOT TO SCALE

6.2 INDIRECT IMPACTS

Secondary impacts include all impacts to WUS that occur indirectly as a result of the project. These are defined in the Ohio Administrative Code (OAC) as “Indirect Impacts” under Wetland definitions 3745-1-50(U). In the context of this project they refer to wetlands affected by hydrologic alteration or indirect fill as result of sediment transport.

Stantec proposes there will be no quantifiable indirect impacts to wetlands below the dam as a result of sediment transport. As part of the preferred alternative, Stantec proposes to control the release of sediment downstream by incremental notching. It is our best estimate that the vast majority of sediment will be transported through the high gradient stream section below the dam and will begin to deposit sediment along the low gradient section between Brady’s island and Sandusky Bay (approximately a 20 mile stretch). Although some additional deposition may occur in the jurisdictional boundaries surrounding the dam, there will be no proposed permanent impacts to these wetlands. Therefore, there are a total of 3.2 acres of delineated jurisdictional wetland below the dam that will not be impacted by the project. All water features below the dam that are proposed to be impacted are direct impacts.

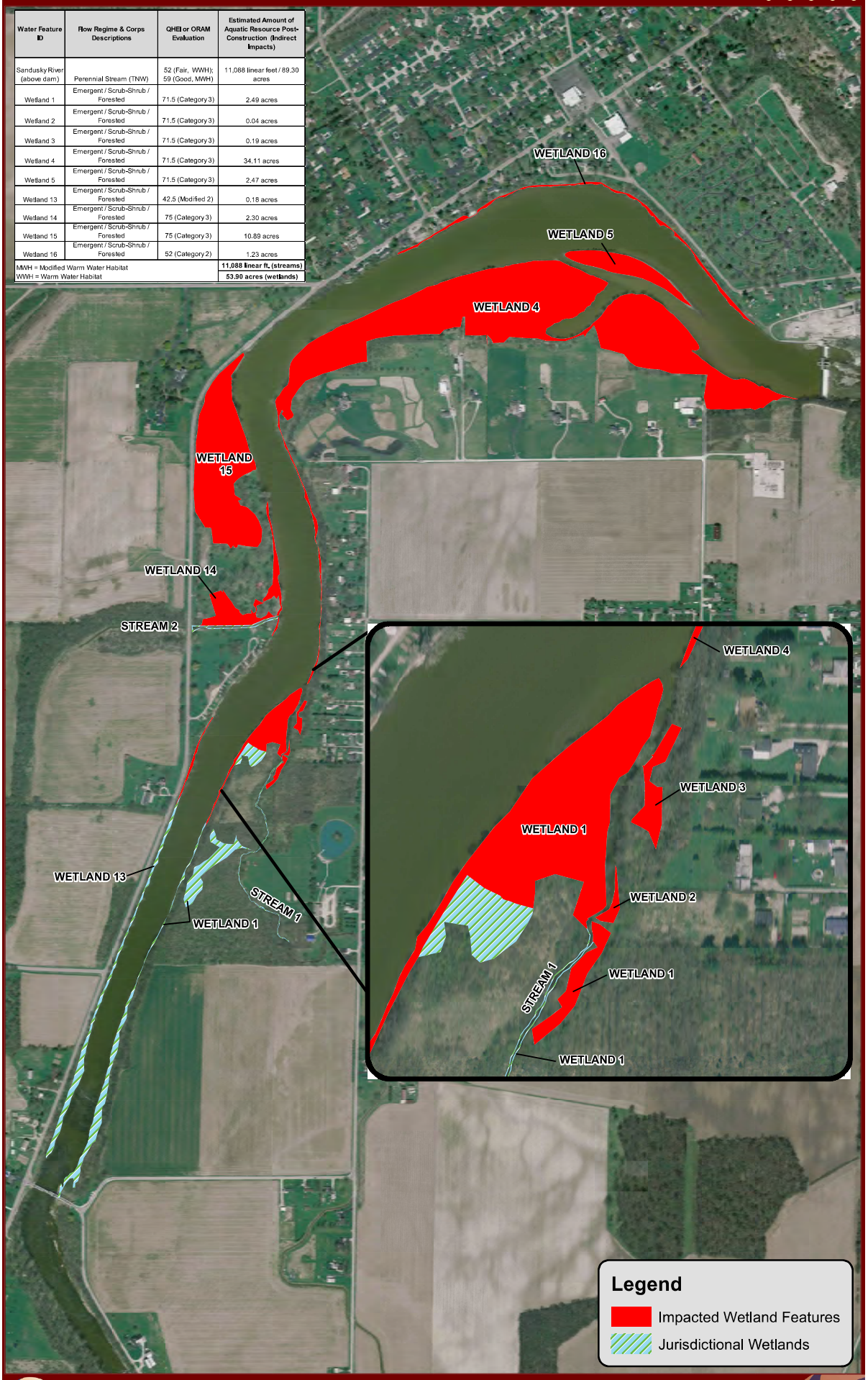
It was determined that the reservoir is approximately 11,088.00 linear feet upstream of the dam. (Stantec, 2011). Therefore, the secondary impacts regarding Sandusky River channel realignment and configuration are expected to extend this approximate distance (Table 6-2). The two unnamed tributaries above the dam are expected to increase in linear feet when the banks of the Sandusky River contract.

The jurisdictional wetland boundaries above the dam are expected to no longer receive annual flooding as depicted in the modeled future storm event. Therefore, a majority of the wetland areas upstream of the dam are expected to undergo a hydrology alteration and will no longer be WUS (Table 6-2; Figure 6-3). For a more detailed investigation into the modeling and determination of secondary impacted wetlands see Section 8.

Table 6-2. Preferred Design Indirect Impacts to WUS

Water Feature ID	Flow Regime & Corps Descriptions	QHEI or ORAM Evaluation	Estimated Amount of Aquatic Resource Post-Construction (Indirect Impacts)
Sandusky River (above dam)	Perennial Stream (TNW)	52 (Fair, WWH); 59 (Good, MWH)	11,088 linear feet / 89.30 acres
Wetland 1	Emergent / Scrub-Shrub / Forested	71.5 (Category 3)	2.49 acres
Wetland 2	Emergent / Scrub-Shrub / Forested	71.5 (Category 3)	0.04 acres
Wetland 3	Emergent / Scrub-Shrub / Forested	71.5 (Category 3)	0.19 acres
Wetland 4	Emergent / Scrub-Shrub / Forested	71.5 (Category 3)	34.11 acres
Wetland 5	Emergent / Scrub-Shrub / Forested	71.5 (Category 3)	2.47 acres
Wetland 13	Emergent / Scrub-Shrub / Forested	42.5 (Modified 2)	0.18 acres
Wetland 14	Emergent / Scrub-Shrub / Forested	75 (Category 3)	2.30 acres
Wetland 15	Emergent / Scrub-Shrub / Forested	75 (Category 3)	10.89 acres
Wetland 16	Emergent / Scrub-Shrub / Forested	52 (Category 2)	1.23 acres
MWH = Modified Warm Water Habitat WWH = Warm Water Habitat			**11,088 linear ft. (streams)** **53.90 acres (wetlands)**

Water Feature ID	Flow Regime & Corps Descriptions	QHEI or ORAM Evaluation	Estimated Amount of Aquatic Resource Post-Construction (Indirect Impacts)
Sandusky River (above dam)	Perennial Stream (TNW)	52 (Fair, WWH); 59 (Good, MWH)	11,088 linear feet / 89.30 acres
Wetland 1	Emergent / Scrub-Shrub / Forested	71.5 (Category 3)	2.49 acres
Wetland 2	Emergent / Scrub-Shrub / Forested	71.5 (Category 3)	0.04 acres
Wetland 3	Emergent / Scrub-Shrub / Forested	71.5 (Category 3)	0.19 acres
Wetland 4	Emergent / Scrub-Shrub / Forested	71.5 (Category 3)	34.11 acres
Wetland 5	Emergent / Scrub-Shrub / Forested	71.5 (Category 3)	2.47 acres
Wetland 13	Emergent / Scrub-Shrub / Forested	42.5 (Modified 2)	0.18 acres
Wetland 14	Emergent / Scrub-Shrub / Forested	75 (Category 3)	2.30 acres
Wetland 15	Emergent / Scrub-Shrub / Forested	75 (Category 3)	10.89 acres
Wetland 16	Emergent / Scrub-Shrub / Forested	52 (Category 2)	1.23 acres
MWH = Modified Warm Water Habitat			**11,088 linear ft. (streams)**
WWH = Warm Water Habitat			**53.90 acres (wetlands)**



Feet
0 350 700 1,400
1 in = 700 ft

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Figure 6-3. Indirect Impacts to WUS
Ballville Dam Removal and River Restoration Project
Fremont, OH

NOT TO SCALE

7.0 Construction Drawings

Stantec

CITY OF FREMONT

OHIO FREMONT Where People Come First

BALLVILLE DAM REMOVAL

DRAFT - PERMIT DRAWINGS

JANUARY, 2014

Project Number: 175630015

VICINITY MAP
APPROX. SCALE: 1" = 1200" ±

INDEX OF SHEETS

SHEET NO.	TITLE
1	COVER SHEET
2	GENERAL NOTES
3	PROJECT OVERVIEW AND SEQUENCE OF CONSTRUCTION
4	PHASE 1A
5	PHASE 1B
6	PHASE 2A
7	PHASE 2B
8	PHASE 2C
9	PHASE 2D
10	PHASE 2E
11	PHASE 3A
12	PLANTING SCHEDULES
13	PHASE 3B
14	PROFILE ALONG THALWEG
15-18	THALWEG CROSS SECTIONS
19	ACCESS ROAD AND TEMPORARY RAMP CROSS SECTIONS
20	DETAILS

NOT TO SCALE

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1. Specifications: The latest edition of the City of Fremont construction and material specifications, including all supplements thereto, shall govern all construction items that are part of this plan unless otherwise noted.

   Any modification to the specifications or changes to the work as shown on the drawings must have prior written approval by the owner or owner's representative.

2. Additional Compensation: The Contractor shall furnish all labor, materials, tools, equipment, services, and related accessories for a complete project as shown and described in the plans and specifications. The price for items of work or materials shown on the plans or provided for in the specifications or special provisions for which no separate unit price is given shall be bid as per plans and the costs distributed among the various bid items. Submission of a bid shall be considered evidence that the bidder is satisfied with the plans and conditions as shown. No additional compensation will be paid to the Contractor for compliance with the plans, specifications, or special provisions.

3. Notification: the Contractor shall notify the following parties at least 48 hours in advance of the anticipated start of construction, holidays and weekends excluded. Work shall not commence until a pre-construction conference is held.

Fremont Administration	(419) 334-5900
Fremont Engineering Department	(419) 334-8963
Fremont Fire Department	(419) 332-4131
Fremont Police Department	(419) 332-6464
Fremont Water Treatment	(419) 332-3581
Fremont Water & Sewer Maintenance	(419) 332-3181
Ballville Township	(419) 332-7830
Sandusky County Emergency Mgmt.	(419) 334-8933

   The Contractor shall notify, in writing, all adjacent landowners a minimum of one week in advance of work near their property. The Contractor shall contact the city administration for a suggested format for the notice.

4. Permits: The Contractor shall obtain all necessary permits and licenses needed for construction of this project as required by Ballville Township, the City of Fremont, and Sandusky County.

   The Contractor shall secure a written permit from the Sandusky County Engineer's office, 2500 West State St, Fremont, a minimum of two working days prior to beginning any work within Sandusky County right of way. The Contractor may be required to post a bond with the Sandusky County Engineer prior to issuance of the permit to insure proper restoration of the pavement and right of way. The Contractor shall provide the Sandusky County Engineer's office a 24-hour telephone number to be used in case of an emergency.

5. Track Mounted Vehicles: No track mounted vehicles shall be moved on public streets or roads. The County Engineer may grant exceptions where short distances and special circumstances are involved. Granting of exceptions must be in writing and any resulting damage must be repaired to the satisfaction of the appropriate jurisdiction.

6. Safety: The Contractor shall be solely responsible for complying with all federal, state, and local safety requirements. Together with exercising precautions at all times for the protection of persons (including employees) and property, it is also the sole responsibility of the Contractor to initiate, maintain, and supervise all safety requirements, precautions, and programs in connection with the work.

7. Elevation Datum: Elevations shown on these plans are based on the NAVD88 Datum.

8. Benchmarks: The Contractor shall carefully preserve benchmarks, property corners, reference points, and stakes. Any benchmark, property corner, or survey marker damaged or disturbed by the Contractor shall be reset by an Ohio registered surveyor at the Contractor's expense.

9. Right-of-Way: In addition to the direct requirements of the contract specifications, the Contractor shall observe and conform to the specific requirements of all rights-of-way including easements, court entries, and rights of entry or action filed in court in accordance with the code of the applicable governing agency. The cost of the operations necessary to fulfill such requirements shall be included in the price bid for the various items of the contract unless specific provision is made in the contract specifications for such cost under specific items of the contract.

10. Utilities: The locations of underground utilities shown on the plan are obtained from the owners of the utility as required by section 153.64 ORC. The utility locations indicated are not necessarily complete or correct. The Contractor is responsible for the investigation, location, support, protection and restoration of all existing utilities and appurtenances shown.

11. Grade Changes: Grades and elevations shown on the plans shall not be revised under any circumstances without first obtaining written approval from the Engineer.

12. Fire Prevention Systems: No two (2) adjacent fire hydrants shall be taken out of service concurrently.

    The Contractor shall notify the fire department whenever fire hydrants are taken out of service and placed back in service.

13. Fire Hydrant Permit: The Contractor must obtain permission from water treatment department prior to connection of water supply lines to any fire hydrant. The Contractor shall provide the necessary gate valves, backflow preventers, and flow meter for each hydrant location. All equipment, fittings and valves shall be in accordance with Fremont water and sewer maintenance standards. The Contractor shall pay for water at the current city rates.

14. Stormwater Facilities: Before any work is started on the project and again before final acceptance by the owner, the Engineer and the Contractor shall make an inspection of all existing sewers which are to remain in service and which may be affected by the work. The condition of the existing conduits and their appurtenances shall be determined from field observations. The Engineer shall keep records of the inspection in writing.

    All existing manholes, catch basins, drains, sewers, and appurtenances inspected initially by the above mentioned parties shall be maintained and left in a condition reasonably comparable to that determined by the original inspection. The Contractor shall correct any change in the condition resulting from the Contractor's operations to the satisfaction of the Engineer. The Contractor shall remove debris, silt, etc. From the existing manholes and catch basins that have been affected by construction operations. The Contractor shall maintain service in existing sewers during construction.

15. End Treatment: Immediately after placement of any conduits, the Contractor shall construct the end treatments required by the plans at both the outlet and inlet ends. This shall include headwalls, concrete, riprap, rock channel protection, sodding, etc.

16. Park Property: The Contractor shall contact the appropriate authorities 24 hours prior to any construction in or near city, township, or County park property.

Fremont Parks and Recreation	(419) 334-5906
Ballville Township	(419) 332-7830)
Sandusky County Park District	(419) 334-4495

17. Tree Preservation: All trees, whether shown or not shown on the plans, are to be preserved unless approval to remove is given in writing by the Engineer or their removal has been designated on the plan. Trees removed by either of the two preceding authorities shall be paid for under _____, clearing and grubbing, unless otherwise provided for by unit price bid under item __, tree removed, xx" size. The Contractor shall use special precautions to avoid damage to all other trees. All trees removed shall include stump removal to 6 inches below grade. All wood over 4-inch diameter shall, at the property owner's discretion, be cut into lengths not exceeding 16 inches and stacked on the owner's property adjacent to the permanent easement. The cost for tree, brush, and stump removal shall be included in the price bid for _____, clearing and grubbing. The Contractor is to work with staff from the appropriate parks and recreation departments on all tree removals.

    Pruning: branches or growth that interferes with the free construction of the project may be removed from trees/bushes that are to be saved by the use of pruning tools with prior approval from the Engineer. All pruning tools used and methods employed shall meet the approval of the Engineer. The cost of all work and expenses connected with tree pruning shall be included in the price bid for _____, clearing and grubbing. No extra payment shall be made.

    Trees damaged or destroyed that were not designated for removal or approved by the Engineer for removal shall be replaced at the Contractor's expense. If suitable replacement cannot be determined, compensation by the Contractor for unauthorized tree removal shall include sufficient additional landscaping as determined by recreation and parks officials.

    Protection during construction: public trees will be protected against injury or damage to branches, trunks or roots from construction and excavation.

A. All tree pruning and removal must be done in accordance to ansi a300 and ansi z133.1 standards. The Contractor performing the work must be a professional tree care company with a certified arborist on staff and available to direct the on-site crew.
B. Heavy equipment will not be allowed to compact the soil over the root zone of existing trees. Restricted equipment access routes will be established before work is begun. Temporary paving materials such as plywood, lumber or rubber matting spread over the root zone may be required to prevent compaction.
C. Installation of utilities under the dripline of existing trees must be directionally bored or drilled below the root zone. Top of the bore or tunnel should be no higher than 3 feet deep. Open trenches within the root zone must be avoided.
D. Where grade change is required within the root zone of public trees, a sufficient residual root zone to provide for the good health of the trees should remain undisturbed and protected by either a dry well or retaining wall if the grade is to be raised or lowered.
E. Construction materials, excavation debris, chemicals, fuel, equipment or vehicles are not to be stockpiled, stored, dumped or parked within the dripline of public trees.
F. Fires are not permitted within the dripline of any trees.
G. All existing trees designated for preservation will be protected with a good, substantial fence, frame or box not less than four feet high and as far from the tree as possible. Dripline is preferable, however, actual location will be determined by site limitations.
H. Fencing will be installed before commencing site preparation work. Fence must be maintained during the full construction period.
I. Interfering branches of trees may be removed when acceptable to park officials and shall be pruned in accordance with these standards.
J. Any trees damaged or destroyed due to Contractor negligence will be treated or removed at the Contractor's expense. If damaged beyond repair, the city will require reimbursement for the value of the tree as determined by the current edition of the 'guide for plant appraisal' published by the international society of arboriculture.

18. Dust Control: The Contractor shall be responsible for providing dust control measures in accordance with _____. Dust control operations shall be performed on a periodic basis and/or as directed by the owner to alleviate or prevent the dust nuisance originating with the project work limits. Calcium chloride on areas to be seeded and mulched will not be permitted. The cost for all dust control measures shall be included in the price bid for _____.

19. Temporary Soil Erosion and Sediment Control: The following estimated quantities are to be used as directed by the Engineer for erosion and sedimentation control measures:

    Erosion and sediment control measures are required as a part of this project. The erosion and sedimentation control reflects a schematic diagram of the intended measures for compliance with the required standards. General practice and/or site field conditions may warrant variation in the placement or use of the specified controls.

    The Contractor shall be solely responsible for providing necessary and adequate measures for proper control of erosion and sediment runoff for the site along with proper maintenance and inspection in compliance with the NPDES general permit for storm water discharges associated with construction activity.

    Land-disturbing activities must comply with all provisions of local erosion and sediment control regulations. All land-disturbing activities shall be subject to inspection and site investigation by the City of Fremont and/or the Ohio EPA. Failure to comply with these regulations is subject to legal enforcement action.

    It is the responsibility of the Contractor to notify the City of Fremont and Ballville Township 48 hours prior to commencement of initial site land disturbance on any site of two or more acres. This includes site clearing, grubbing and any earth moving. Primary erosion and sediment control practices are mandated by regulation to be in place from the beginning of the construction activity.

20. Soil Stockpiles: all soil stockpiles shall be protected from erosion by perimeter control devices such as straw bale dikes or silt fences. These perimeter control devices shall be maintained throughout the life of the project. Excavated materials shall not be stored on existing public roadway pavements. This includes excess or unusable excavated soil.

21. Disposal of Excess Excavation: The Contractor shall dispose of all excess excavation. If materials are disposed on property within city limits, the Contractor shall provide a copy of the signed agreement and a copy of the grade and fill permit obtained from the development department.

22. Street Cleaning: The Contractor shall keep streets affected by his construction free of dirt, sediment or mud. The Engineer may direct the Contractor to perform street cleaning periodically or on a regular interval if excessive amounts of dirt and mud are present along the street. This may include removal by sweeping, power cleaning, or manual methods. The cost of this work shall be included in the unit price bid for _____, unless otherwise specified.

23. Non-performance: In the event that it becomes necessary for the city to perform work of an immediate nature (such as the placement of barricades or replacement of signs or other warning or protective devices) required of the Contractor by this contract because of failure or refusal of the Contractor to perform such work, the Contractor shall reimburse the city at the rate of 2.5 times the actual cost of labor, materials, and equipment necessary to perform such work. If the Contractor refuses or fails within a reasonable time to perform or cause the performance of such work, the city shall be reimbursed by the Contractor in the amount provided herein by way of a deduction from the Contractor's net payment under the contract. Reasonable time for all streets involved on this contract is 1 hour from the time of notification by the city.

24. For Ohio Power/American Electric Power (AEP) Transmission: the Contractor shall contact AEP transmission's field representative, Dino Julian, at 740-503-2819 prior to the pre-construction meeting and a minimum of 48 hours prior to any construction activity in the vicinity of AEP's transmission lines.

    The Contractor shall use extreme caution while working in the vicinity of the staging and access areas on or near AEP's property and transmission lines. The Contractor shall also utilize the following construction practices:

A. Keep a low clearance zone in the vicinity of overhead lines where boom or lift mechanisms may not be used.
B. Do not install trees or shrubs within 10 feet on either side of overhead transmission lines.

25. Project Identification Sign: The Contractor shall furnish, install, and maintain four (4) project identification signs at the project site. Place one sign at the Phase 1a South Abutment access entrance near intersection of Yingling and Laird Roads, one sign at the Phase 2b access road near Oakwood Street, one sign at Tucker Dam access road entrance near Laird Road, and one sign at Ice Control Structure (ICS) location B access road near River Road.

Construction

1. Provide 30 in. High x 42 in. Wide signs.
2. Material shall be metal or ¾" exterior grade plywood with trim mitered on all edges.
3. Design signs and supports to withstand 75 mph wind.
4. Paint with exterior gloss enamel white base paint with black lettering, with Type 4 ASTM-approved reflective sheeting.
5. The signs must be professional quality, and in as large a font possible read:

   Ballville Dam Removal Project

   It is the Contractor's responsibility for names and titles to be correct at the time of erection.

Installation and Maintenance

1. The signs shall be installed at least one week before construction begins and removed within one week of completion.
2. The sign shall be placed within the right of way to face traffic as directed by the Engineer.
3. Maintain sign so it is clean, legible, and structurally sound.
4. Repair and repaint all damage to the sign, replace if stolen. Relocate sign as required by the progress of work.

   All costs for project identification signs shall be included in lump sum bid for item mobilization.

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File Name: 30015c-002-gn1.dwg	CW	SDP	JGB	14.01.24
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title
General Notes

Project No.	Scale	
175630015	NONE	
Drawing No.	Sheet	Revision
	2 of 20	0

SaveDate: 2014/01/23 11:19 AM Login: Williams, Cheyenne
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NOT TO SCALE

Sequence of Construction:

Phase 1
a. Construct access to south abutment (September, 2014)
b. Notch in Spillway to Elevation 615': resulting in WSE ≈ 618' (November, 2014)

Phase 2
a. Sediment Stabilization (March, 2015)
b. Construct Ramp (May–June, 2015)
c. Construct Ice Control Structure (July–October, 2015)
d. Remove Dam (September–November, 2015)
e. Channel Restoration (November–December, 2015)

Phase 3
a. Bank stabilization/planting/in stream work (Summer, 2016)
b. Remove any remaining Dam designated for removal and modify Seawall (August–November, 2016)

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Legend

- Major Contour
- Minor Contour
- Edge of Water
- Fence
- Overhead Electric Line
- Property Line
- Sign
- Guy Wire
- Power/Light Poles
- River Mile (RM 18.6)

Notes

1. Multiple topographic surveys are represented. Stantec performed bathymetric survey of impoundment in June 2011 and bathymetric survey downstream of the dam January and April 2012. Topographic survey to the North and South of the impoundment was performed by The U.S. Army Corps of Engineers, 2010.
2. Property Information taken from County Auditor GIS Data (Available online at http://www.sanduskycountygis.org/sandgis/) and physical deeds (available at the County Courthouse).
3. Wetlands delineated by USACE.

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: 30015c-003-ovr1.dwg	CW	SDP	JGB	14.01.24
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Client/Project
City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title
Project Overview And Sequence Of Construction

Project No. 175630015

Scale 1"=400' (0 200' 400' 800')

Drawing No.

Sheet 3 of 20

Revision 0

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File Name: 30015c-004-ph1a.dwg	CW	SDP	JGB	14.01.24
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Client/Project
City of Fremont

Ballville Dam Removal

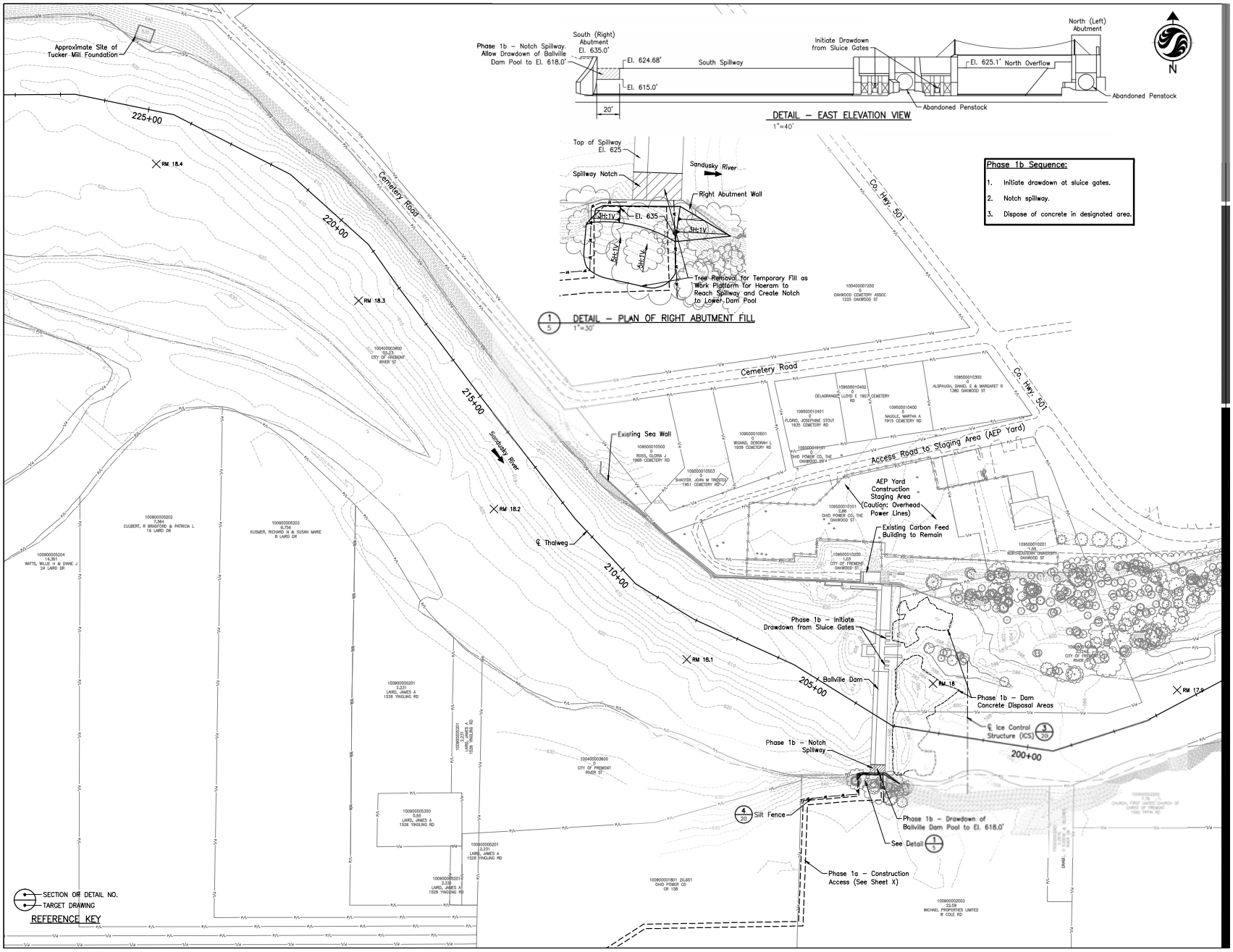
Sandusky County, Ohio

Title
Phase 1a - South Abutment Access

Project No.	Scale
175630015	1"=200' (0, 100', 200', 400')

Drawing No.	Sheet	Revision
	4 of 20	0

NOT TO SCALE



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Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: 30015c-006-ph1b.dwg	CW	SDP	JGB	14.01.24
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title
Phase 1b - Notch Spillway And Impoundment Drawdown

Project No. 175630015

Scale 1"=100' (0 50' 100' 200')

Drawing No.

Sheet 5 of 20

Revision 0

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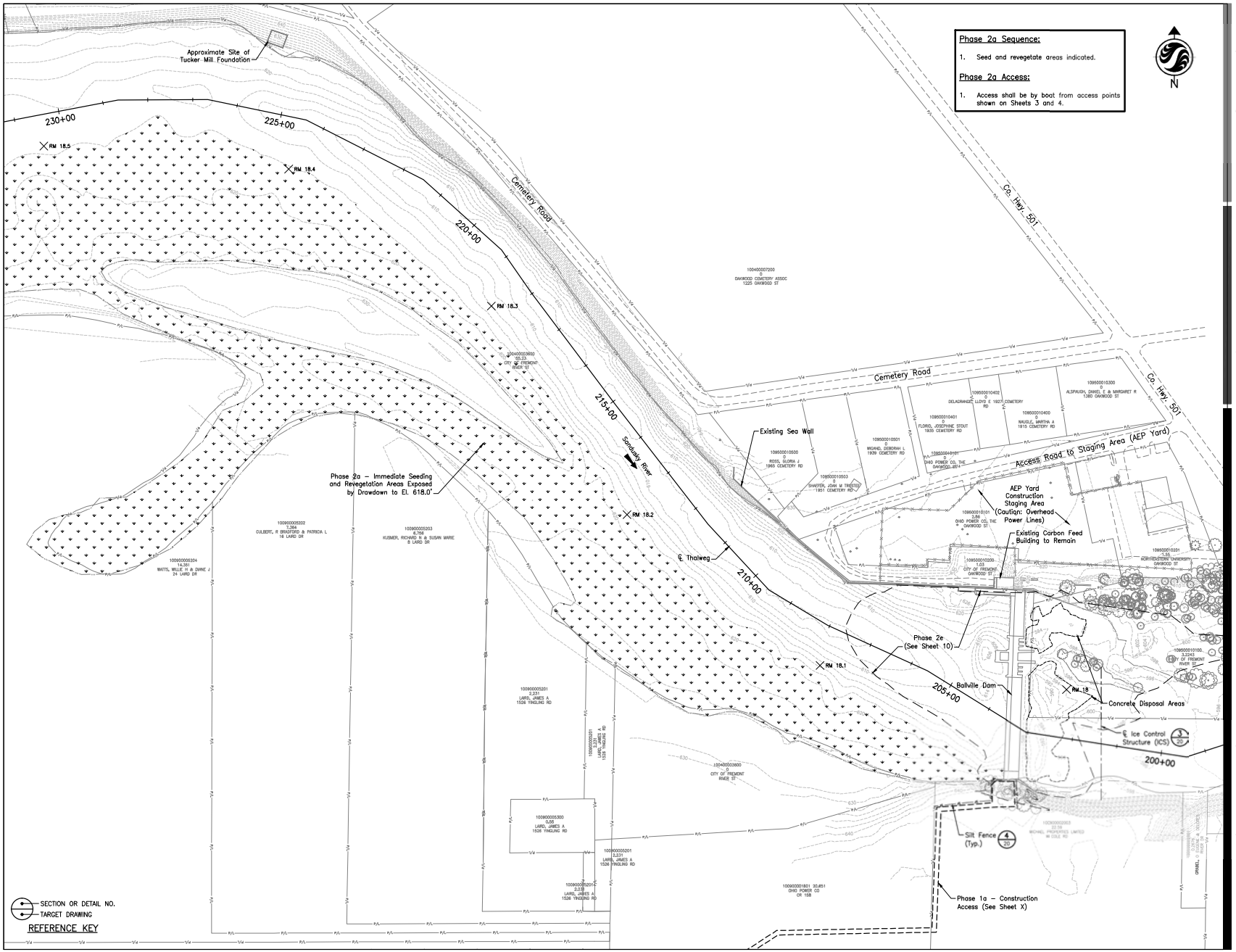

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Notes

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Permit-Seal

Client/Project
City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title
Phase 2a - Sediment Stabilization

Project No. 175630015
Scale 1"=100' (0, 50', 100', 200')
Drawing No.
Sheet 6 of 20
Revision 0

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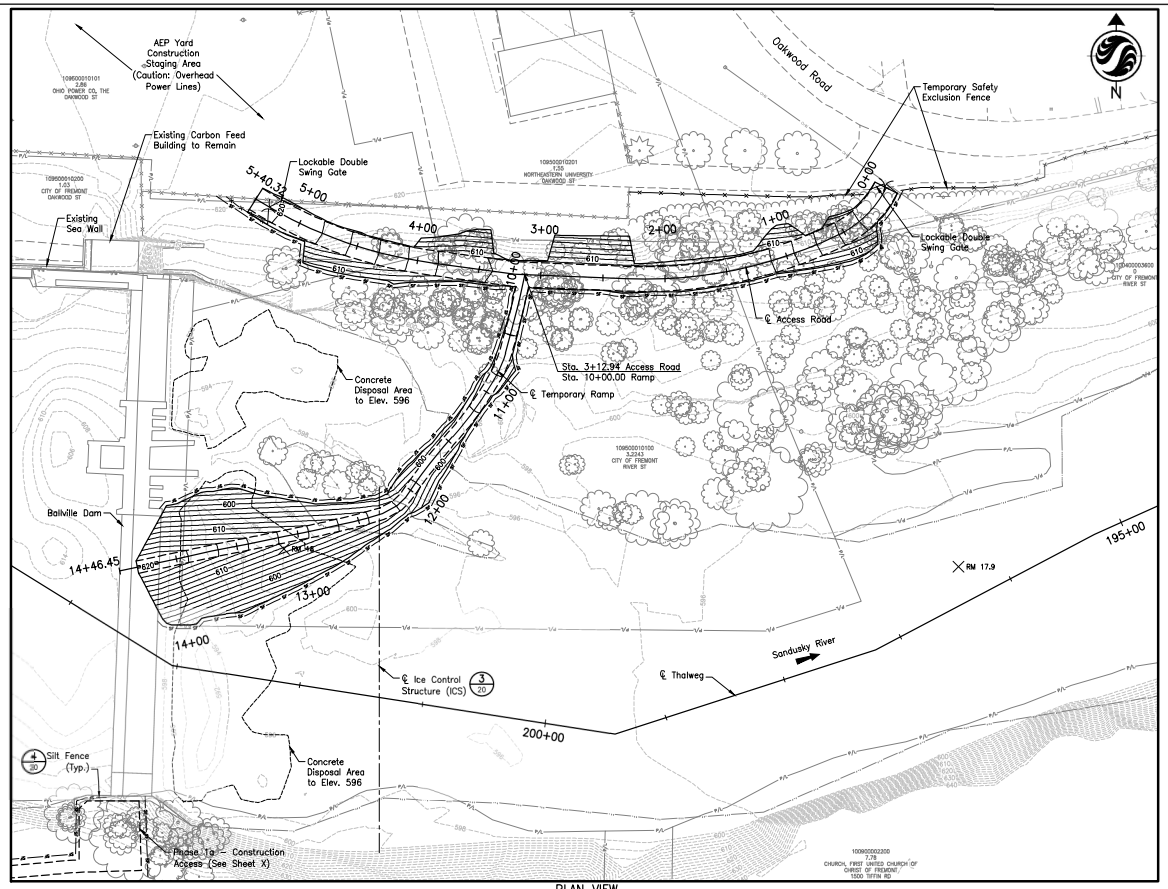
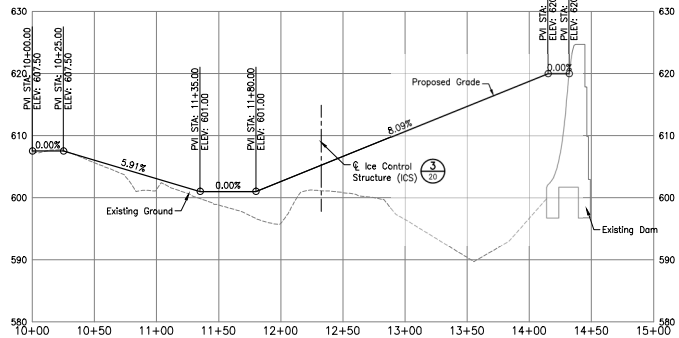
Phase 2b Sequence:

1. Construct access roads and causeways.

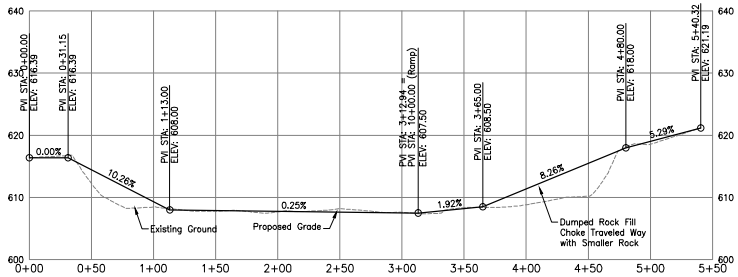


PLAN VIEW
1"=50'

SECTION OR DETAIL NO.
TARGET DRAWING
REFERENCE KEY



PROFILE – TEMPORARY RAMP
1"=50'H, 1"=10'V



PROFILE – ACCESS ROAD
1"=50'H, 1"=10'V

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Legend

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- River Mile (RM 18.6)

Notes

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2. Property Information taken from County Auditor GIS Data (Available online at http://www.sanduskycountygis.org/sandgis/) and physical deeds (available at the County Courthouse).
3. Contractor is not expected to hoe-ram or blast out bedrock. If conditions on site show bedrock above proposed contours, notify Engineer.

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Permit-Seal

Client/Project

City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title

Phase 2b - Construct Access Road and Temporary Ramp

Project No. 175630015

Scale 1"=50' (0, 25', 50', 100')

Drawing No.

Sheet 7 of 20

Revision 0

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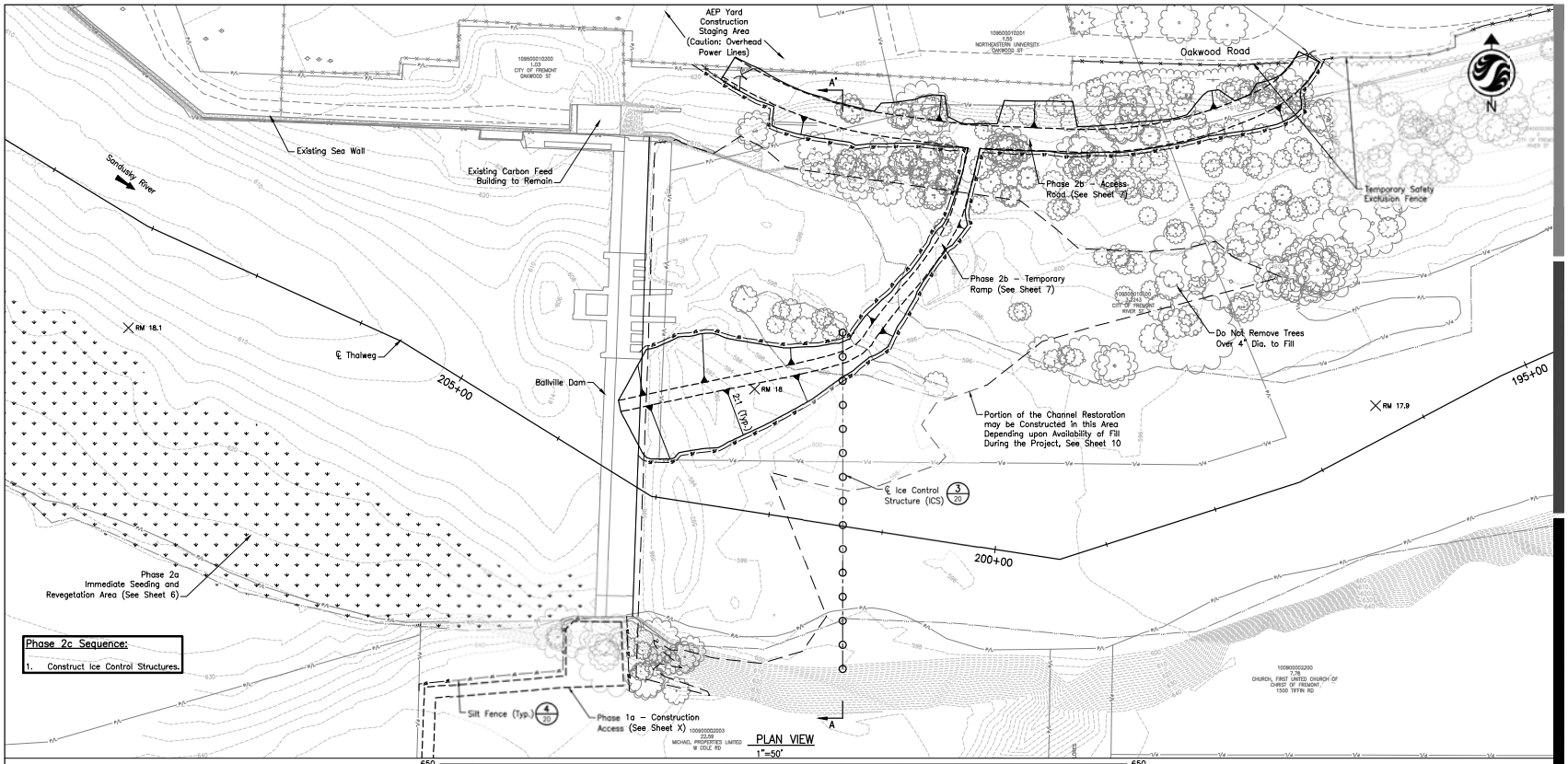

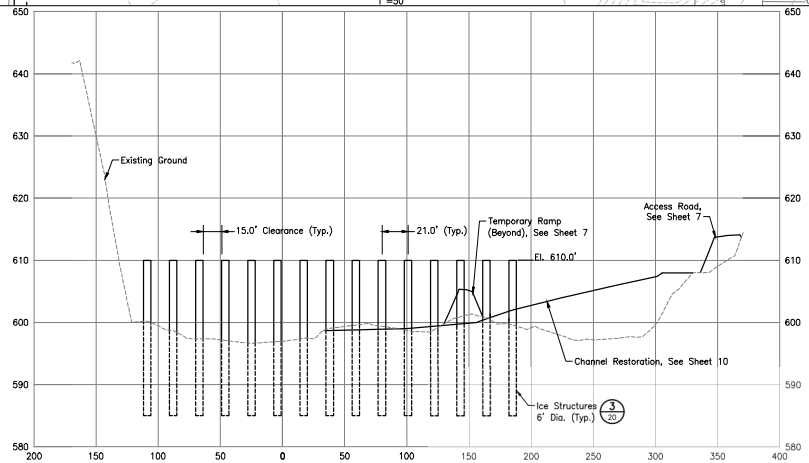

SECTION – A–A'
1"=50'H, 1"=10'V

SECTION OR DETAIL NO.
TARGET DRAWING
REFERENCE KEY

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Legend

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Permit-Seal

Client/Project
City of Fremont

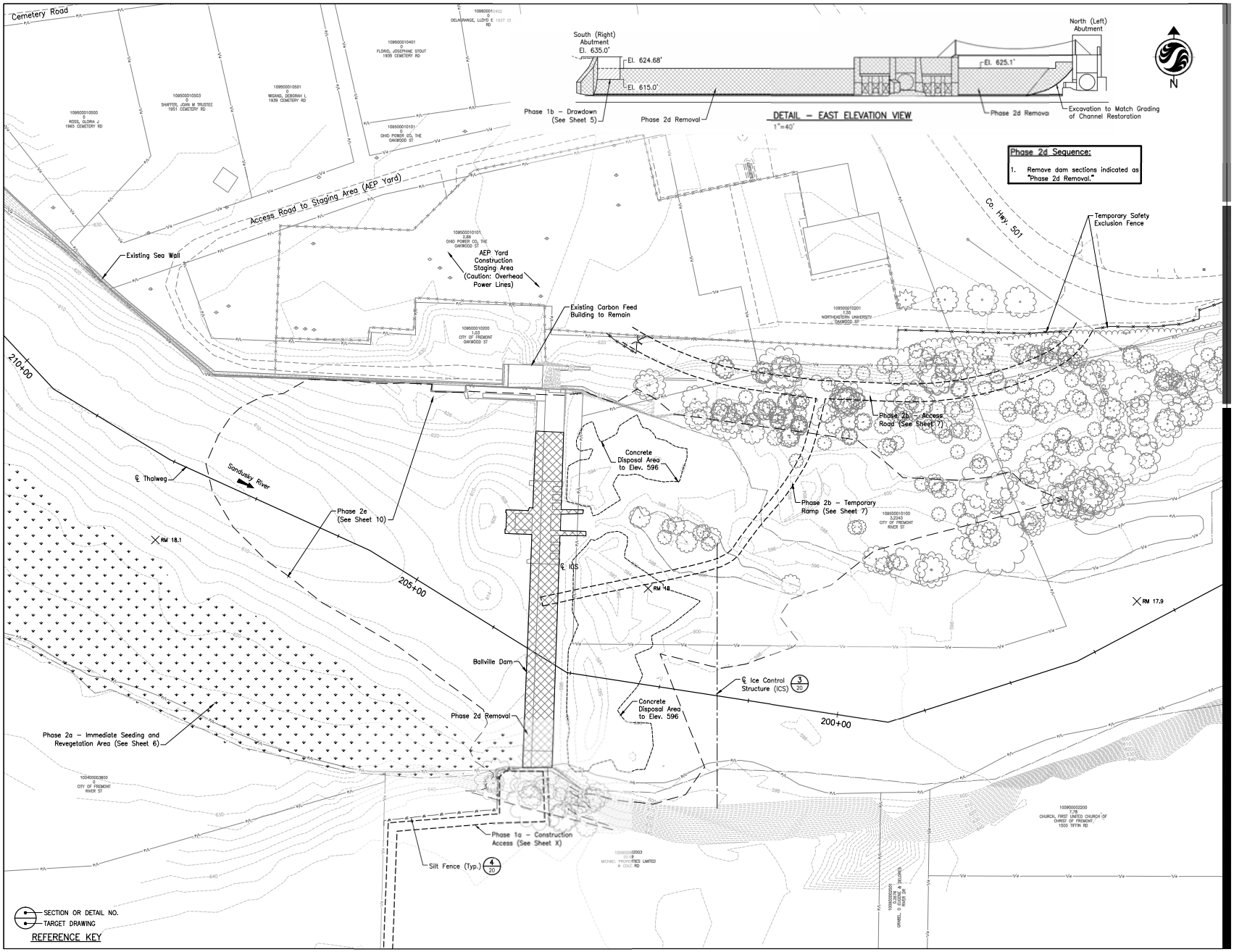
Ballville Dam Removal

Sandusky County, Ohio

Title
Phase 2c - Ice Control Structure

Project No. 175630015
Scale 1"=50'H, 1"=10'V
Drawing No.
Sheet 8 of 20
Revision 0

NOT TO SCALE



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Permit-Seal

Client/Project

City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title

Phase 2d - Dam Removal

Project No. 175630015

Scale 1"=50' (0, 25', 50', 100')

Drawing No.

Sheet 9 of 20

Revision 0

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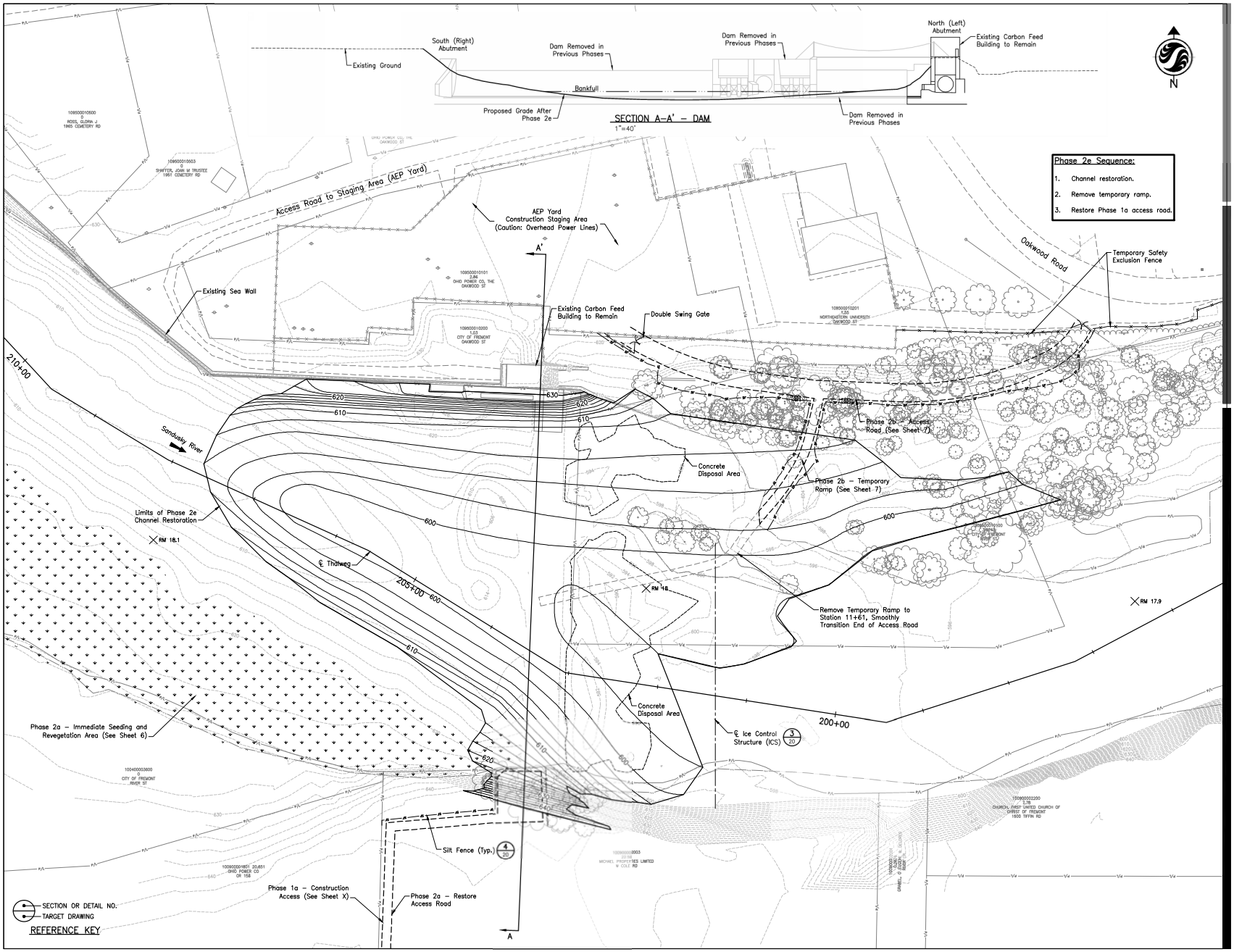

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3. Contractor is not expected to hoe-ram or blast out bedrock. If conditions on site show bedrock above proposed contours, notify Engineer.

Revision	By	Appd.	YY.MM.DD

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File Name: 30015c-010-ph2e.dwg	CW	SDP	JGB	14.01.24
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Permit-Seal

Client/Project

City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title

Phase 2e - Channel Restoration

Project No. 175630015

Scale 1"=50' (0 25' 50' 100')

Drawing No.

Sheet 10 of 20

Revision 0

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Phase 3a Sequence:

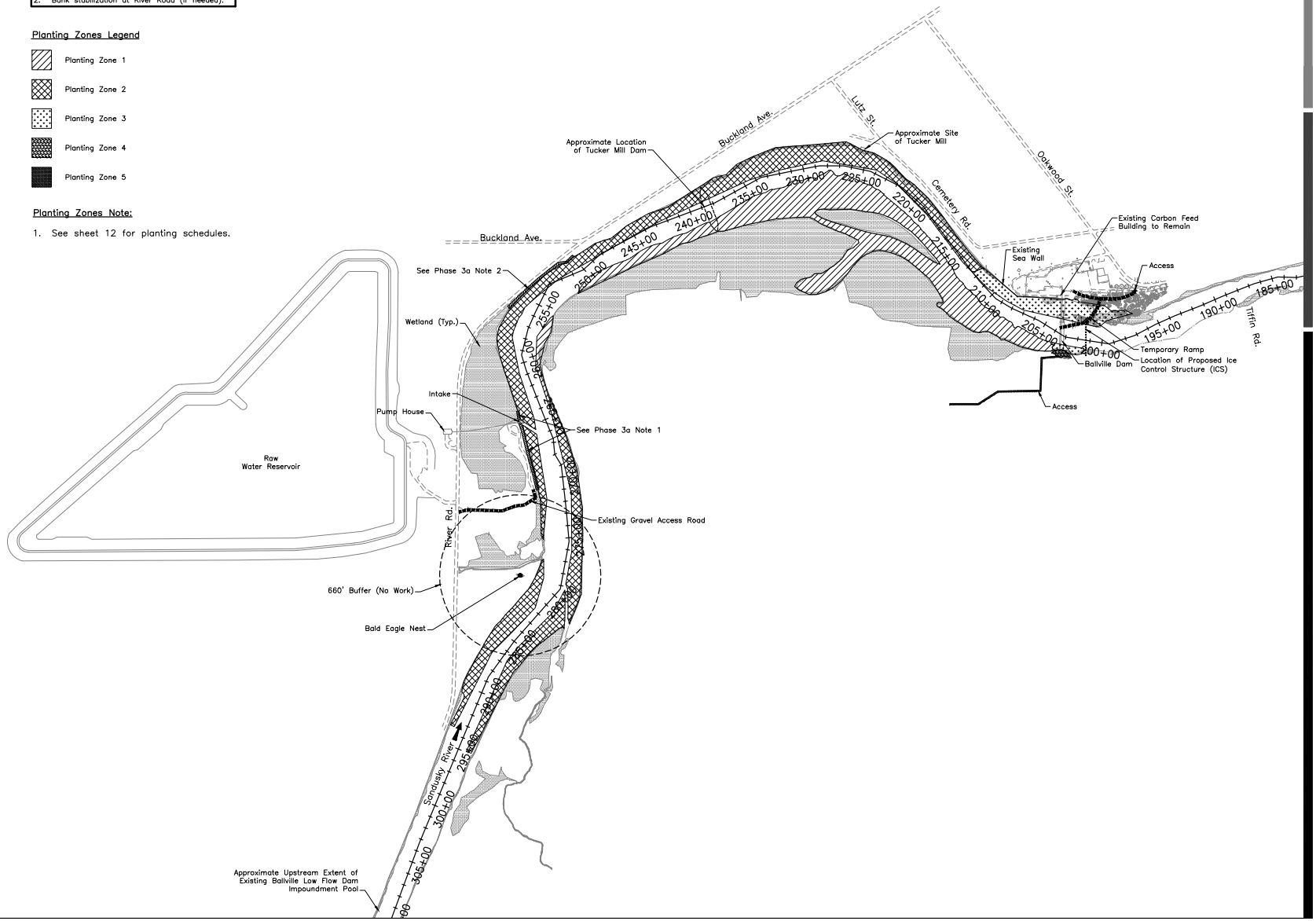
1. Bank stabilization at Intake (if needed).
2. Bank stabilization at River Road (if needed).

Planting Zones Legend

- Planting Zone 1
- Planting Zone 2
- Planting Zone 3
- Planting Zone 4
- Planting Zone 5

Planting Zones Note:

1. See sheet 12 for planting schedules.



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Legend

- Major Contour
- Minor Contour
- Edge of Water
- Fence
- Overhead Electric Line
- Property Line
- Sign
- Guy Wire
- Power/Light Poles
- River Mile (RM 18.6)

Notes

1. Multiple topographic surveys are represented. Stantec performed bathymetric survey of impoundment in June 2011 and bathymetric survey downstream of the dam January and April 2012. Topographic survey to the North and South of the impoundment was performed by The U.S. Army Corps of Engineers, 2010.
2. Property Information taken from County Auditor GIS Data (Available online at http://www.sanduskycountygis.org/sandgis/) and physical deeds (available at the County Courthouse).
3. Wetlands delineated by USACE.

Revision	By	Appd.	YY.MM.DD

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Client/Project

City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title

Phase 3a - Bank Stabilization, Revegetation and Instream Restoration Work

Project No. 175630015

Scale 1"=400' (0 200' 400' 800')

Drawing No.

Sheet 11 of 20

Revision 0

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Ballville Dam River Restoration Seeding Schedule

Planting Zone 1-5 (Temporary Cover Crop)
Planting Area: 51.3 acres

Planting Zone	Expected Planting Time	Common Name	Scientific Name	*Wetland Indicator	Pounds (PLS) per Acre	Pounds in Planting Zone
1	Spring	Common Oat	*Avena sativa*	UPL	20	431
2	Spring	Common Oat	*Avena sativa*	UPL	20	507
3	Fall	Winter Rye	*Secale cereale*	NI	40	160
4	Fall	Winter Rye	*Secale cereale*	NI	40	6
5	Fall	Winter Rye	*Secale cereale*	NI	40	11
				Total	160	1,115

*Northeastern and Northwest Region Pure Live Seed (PLS)

Planting Zone 1 (flat to moderate gradient within former reservoir)

Planting Area: 21.573

Custom Blend Herbaceous Seed Mix

Common Name	Scientific Name	Wetland Indicator (NCNE)	Composition (%)	*Pounds (PLS) per Acre	Pounds in Planting Zone
Virginia Wild Rye	*Elymus virginicus*	FACW	34.36	6.18	133.42
Nodding Wild Rye	*Elymus canadensis*	FACU	30.05	5.41	116.69
Partridge Pea	*Chamaecrista fasciculata*	FACU	12.50	2.25	48.54
Swamp Milkweed	*Asclepias incarnata*	OBL	6.25	1.13	24.27
Rice Cut Grass	*Leersia oryzoides*	FACW	3.12	0.56	12.12
Shallow/Lurid Sedge	*Carex lurida*	OBL	3.12	0.56	12.12
Ohio Spiderwort	*Tradescantia ohiensis*	FACU	3.12	0.56	12.12
Tall Ironweed	*Vernonia altissima*	FACW	1.87	0.34	7.28
Gray' sedge	*Carex grayi*	FACW	1.25	0.23	4.85
Fowl Manna Grass	*Glyceria striata*	OBL	0.94	0.17	3.65
Common Tussock Sedge	*Carex stricta*	OBL	0.62	0.11	2.41
New England Aster	*Symphyotrichum novae angliae*	FACW	0.62	0.11	2.41
Wild Bergamot	*Monarda fistulosa*	FACU	0.62	0.11	2.41
Spotted Joe Pye	*Eupatorium maculatum*	OBL	0.47	0.08	1.83
Blue Vervain	*Verbena hastata*	FACW	0.44	0.08	1.71
Dark Green Bulrush	*Scirpus atrovirens*	OBL	0.31	0.06	1.20
Common Rush	*Juncus effusus*	OBL	0.19	0.03	0.74
Great Lobelia	*Lobelia siphilitica*	FACW	0.06	0.01	0.23
Monkey Flower	*Mimulus ringens*	OBL	0.06	0.01	0.23
*18 PLS Lbs/acre drilled or 1 used 25 PLS Lbs/acre broadcast		Total	100	18	388

Live Staking Planting Schedule; Along Bankfull; ~5,400 Linear Feet

Common Name	Scientific Name	Wetland Indicator (NCNE)	Spacing	Quantity
Black Willow	*Salix nigra*	OBL	3x3	900
Silky Dogwood	*Cornus amomum*	FACW	3x3	900
Elderberry	*Sambucus canadensis*	FACW	3x3	900
Arrowwood	*Viburnum dentatum*	FAC	3x3	900
			Total	3,600

Bare-Root Seedlings

Common Name	Scientific Name	Wetland Indicator (NCNE)	Spacing	Quantity
American Elm	*Ulmus americana*	FACW	10 x 10	1,566
Box Elder	*Acer negundo*	FAC	10 x 10	1,566
Silver Maple	*Acer saccharinum*	FACW	10 x 10	1,566
Pin Oak	*Quercus palustris*	FACW	10 x 10	1,566
Cottonwood	*Populus deltoides*	FAC	10 x 10	1,566
River Birch	*Betula nigra*	FACW	10 x 10	1,566
			Total	9,396

Planting Zone 2 (moderate to severe gradient within former reservoir)

Planting Area: 25.345

Custom Blend Herbaceous Seed Mix

Common Name	Scientific Name	Wetland Indicator (NCNE)	Composition (%)	Pounds (PLS) per Acre	Pounds in Planting Zone
Virginia Wild Rye	*Elymus virginicus*	FACW	25.00	5	126.72
Nodding Wild Rye	*Elymus canadensis*	FACU	21.25	4.25	107.71
Indian Grass	*Sorghastrum nutans*	FACU	12.50	2.5	63.36
Partridge Pea	*Chamaecrista fasciculata*	FACU	12.50	2.5	63.36
Little Bluestem	*Schizachyrium scoparium*	FACU	10.63	2.126	53.88
Prairie Cordgrass	*Spartina pectinata*	FACW	9.38	1.876	47.55
Switch Grass	*Panicum virgatum*	FAC	3.12	0.624	15.81
Showy Tick Trefoil	*Desmodium canadense*	FAC	2.50	0.5	12.67
Ohio Spiderwort	*Tradescantia ohiensis*	FACU	1.44	0.288	7.30
Black-eyed Susan	*Rudbeckia hirta*	FACU	0.63	0.126	3.19
Wild Bergamot	*Monarda fistulosa*	FACU	0.31	0.062	1.57
New England Aster	*Symphyotrichum novae-angliae*	FACW	0.31	0.062	1.57
Smooth Aster	*Symphyotrichum laeve*	FACU	0.31	0.062	1.57
Blue Vervain	*Verbena hastata*	FACW	0.06	0.012	0.30
Tall Ironweed	*Vernonia altissima*	FACW	0.06	0.012	0.30
*20 PLS Lbs/acre drilled or 8 used 50 PLS Lbs/acre broadcast		Total	100.00	20	506.89

Live Staking Planting Schedule: Along bankfull; ~10,900 linear feet

Common Name	Scientific Name	Wetland Indicator (NCNE)	Spacing	Quantity
Black Willow	*Salix nigra*	OBL	3x3	1817
Silky Dogwood	*Cornus amomum*	FACW	3x3	1817
Elderberry	*Sambucus canadensis*	FACW	3x3	1817
Arrowwood	*Viburnum dentatum*	FAC	3x3	1817
			Total	7,268

Planting Zone 3 (channel restoration area including seawall)

Planting Area: 3.999 acres

Retention Basin Slope Native Seed Mix produced by the Ohio Prairie Nursery https://ohioprairienursery.com

Common Name	Scientific Name	Wetland Indicator (NCNE)
Grasses requested @ 50% composition		
Big Bluestem	*Andropogon gerardii*	FACU
Switch Grass	*Panicum virgatum*	FAC
Indian Grass	*Sorghastrum nutans*	FACU
Forbs requested @ 40% composition		
Swamp Milkweed	*Asclepias incarnata*	OBL
Partridge Pea	*Chamaecrista fasciculata*	FACU
Lanceleaf Coreopsis	*Coreopsis lanceolata*	FACU
Purple Coneflower	*Echinacea purpurea*	NI
Ox Eye Sunflower	*Heliopsis helianthoides*	FACU
Dense Blazingstar	*Liatris spicata*	FAC
Wild Bergamot	*Monarda fistulosa*	FACU
Foxglove Beardtongue	*Penistemon digitalis*	FACU
Grey-Headed Coneflower	*Ratibida pinnata*	NI
Black-eyed Susan	*Rudbeckia hirta*	FACU
Brown-eyed Susan	*Rudbeckia triloba*	FACU

This specific sod cutter seed mix is prescribed to be planted for 1 Acre Drilled @ 10.0 PLS Lbs or 1 Acre Broadcast 15 PLS Lbs

Containerized Tree Plantings

Common Name	Scientific Name	Wetland Indicator (NCNE)	Spacing	Quantity
American Elm	*Ulmus americana*	FAC	30x30	25
Cottonwood	*Populus deltoides*	FAC	30x30	25
Red Maple	*Acer rubrum*	FAC	30x30	24
Black Walnut	*Juglans nigra*	FACU	30x30	24
Red Bud	*Cercis canadensis*	FACU	30x30	24
Pin Oak	*Quercus palustris*	FACW	30x30	24
River Birch	*Betula nigra*	FACW	30x30	24
Swamp White Oak	*Quercus bicolor*	FACW	30x30	24
			Total	194

Zone 4 (south abutment staging area)

Planting Area: 0.142 acres

Containerized Tree Plantings

Common Name	Scientific Name	Wetland Indicator (NCNE)	Spacing	Quantity
Black Walnut	*Juglans nigra*	FACU	20x20	3
Black Cherry	*Prunus serotina*	FACU	20x20	3
Sugar Maple	*Acer saccharum*	FACU	20x20	3
Common Hackberry	*Celtis occidentalis*	FAC	20x20	3
Red Bud	*Cercis canadensis*	FACU	20x20	3
			Total	15

Planting Zone 5 (south access road

Planting Zone: 0.27

Custom Blend Upland Herbaceous Seed Mix

Common Name	Scientific Name	Wetland Indicator (NCNE)	Composition (%)	Pounds per Acre	Pounds in Planting Zone
Grasses					
Little Bluestem	*Scoizachyrium scoparium*	FACU	10	3	0.81
Indian Grass	*Sorghastrum nutans*	FACU	10	3	0.81
Nodding Wild Rye	*Elymus canadensis*	FACU	25	7.5	2.03
Switch Grass	*Panicum virgatum*	FAC	10	3	0.81
Big Bluestem	*Andropogon gerardi*	FACU	5	1.5	0.41
		Total	60	18	4.86
Forbs					
Black-eyed Susan	*Rudbeckia hirta*	FACU	7	2.1	0.57
Partridge Pea	*Chamaecrista fasciculata*	FACU	7	2.1	0.57
Common Milkweed	*Asclepias syriaca*	UPL	8	2.4	0.65
Showy Tick Trefoil	*Desmodium canadense*	FAC	1	0.3	0.08
Plains Coreopsis	*Coreopsis tinctoria*	FACU	5	1.5	0.41
Wild Bergamot	*Monarda fistulosa*	FACU	6	1.8	0.49
Beardtongue	*Penistemon digitalis*	FACU	1	0.3	0.08
Evening Primrose	*Oenothera biennis*	FACU	5	1.5	0.41
		Total	40	12	3.24

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Client/Project
City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title
Phase 3a - Planting Schedules

Project No. 175630015
Scale NONE
Drawing No.
Sheet 12 of 20
Revision 0

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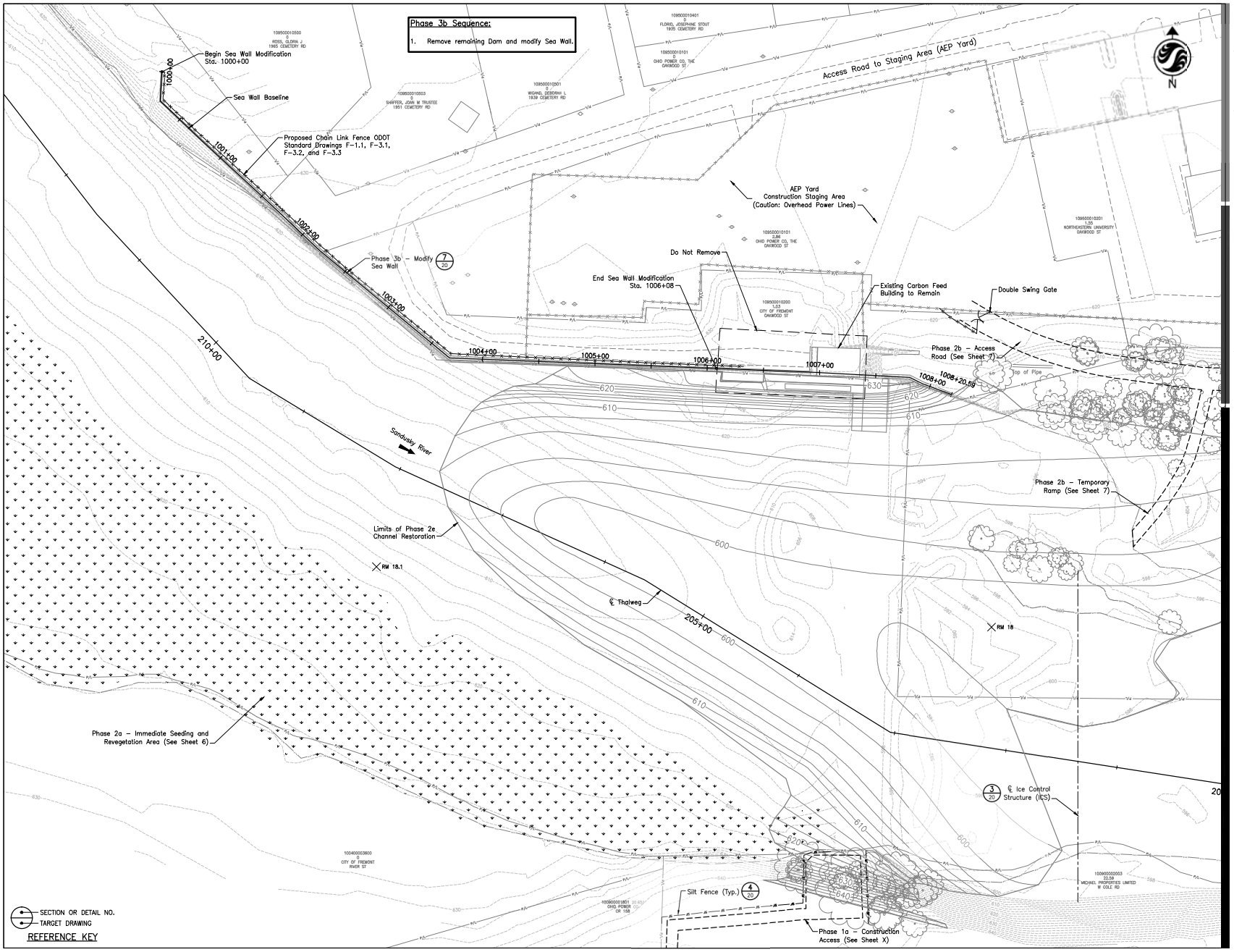

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Legend

- Major Contour
- Minor Contour
- Edge of Water
- Fence
- Overhead Electric Line
- Property Line
- Sign
- Guy Wire
- Power/Light Poles
- River Mile (RM 18.6)

Notes

1. Multiple topographic surveys are represented. Stantec performed bathymetric survey of impoundment in June 2011 and bathymetric survey downstream of the dam January and April 2012. Topographic survey to the North and South of the impoundment was performed by The U.S. Army Corps of Engineers, 2010.
2. Property Information taken from County Auditor GIS Data (Available online at http://www.sanduskycountygis.org/sandgis/) and physical deeds (available at the County Courthouse).

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Client/Project

City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title

Phase 3b - Modify Sea Wall

Project No. 175630015

Scale 1"=40' (0, 20', 40', 80')

Drawing No.

Sheet 13 of 20

Revision 0

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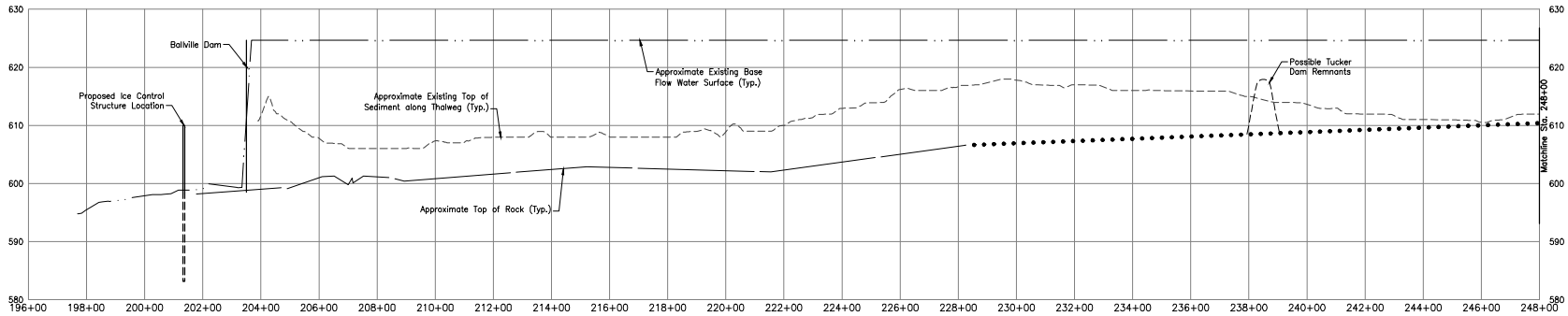

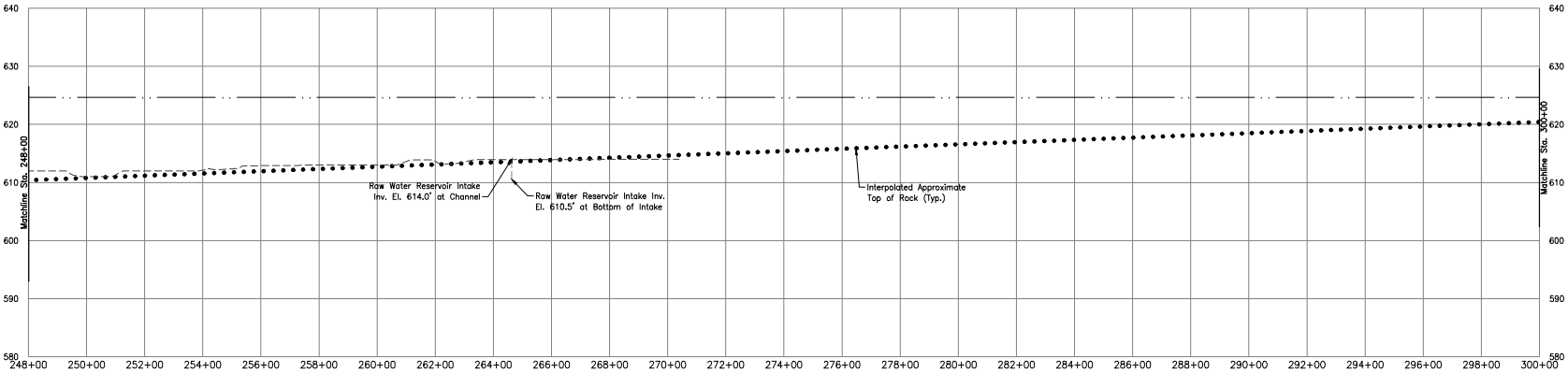

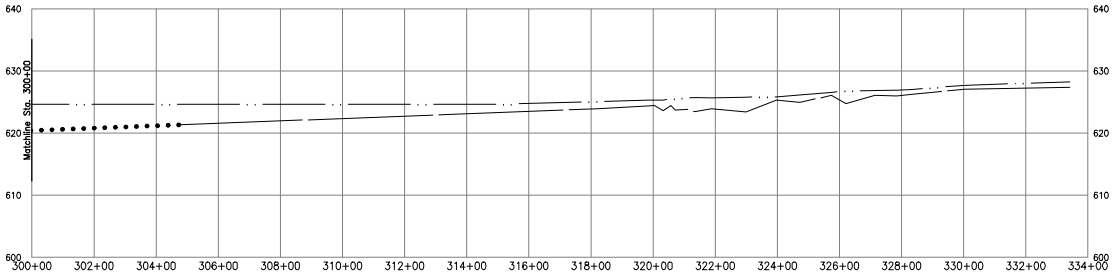

Notes:

1. Top of Rock elevations are taken from field survey (Stantec 2011) and geotechnical explorations (AECOM 2010) and are approximate. Actual rock elevations vary in the riverbed. The elevations shown indicate the lowest elevations noted from existing and collected data.
2. Top of Sediment elevations taken from bathymetric survey along thalweg (Stantec 2011).
3. Interpolated Top of Rock elevations developed as straight line between known top of rock elevations.
4. Tucker Dam location and elevation is based upon historical research. Limited field reconnaissance could not verify the location and elevation of the actual structure.

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Client/Project
City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title
Profile Along Thalweg

Project No. 175630015

Scale 1"=200'H (0, 100', 200', 400') 1"=10'V (0, 5', 10', 20')

Drawing No.

Sheet 14 of 20

Revision 0

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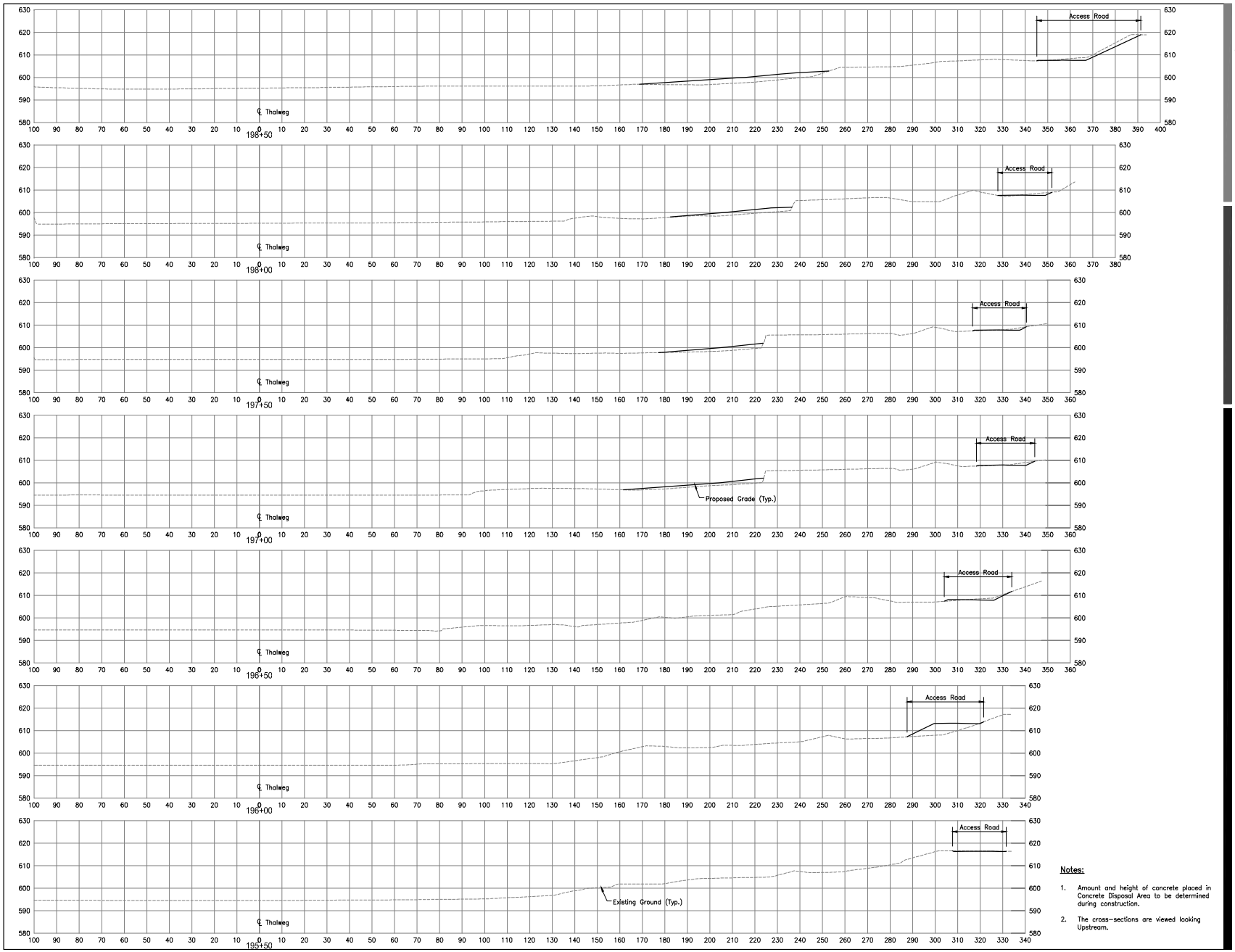

Notes:

1. Amount and height of concrete placed in Concrete Disposal Area to be determined during construction.
2. The cross-sections are viewed looking Upstream.

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City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title
Thalweg Cross Sections

Project No. 175630015

Scale 1"=20' (0, 10', 20', 40')

Drawing No.

Sheet 15 of 20

Revision 0

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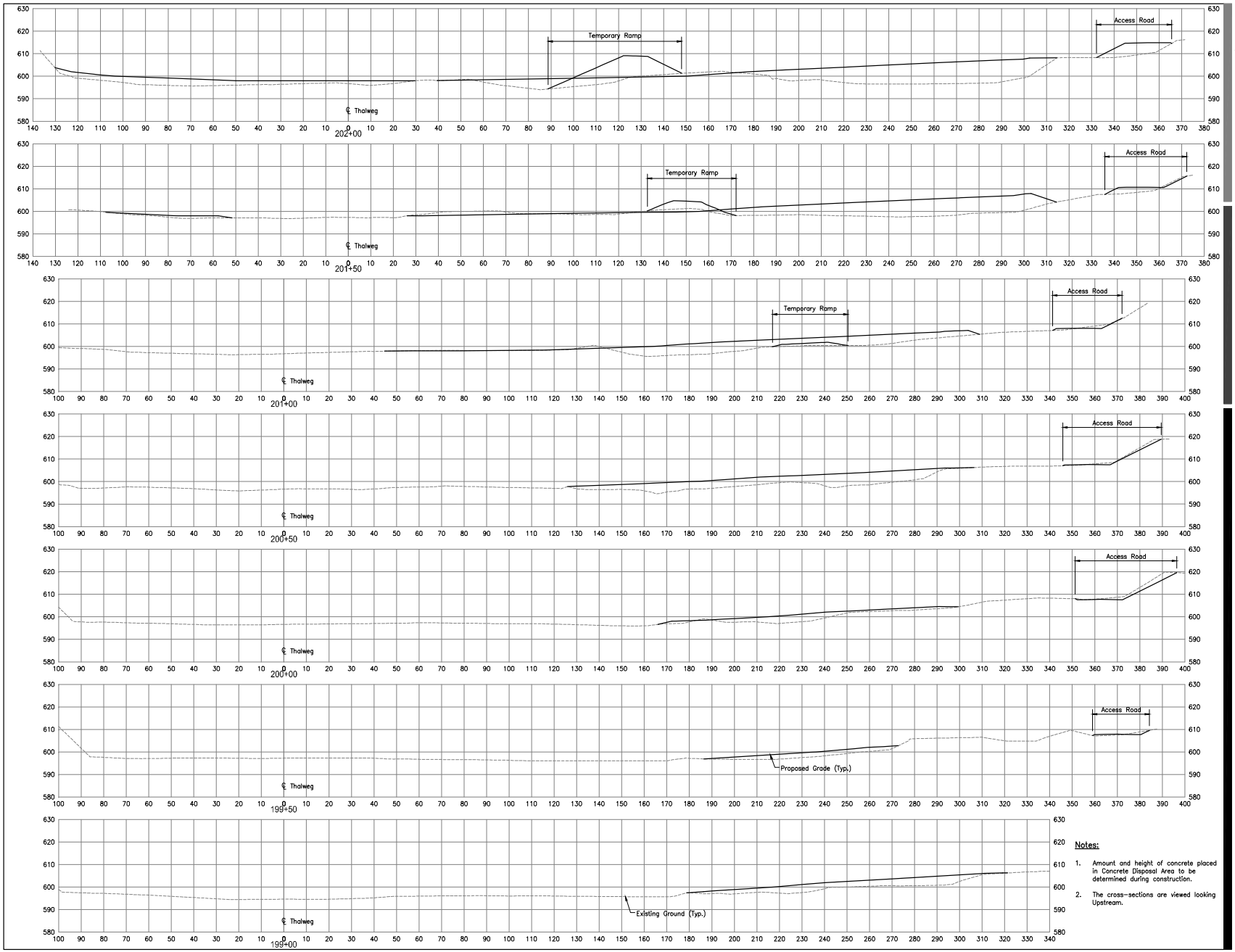

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Client/Project
City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title
Thalweg Cross Sections

Project No. 175630015

Scale 1"=20' (0, 10', 20', 40')

Drawing No.

Sheet 16 of 20

Revision 0

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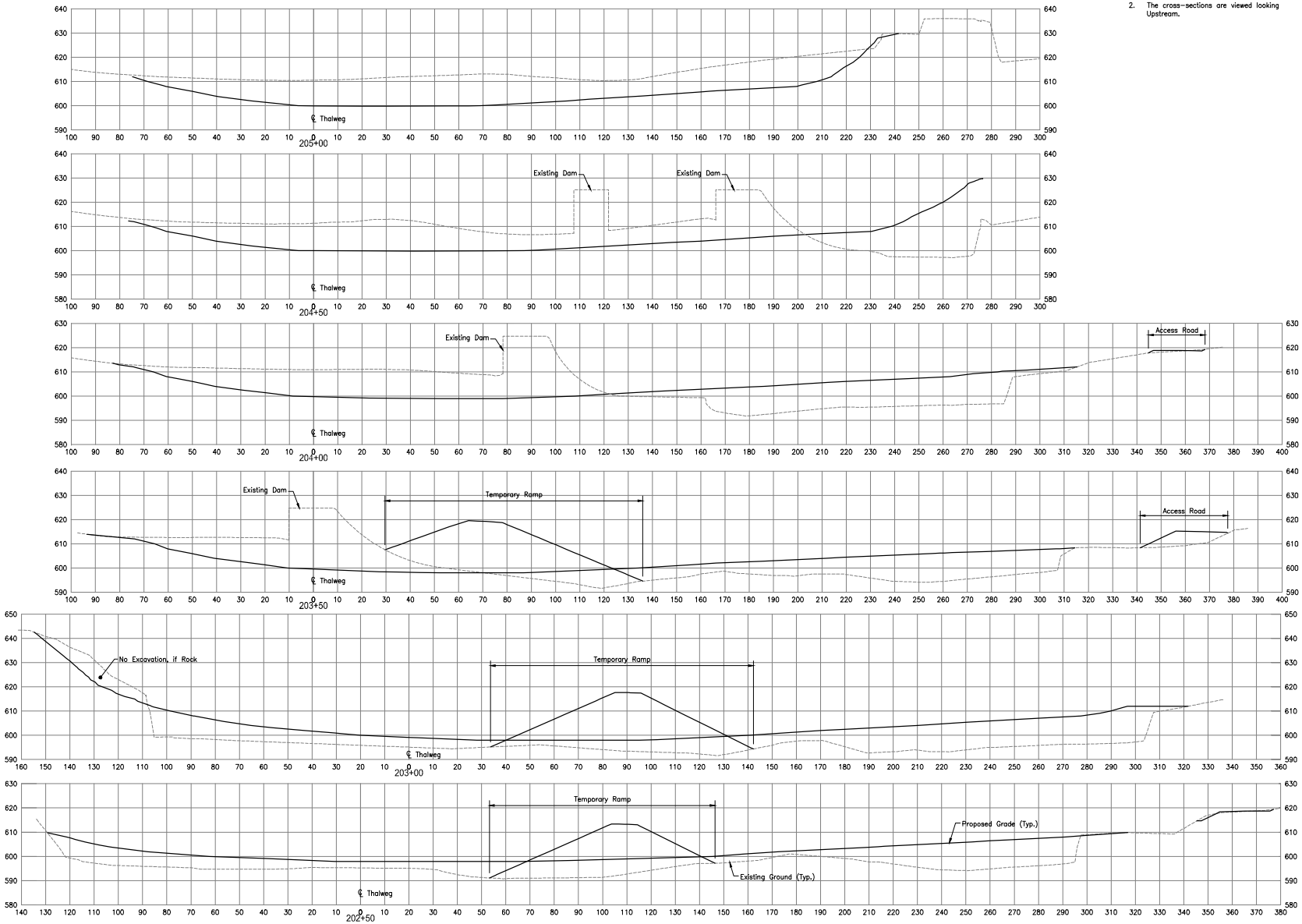
Notes:

1. Amount and height of concrete placed in Concrete Disposal Area to be determined during construction.
2. The cross-sections are viewed looking Upstream.



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Client/Project
City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title
Thalweg Cross Sections

Project No. 175630015

Scale 1"=20' (0, 10', 20', 40')

Drawing No.

Sheet 17 of 20

Revision 0

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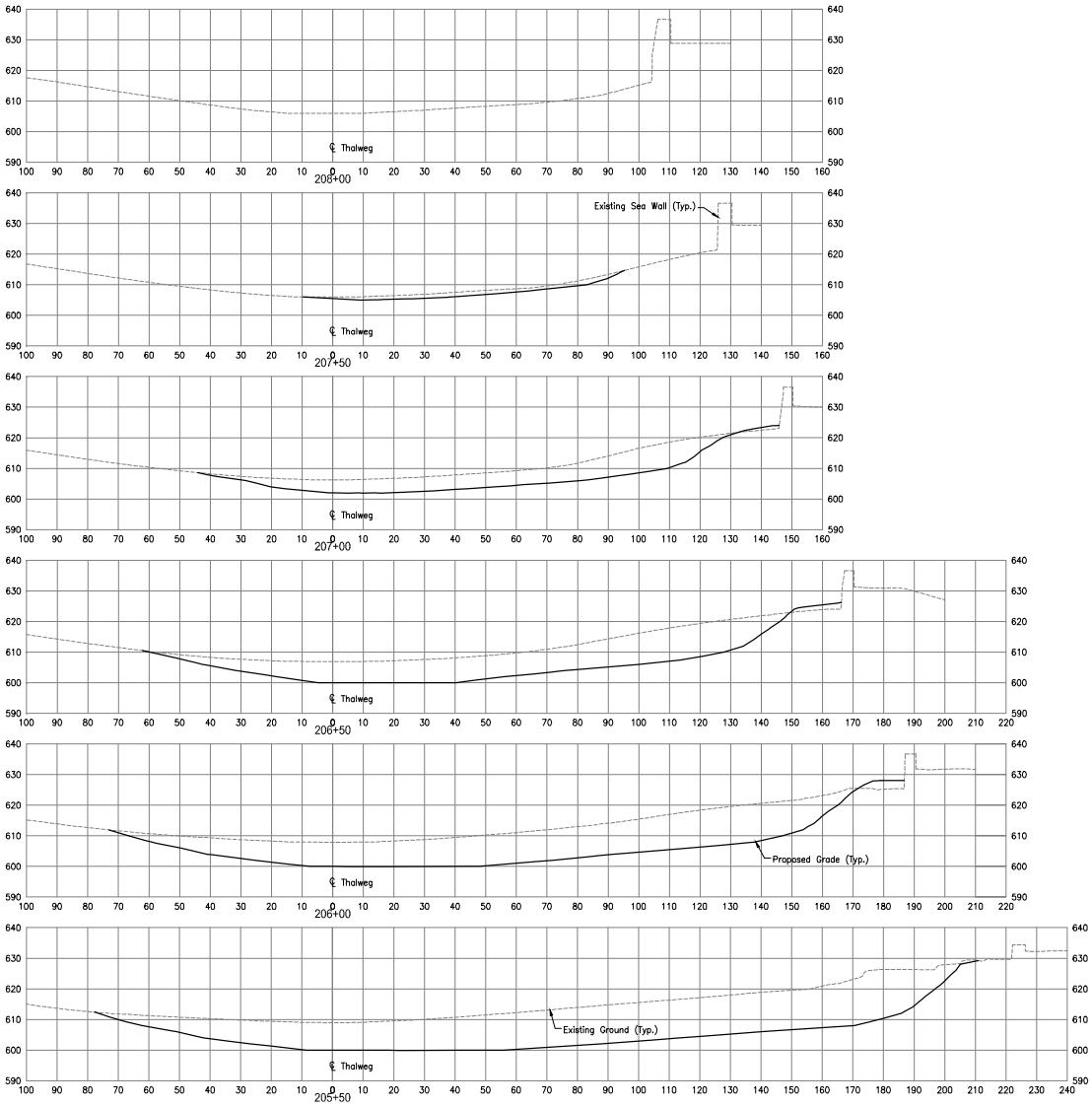

Notes:

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Client/Project
City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title
Thalweg Cross Sections

Project No. 175630015

Scale 1"=20' (0, 10', 20', 40')

Drawing No.

Sheet 18 of 20

Revision 0

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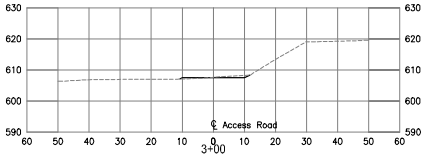
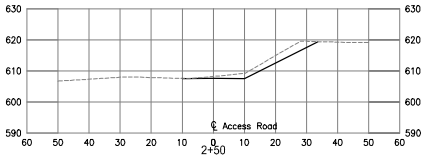
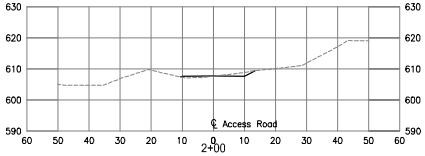
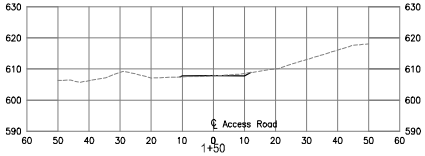
Notes:

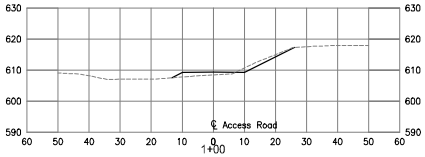
1. Amount and height of concrete placed in Concrete Disposal Area to be determined during construction.
2. The cross-sections are viewed looking Upstream.

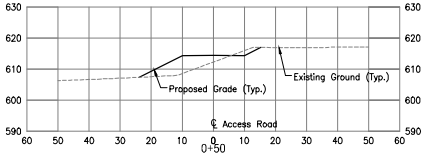


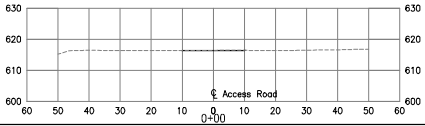


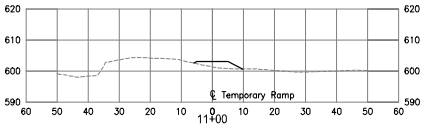


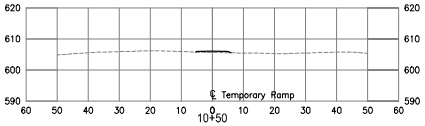


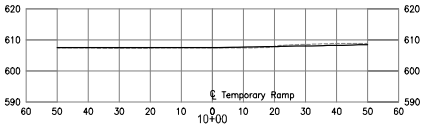


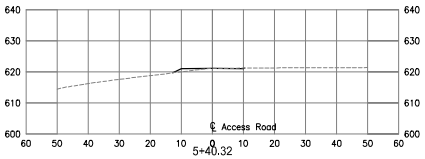


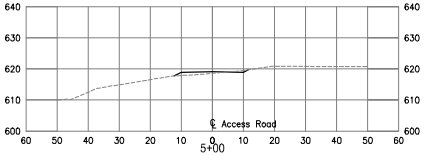


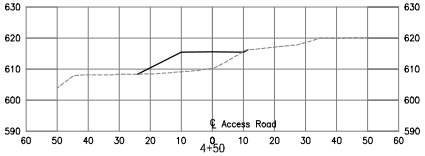


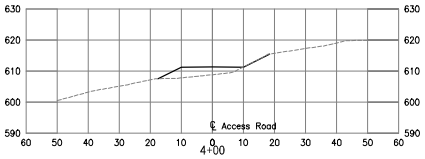


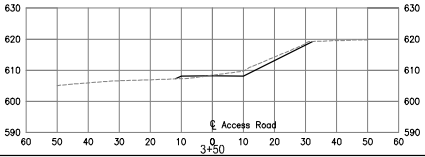


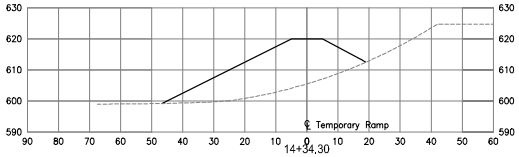


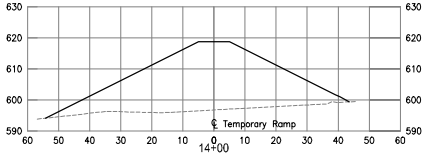


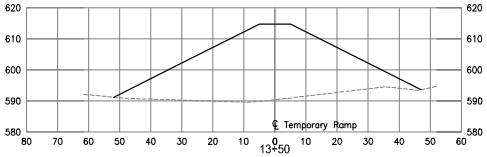


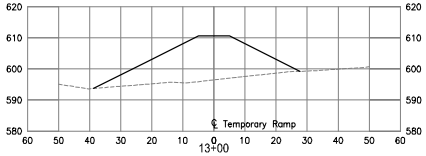


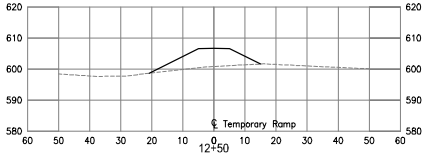


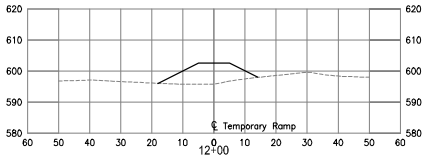


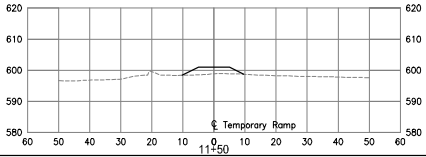












Stantec

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Revision	By	Appd.	YY.MM.DD

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File Name: 30015c-019-sec5.dwg	CW	SDP	JGB	14.01.24
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Permit-Seal

Client/Project
City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title
Access Road And Temporary Ramp Cross Sections

Project No. 175630015

Scale 1"=20' (0, 10', 20', 40')

Drawing No.

Sheet 19 of 20

Revision 0

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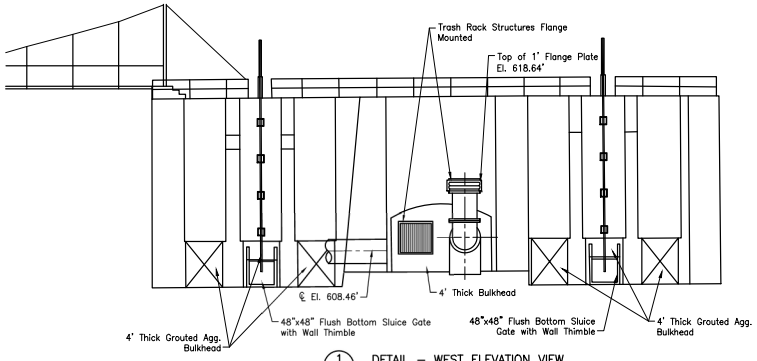
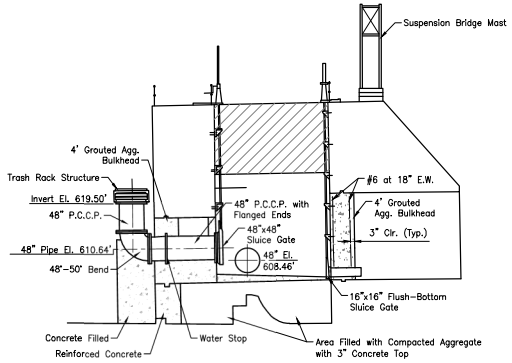
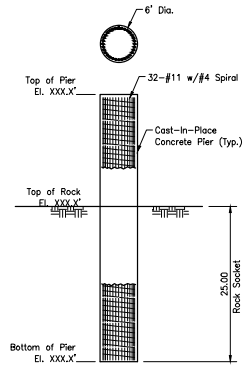


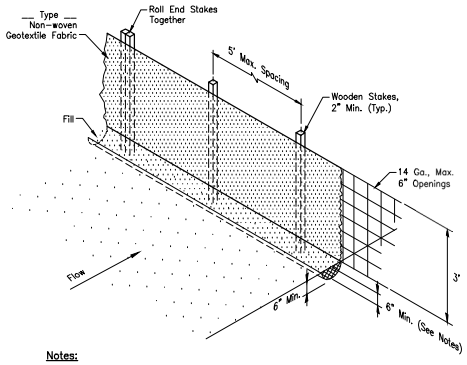
1 / 20 DETAIL – WEST ELEVATION VIEW
1"=10'



2 / 20 SECTION – NONOVERFLOW
1"=10'



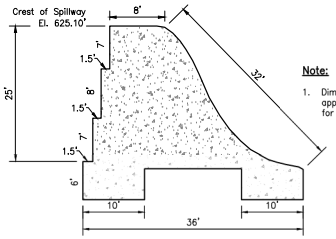
3 / 20 DETAIL – CONCRETE PIER FOR ICS
1"=10'



Notes:

1. All earthwork activity shall be located uphill of silt fence.
2. Silt fence shall be installed across slopes on the contour line.
3. Attach filter fabric to wooden stakes with staples, hogrings or other materials approved by the engineer.
4. Wooden stakes shall be installed on the downhill side of filter fabric.
5. Bury the bottom 12 inches of filter fabric in a 6"x6" trench (to prevent sediment from escaping under the fence) and back fill with soil.
6. Join silt fence sections by rolling end stakes together to create an unbroken sediment barrier.

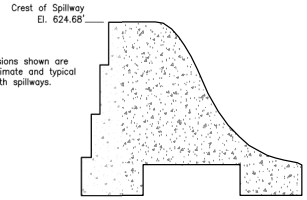
4 / 20 DETAIL – SILT FENCE
NOT TO SCALE



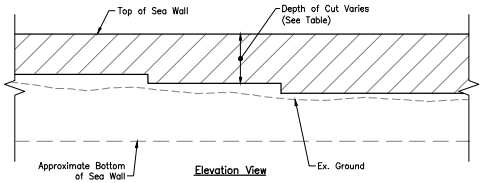
5 / ## SECTION – NORTH SPILLWAY
1"=10'

Note:

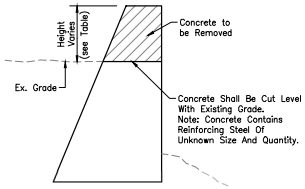
1. Dimensions shown are approximate and typical for both spillways.



6 / ## SECTION – SOUTH SPILLWAY
1"=10'



Elevation View



Sea Wall Cross Section

Note:

1. Fence not shown.

Height Of Sea Wall	
Sta.	Height
1000+00–1000+70	3 Ft.
1000+70–1000+90	4 Ft.
1000+90–1001+10	5 Ft.
1001+10–1001+35	6 Ft.
1001+35–1001+60	7 Ft.
1001+60–1003+90	7.5 Ft.
1003+90–1004+25	7 Ft.
1004+25–1004+55	6.5 Ft.
1004+55–1004+85	6 Ft.
1004+85–1005+15	5.5 Ft.
1005+15–1005+55	5 Ft.
1005+55–1006+55	4.5 Ft.

7 / 20 SEA WALL ALTERATIONS
NOT TO SCALE

SECTION OR DETAIL NO.
TARGET DRAWING
REFERENCE KEY

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Cincinnati, Ohio
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Notes

1. Dam details taken from 1969 Construction drawings. The drawing is to scale, but shapes and dimensions are approximate only. This drawing is to provide general information about the work area. All elevations and dimensions should be field verified.
2. Reinforcing steel is known to be present in spillways. Spacing and size is unknown, but historical photographs are available for inspection at the consent of the Engineer. Reinforcing steel is unknown for the non-overflow section, but assumed present.

Revision	By	Appd.	YY.MM.DD

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File Name: 30015c-020-dtl1.dwg	CW	SDP	JGB	14.01.24
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Permit-Seal

Client/Project
City of Fremont

Ballville Dam Removal

Sandusky County, Ohio

Title
DETAILS

Project No. 175630015
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Drawing No.
Sheet 20 of 20
Revision 0

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8.0 Conceptual Wetland Mitigation Plan

8.1 PROJECT BACKGROUND

The City of Fremont proposes to remove the Ballville Dam from the Sandusky River located near River Mile 18.5, upstream of the City of Fremont. The Ballville Dam removal project will deliver ecological and economic benefits on a local, regional and global scale. The outcome of the proposed project will result in the following improvements to the area:

- Provide fish passage opportunities in the Sandusky River at the Ballville Dam site in both the upstream and downstream directions.
- Restore system connectivity and natural hydrologic processes between the impounded area upstream of Ballville Dam and the lower Sandusky River, which would restore riverine fish and wildlife habitat, resulting in a net gain in the amount of free-flowing riverine habitat.
- Eliminate liabilities associated with the maintenance of the Ballville Dam including potential threats to private properties both upstream and downstream of Ballville Dam.
- Manage downstream movement of reservoir sediments.
- Achieve Aquatic Life Beneficial Uses (as defined by OEPA) within the impounded section of the river.
- Improve and increase aquatic habitat availability in the lower Sandusky River downstream of the Ballville Dam site by restoring the supply of sediment for spawning.
- Increase opportunities for recreation.
- Create a natural stream / floodplain wetland interaction upstream of the Ballville Dam.

Implementation of the project will result impacts to wetlands in the project area. Approximately 0.67 acres of wetlands will be impacted directly as result of construction related activities (Table 6-1). Wetlands upstream of the dam will be impacted indirectly (Table 6-2) due to the lowering of the pool which will reduce flood inundation frequency. This conceptual mitigation plan:

- Describes the methods used to characterize the current and future abundance and distribution of wetlands in the project area
- Presents the results of field studies and modeling

- Quantifies impacts of the proposed project, and
- Proposes conceptual mitigation for impacts to wetlands.

8.1.1 Proposed Project

The proposed project design is to incrementally remove the dam in phases as a measure to control sediment release downstream and to allow time to stabilize sediment upstream. In September of 2014, the existing south spillway will be notched to draw-down the reservoir. Following draw-down in March of 2015, former exposed reservoir areas will be seeded. Following this mitigation, a temporary access road and ramp will be constructed on the north bank for demolition access. Ice Control Structure (ICS) will be installed to mitigate for ice-jam flooding. Following the demolition, the area surrounding the removed dam will be restored and graded. The final phase of the project is to modify the seawall, and if needed to stabilize banks near raw the water intake and to possibly remove Tucker dam.

The project will start in September of 2014 and be finished in late 2016. The sequence of construction and staged removal of the dam will be designed in a manner which trains the river into a preferred alignment, minimizing the release of sediment and the potential for future river instability. Along with adaptive mitigation efforts and planting, this incremental approach will allow time for natural processes to establish and enhance restoration. The project details and the sequence of construction events are described more fully in Section 1.7.1 and construction drawings are presented in Section 7.0 of the permit application text.

8.1.2 Wetland Hydrology

The Ballville Dam was built on the Sandusky River between 1911 and 1913 in the Township of Ballville, approximately 1.5 miles (2.4 km) upstream of the City and approximately 18 river miles upstream of Lake Erie (Figure 3-1). The dam is approximately 407 feet long and 34.4 feet high. The impounded section of the Sandusky River extends upstream from the dam approximately 2.1 miles (3.4 km) and the surface area is approximately 89.3 acres (ODNR 1981). When the dam was installed the water surface elevation of the impounded water increased by approximately 30 feet near the dam. The influence of the dam pool disappears at approximately river mile (RM) 20. Floodplain wetlands present along the Sandusky River at the time of the dam's construction were lost beneath the pool. The type, quality, and acreage of pre-dam wetlands are unknown. The hydrologic processes responsible for creating and maintaining wetlands prior to dam construction led to the formation of new fringe and floodplain wetlands surrounding the reservoir. Upland habitats were transformed over time into wetlands as a result of the increased inundation frequency of the new pool elevation. Sediment storage and accumulation since the dam's completion in 1913, led to the formation of an island in the impoundment. Over time, this island also developed wetland characteristics.

Demolition of the dam as part of the proposed project will lower the pool elevation by approximately 30 feet near the dam. Existing wetlands near the dam will no longer be maintained by the Sandusky River's seasonal flow fluctuations. It is expected that most, if not

all, of these wetlands will slowly revert to upland habitat types. Simultaneously, new wetlands will form at a lower elevation coincident with the new floodplain.

Figure 8-1. Viewing upstream at Tucker Mill Dam with a potential scrub shrub wetland on the left descending bank

8.1.3 Regulatory Setting

Mitigation for impacts to wetlands is required by the United States Army Corp of Engineers and the State of Ohio.

On April 11, 2013 Stantec met with Ohio EPA and discussed the appropriate actions for wetland mitigation. It was concluded that compensatory mitigation would be required for those wetlands directly filled as the result of construction activities. The proposed direct fill (permanent impacts) to WUS (both wetlands and the Sandusky River) for this project are river enhancements that are an intrinsic part of this project. It was also discussed that OEPA would not require mitigation for wetlands indirectly impacted by hydrologic alteration.

Wetland mitigation was further discussed on April 25, 2013 between Stantec and USACE Buffalo District (Corps). The Corp indicated that mitigation would be required for both direct and indirect impacts to wetlands.

This conceptual wetland mitigation plan was prepared to resolve impacts from the proposed project through both “in-kind” and “out-of-kind” mitigation that would result from demolition of Ballville Dam. It is our professional opinion that by implementing the preferred alternative the functional value of wetlands that are formed following dam removal will far exceed the functional value of existing wetlands formed by the current hydrologic interaction with the dam’s pool. The mitigation proposed in this conceptual mitigation plan will occur on-site and restore the section of stream in the proposed project limits. Furthermore, the mitigated wetland condition will provide significant functional benefits for the entire region that do not exist today.

Stantec understands that the wetland mitigation plan must meet the requirements set forth in the U.S. Army Corps of Engineers Federal Register, Compensatory Mitigation for Losses of Aquatic Resources; Final Rule April 10, 2008.

8.2 METHODS

8.2.1 Wetlands Analysis

In August and September of 2010 biologists from USACE-Buffalo District (Richard Ruby and Brian Swartz) conducted a Jurisdictional Determination (JD) field survey of WUS (both streams and wetlands) surrounding the Ballville Dam project area. They used the North Central and Northeast Regional supplement during the wetland determinations. In order to determine the appropriate level of mitigation and overall quality and functions of the wetlands, the wetlands were rated using the Ohio Rapid Assessment Method Wetlands (ORAM) version 5.0 scoring assessment.

Following this survey a biologist from Stantec made a site visit (May 22-25, 2012) to analyze the existing site conditions with regards to the Corps JD survey. The following information was collected.

- general site conditions, habitat and overview
- reviewing ORAM assessments and wetland boundaries (Appendix A)
- plant inventory: meandering survey, recording only the most common or dominant plants (Appendix D)
- soil borings up to 4 feet deep when possible (Appendix C)
- vegetation cover plots using the Corp's (see regional supplement) standard plot radius size
- HHEI and QHEI stream analysis on unnamed tributaries (Section 4)

8.2.2 Hydrologic Engineering Analysis

The objective of this analysis was to predict the future extent of various wetland types in the project area after removal of the dam. This was accomplished using 1) existing wetland data in the project area, 2) topographic and bathymetric data 3) streamflow statistics and 4) hydraulic models characterizing the lateral extent of flood inundation. Forested floodplain wetlands in the eastern U.S. are maintained by seasonal inundation that typically occurs sometime between February and April (Tiner, 1999). Existing condition hydraulic models developed by the U.S. Army Corps of Engineers plus additional data collected by Stantec were examined to identify the discharge whose lateral extent closely approximated the upland limit of existing wetlands in the project area. According to USGS stream gauging data this discharge corresponds to a one

year recurrence interval and the river stage was slightly less than a one-half bankfull event. Existing wetland boundaries downstream of the dam all fell within the modeled lateral extent of the 6,000 cfs discharge. This provides us a valuable reference site for expected wetland conditions upstream of the dam following its removal. Therefore, floodplain mapping under the 6,000 cfs discharge was used to approximate the extent of wetlands upstream of the dam following its removal. A previous study by the Wetland Reserve Program (WRP) used a similar approach reflecting the inundation zone defined as an area prone to sustained or frequent flooding for a period of 7 consecutive days at least once every 2 years on average (Kim et al. 2012). In comparison to similar parameters used for the WRP study, using the 6,000 cfs discharge is a conservative evaluation of wetland inundation zone following removal of the Ballville Dam. Future wetland conditions were modeled using:

- Historical data on river location.
- Bedrock elevations in the impoundment as estimated by Stantec from geotechnical investigations. Drilling Activities Report, Ballville Dam Removal Project, Geotechnical Investigation, Fremont, OH. AECOM (in conjunction with USACE Buffalo District), November 9, 2010
- Known channel dimensions from a free flowing, geomorphically similar section of the Sandusky River upstream of the impoundment.
- Hydraulic models simulating the lateral extent of a 6,000 cfs discharge.
- Data characterizing wetlands in and around the project area.

Hydraulic modeling was sufficient to predict the approximate location of future fringe and floodplain forested wetlands. The models could not, however, predict acreages for in-stream wetlands observed elsewhere in bedrock reaches of the Sandusky River. This was accomplished using equation 1 where:

$$(RLf)\frac{(WAe)}{(RLe)} = WAf \quad \text{Equation 1}$$

WA_e = the total amount existing in-stream wetland downstream of the dam in acres, RL_e = the linear distance along stream centerline of Sandusky River from the dam to the last downstream wetland, RL_f = the future length of restored channel in the currently impounded section of the river, and WA_f = the anticipated future acreage of wetlands in the restored channel.

8.2.3 Planting Plans

Planting vegetation is an important part of river restoration. The purpose of planting is to stabilize exposed sediment, stream banks, side slopes and some of the ICS piers. Planting vegetation may also help to control the release of sediment downstream, establish native riparian and floodplain species, and control the spread of invasive species. With these goals in mind we propose to plant the following where applicable: a seasonal cover crop, a native

floodplain-upland herbaceous species mixture, a native wetland herbaceous species mixture, a high composition of perennial grasses within mixtures, an assortment of shrub livestakes, bare-root tree seedlings, and containerized trees.

The initial planting areas will occur in three different areas within project boundary: the south abutment access road and staging area, the exposed sediment areas after the reservoir drawdown, and the channel restoration and seawall modification areas. The exposed sediment areas are controlled by how the reservoir draws down, thus the proposed planting plans are only estimates that cannot be accurately validated until the reservoir actually draws down. The exposed areas surrounding the reservoir were delineated by using the relocated channel model (discussed in Section 8.2.2.) with the aerial photography. The exposed sediment areas were further divided into two separate planting zones based on the expected gradient and substrate following the drawdown. In total, the project area was divided into 5 separate planting zones that will be planted at separate phases of the project.

The seed mix specifications and composition were derived with the assistance from the Ohio Prairie Nursery (OhioPrairieNursery.com). The seed mixtures were selected based off the existing site conditions, seed availability, and recommended stream restoration species.

8.3 RESULTS

8.3.1 Existing Wetland Characteristics and Functional Assessment

8.3.1.1 Corp JD Survey

A JD letter was submitted by the Corp on March 31, 2011 which reported that 20 separate wetlands totaling 63.4 acres were federally jurisdictional (Appendix A). The USACE (Corp) provided preliminary ORAM quantitative ratings for the 20 wetlands surveyed. The results of the ORAM surveys, found that 95 percent (60 acres) of all wetlands surveyed were of Class 3 quality and function. Of the 60 acres of Category 3 wetland habitat 56.5 acres are located above the dam and are part of a wide forested floodplain area surrounding the reservoir and tributaries. The remaining 3.8 acres of Category 3 habitat are below the dam composed of more rocky substrates within or adjacent to the Sandusky River stream channel (Table 8-1).

Table 8-1. JD Survey Results

ORAM Category	Acres	% of Total
1	0.093	0.001
2	1.310	0.021
Modified 2	1.695	0.027
3	60.270	0.951
Total Acreage	63.368	

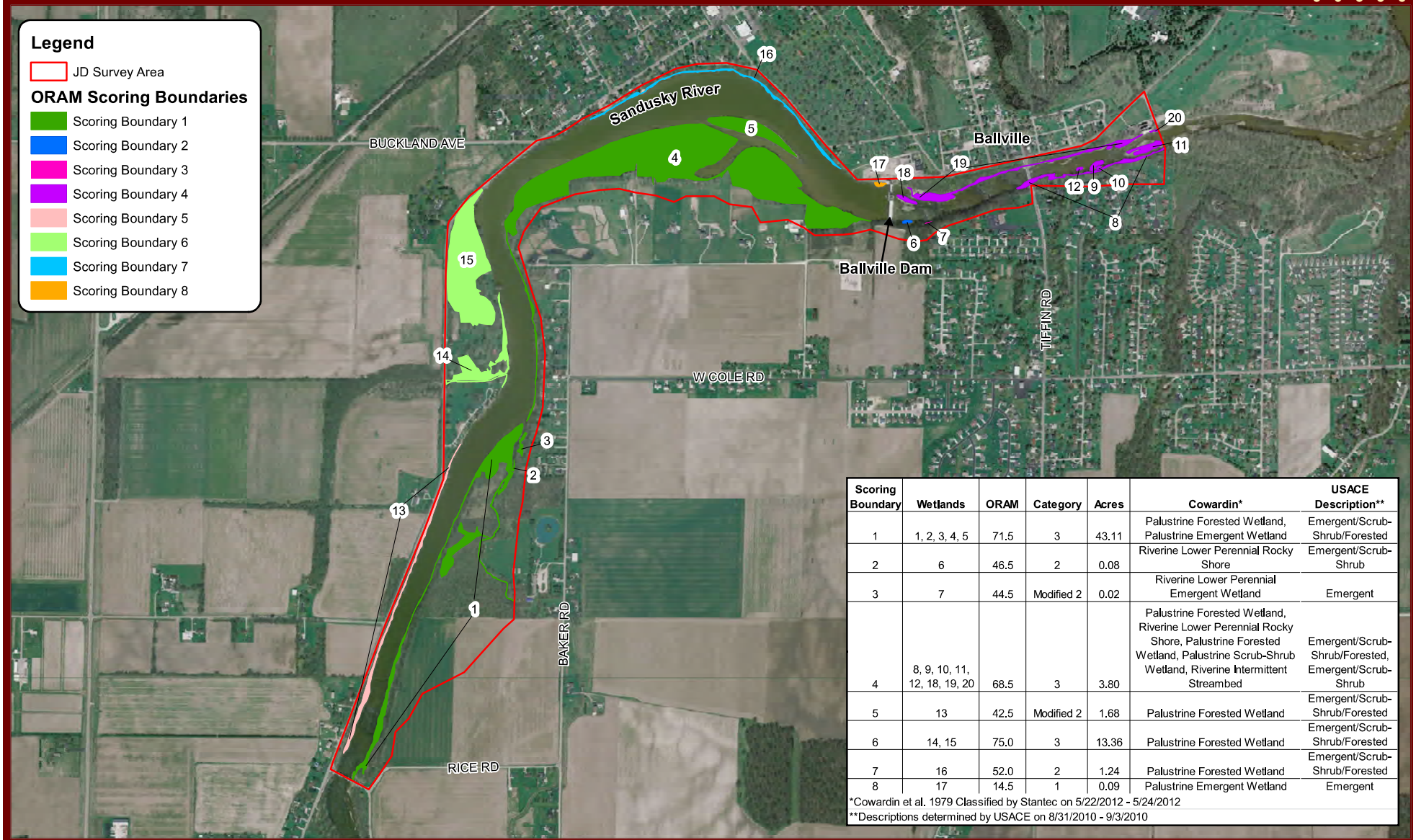
The Category 2 wetland habitats are located mainly upstream of the dam and are long narrow features that serve as a buffer between the river bank and human land use. Also, a small portion of Category 2 (0.1 acres) habitat is located directly below the dam as a small rocky shore with sparse shrub cover (Wetland 6). The Category 1 habitat is a small patch (0.1 acre) of reed canarygrass (*Phalaris arundunaceae*) just below seawall located above the dam.

According to the ORAM manual, multiple JD wetland boundaries may be grouped into a single scoring boundary if there is no real change in hydrology and if there is a high degree of hydrologic interaction between jurisdictional boundaries (OEPA, 2001). Therefore, the 20 wetlands boundaries were evaluated by the Corp as 8 separate ORAM scoring boundaries (Table 8-2). Scoring boundary's 2, 3 and 4 were located below the dam while the remainder of the scoring boundaries occurred above the dam surrounding the reservoir (Figure 8-2).

Table 8-2. Wetlands Grouped by ORAM Scoring Boundary

Scoring Boundary	Wetlands	ORAM	Category	Acres
1	1, 2, 3, 4, 5	71.5	3	43.11
2	6	46.5	2	0.08
3	7	44.5	Modified 2	0.02
4	8, 9, 10, 11, 12, 18, 19, 20	68.5	3	3.80
5	13	42.5	Modified 2	1.68
6	14, 15	75.0	3	13.36
7	16	52.0	2	1.24
8	17	14.5	1	0.09

Jurisdictional Determination of waters of the U.S. Survey was conducted by the Buffalo District USACE on 08/31/2010 - 09/03/2010



Scoring Boundary	Wetlands	ORAM	Category	Acres	Cowardin*	USACE Description**
1	1, 2, 3, 4, 5	71.5	3	43.11	Palustrine Forested Wetland, Palustrine Emergent Wetland	Emergent/Scrub-Shrub/Forested
2	6	46.5	2	0.08	Riverine Lower Perennial Rocky Shore	Emergent/Scrub-Shrub
3	7	44.5	Modified 2	0.02	Riverine Lower Perennial Emergent Wetland	Emergent
4	8, 9, 10, 11, 12, 18, 19, 20	68.5	3	3.80	Palustrine Forested Wetland, Riverine Lower Perennial Rocky Shore, Palustrine Forested Wetland, Palustrine Scrub-Shrub Wetland, Riverine Intermittent Streambed	Emergent/Scrub-Shrub/Forested, Emergent/Scrub-Shrub
5	13	42.5	Modified 2	1.68	Palustrine Forested Wetland	Emergent/Scrub-Shrub/Forested
6	14, 15	75.0	3	13.36	Palustrine Forested Wetland	Emergent/Scrub-Shrub/Forested
7	16	52.0	2	1.24	Palustrine Forested Wetland	Emergent/Scrub-Shrub/Forested
8	17	14.5	1	0.09	Palustrine Emergent Wetland	Emergent

*Cowardin et al. 1979 Classified by Stantec on 5/22/2012 - 5/24/2012

**Descriptions determined by USACE on 8/31/2010 - 9/3/2010

0 500 1,000 2,000 Feet

1 in = 1,000 ft

N

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Figure 8-2 ORAM Scoring Summary

Ballville Dam Removal and River Restoration Project
Fremont, OH

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8.3.1.2 Stantec Wetland Survey

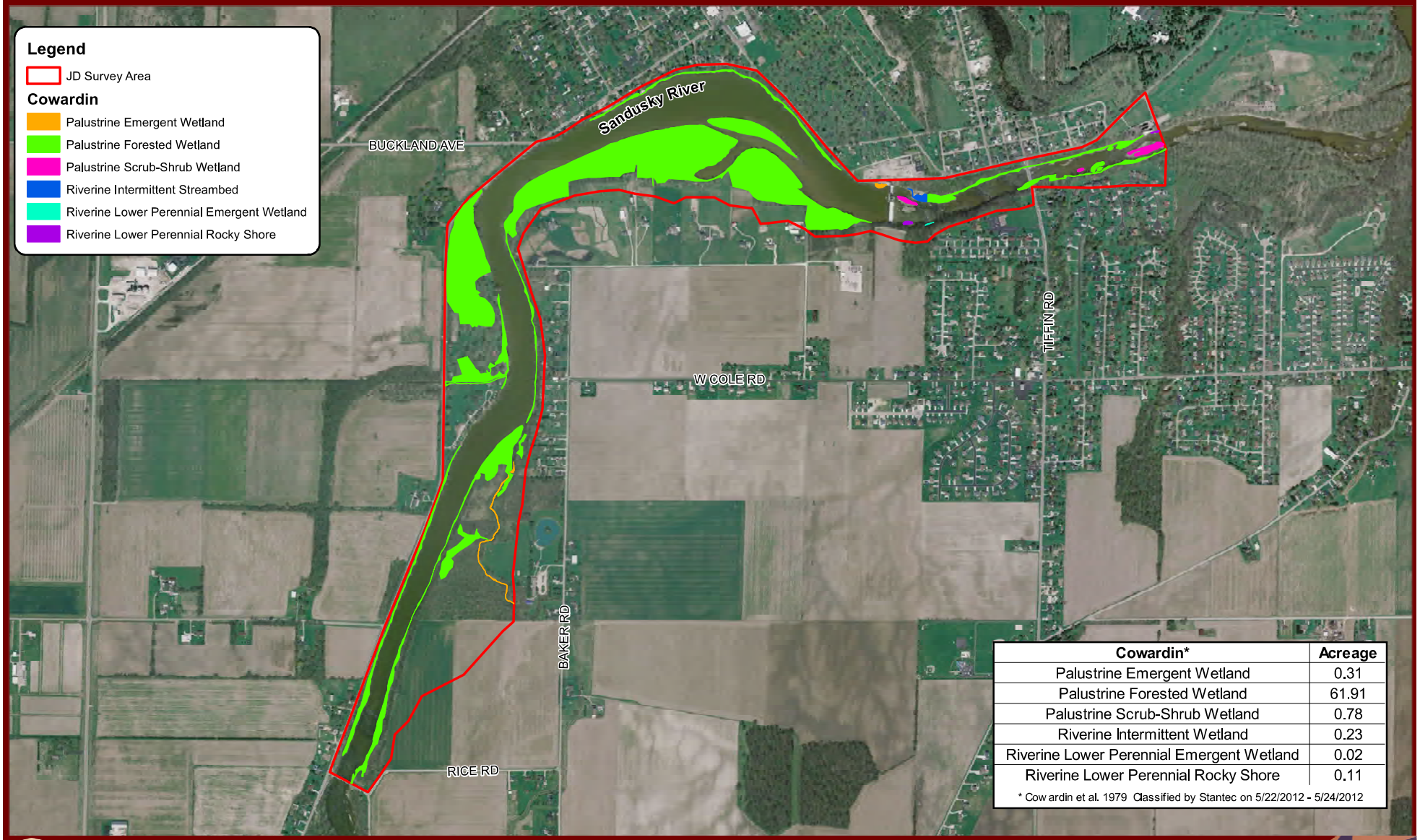
A narrative describing the general site conditions of each wetland is included in Appendix C, and the result of the meandering plant survey is included in Appendix D.

The jurisdictional wetland boundaries were further classified and segmented into Cowardin classes (Cowardin et al, 1979) to better identify the ecological community and mitigation potential (Table 8-3). Generally speaking, if the wetland appeared below the OHWM of the Sandusky River the class was considered Riverine (0.36 total acres), and the wetlands above the OHWM were considered Palustrine (63.01 total acres).

Table 8-3. Cowardin Classification by ORAM Category

Cowardin	Total Acreage	Category 3	Category 2	Category Modified 2	Category 1
Palustrine Emergent Wetland	0.31	0.22	0.00	0.00	0.09
Palustrine Forested Wetland	61.91	59.00	1.24	1.68	0.00
Palustrine Scrub-Shrub Wetland	0.78	0.78	0.00	0.00	0.00
Riverine Intermittent Wetland	0.23	0.23	0.00	0.00	0.00
Riverine Lower Perennial Emergent Wetland	0.02	0.00	0.00	0.02	0.00
Riverine Lower Perennial Rocky Shore	0.11	0.03	0.08	0.00	0.00
Total Acreage	**63.37**	**60.26**	**1.32**	**1.70**	**0.09**

Jurisdictional Determination of waters of the U.S. Survey was conducted by the Buffalo District USACE on 08/31/2010 - 09/03/2010



Cowardin*	Acreage
Palustrine Emergent Wetland	0.31
Palustrine Forested Wetland	61.91
Palustrine Scrub-Shrub Wetland	0.78
Riverine Intermittent Wetland	0.23
Riverine Lower Perennial Emergent Wetland	0.02
Riverine Lower Perennial Rocky Shore	0.11

* Cowardin et al. 1979 Classified by Stantec on 5/22/2012 - 5/24/2012

Feet
0 500 1,000 2,000
1 in = 1,000 ft

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Figure 8-3 Cowardin Classification

Ballville Dam Removal and River Restoration Project
Fremont, OH

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The most dominant Cowardin class Palustrine Forested Wetland (PFO); 95 percent of PFO area was Category 3. The wetlands above the dam were mainly classified as PFO with an occasional Palustrine Emergent Wetland (PEM) (Figure 8-4). In contrast, five of the six Cowardin classes were present below the dam. Overall a majority of the PFO habitat had a high degree of horizontal interspersion with multiple plant assemblages (canopy, subcanopy, shrub and herbaceous) present.

The dominant vegetation community in the wetlands is mature riparian forest, dominated by Silver Maple-Cottonwood-Green Ash. Other common trees and sub-canopy trees were sycamore, black willow, American elm, box elder and red maple. The dominant shrub strata were composed of sandbar willow, black willow and roughleaf dogwood. The dominant herbaceous strata were composed of reed canary-grass, sedges, wood nettle, and smartweeds. The invasive species reed canarygrass was common in large patches above the dam.

Along the riparian corridor, there is more vegetation cover upstream of the dam. The habitat below the dam is rocky with exposed bedrock and patches of sparse vegetation cover. In general, because of the influence of the dam, there were three types of wetlands observed on site: In-Stream, Fringe and Forested Floodplain. Each type possesses a varying degree of quality and function.

8.3.1.2.1 In-Stream Wetland Characteristics and Function

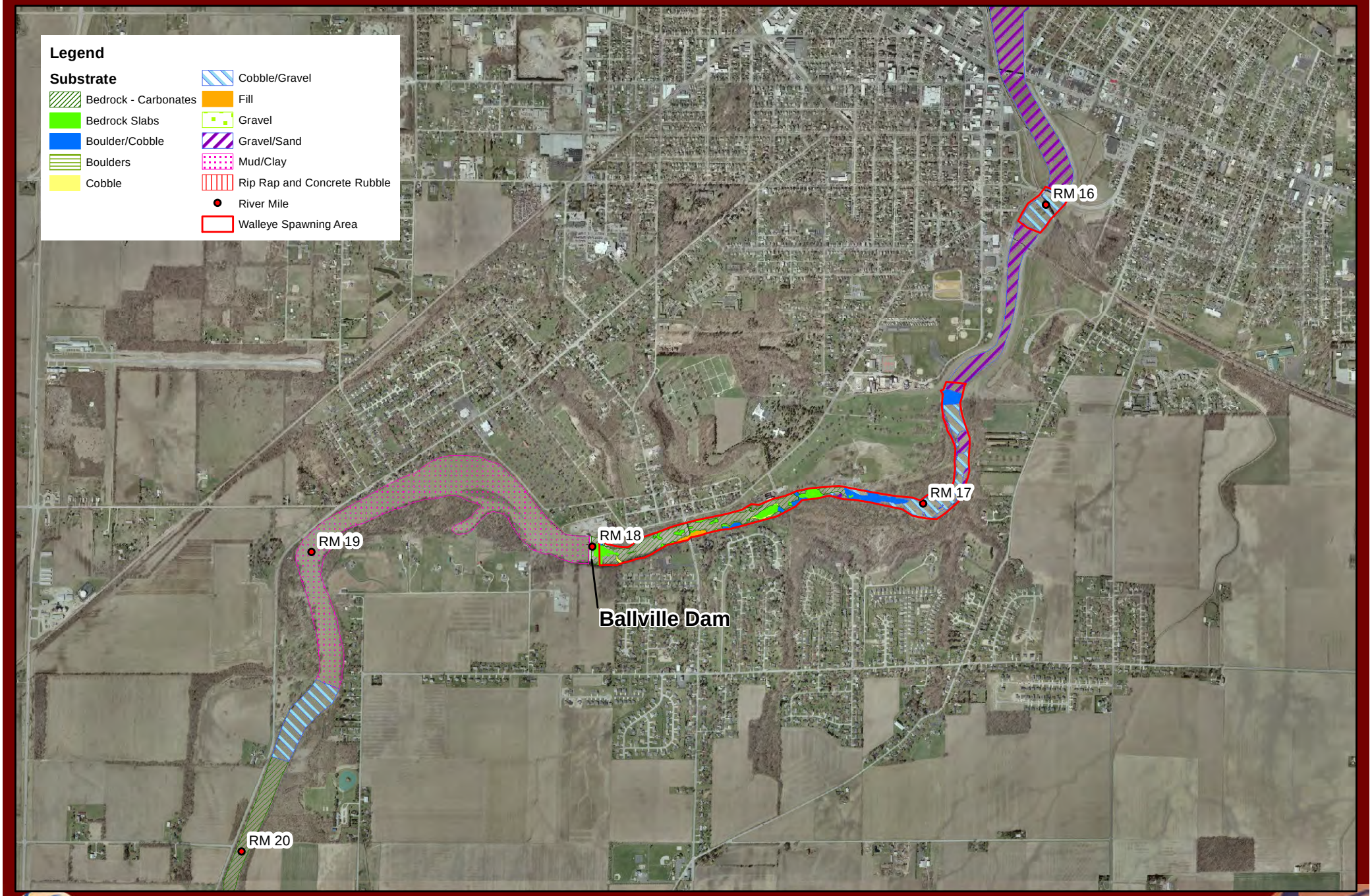
The wetlands directly downstream of the dam are within the main stream channel of the Sandusky River composed of in-stream vegetation. These wetlands are a diverse mix of in stream wetland types (See Figure 8-3) from Palustrine Forest and Scrub-Shrub to Riverine Rocky Shore, Intermittent Stream Bed, and Lower Perennial Emergent (Figure 8-4, 8-5).

Figure 8-4. In-stream depositional features above the OHWM classified as a Palustrine Scrub-Shrub (Wetland 11)

Figure 8-5. Side channel with an intermittent shallow pool surrounded by forest above the OHWM (Wetland 19)

Although these wetland features exist within the main stream channel, some portions fall above the OHWM of the Sandusky River depending if the wetland is composed of rocky substrate, rock outcrops, bedrock shore, small pooled areas, sparse hydric vegetation islands and peninsulas.

There are multiple substrates types (cobbles beds, bedrock, boulder beds, sand and gravel beds) deposited outside the impounded areas versus the silt bed in the impounded area (Figure 8-6). For example, Scoring Boundary 4 which is made up of JD Wetland's 8, 9,10,11,12, 18, 19 and 20 has been assigned a Category 3 rating (Figure 8-2). These natural in stream vegetation communities are diverse with heterogeneous mosaic of habitats important to the ecological integrity of the system, and have more ecological function and quality than the existing fringe wetlands surrounding the reservoir (i.e., fringe portions of Wetland 14 and 15) provide. The existing impounded area is limited in the development of in stream wetland habitat.



0 1,000 2,000 4,000 Feet

1 inch = 2,000 feet

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Figure 8-6. Sandusky River Substrate Types Surrounding the Ballville Dam

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These wetland types occur in the free flowing areas of the river and are a product of river channel deposition and erosion of sediment. Splitting the river channel, these island features provide important habitat for fish and mussels. These wetlands improve the site's function as a riparian corridor; promote habitat stabilization and water quality for fish and mussel habitat within the river. They also provide valuable habitat for a variety of species of amphibians, reptiles, mammals and birds (Table 8-4).

Table 8-4. In-Stream Wetlands (Directly Impacted) Functional Summary

Function/ Value*	Wetland / Cowardin Classification				
	6 / RLPRS	17 / PEM	18 / PSS	19 / RIS	19 / PFO
Ground Water Exchange	-	x	x	-	x
Nutrient Removal and/or transformation	x	x	x	-	x
Sediment and/or Contaminant Retention	x	x	x	-	x
Water Storage/Flood Control	-	x	x	-	+
Sediment Stabilization	x	x	x	-	x
Shoreline Stabilization	-	x	-	+	+
Maintenance of Biodiversity	x	x	x	x	x
Recreation	x	x	x	x	x
Education and Research	x	x	x	x	x
Habitat for Threatened or Endangered Species	x	x	x	x	+

***** "-" means that the function is not present; "X" means that the function is present and is of low quality; and "+" means the function is present and is of high quality

The PFO portion of Wetland 19 by far offer the most functionality of the wetlands located directly downstream of the dam. The open bedrock and rocky substrate portions of the some of these wetland areas offer limited functionality in terms of wildlife habitat and biodiversity.

8.3.1.2.2 Fringe Wetland Characteristics and Function

The fringe wetlands are long narrow features on the landscape that are limited in size and function that the Category 3 wetlands possess. Generally speaking they are riparian features that are in between the river and human land use such as a road and or residential areas. They are important Category 2 features that provide a buffer for the riparian corridor and also function to stabilize banks, provide perch and nesting sites for birds, reduce flood risk, define the riparian corridor, and serve as a water and sediment filter for the river.

There are approximately 4.01 acres above the dam surrounding the reservoir that currently function as forested fringe wetland along the Sandusky River. This existing 4.01 acres consists of approximately 1.41 acres of category 2 wetland and 2.6 of Category 3 wetland. The Category 2 fringe sections function as a buffer between the river and other human land use; while the Category 3 sections of fringe are part a large floodplain forest.

Currently there are some noticeable breaks with the fringe wetlands, due to the seawall and other human land uses (Figure 8-7).

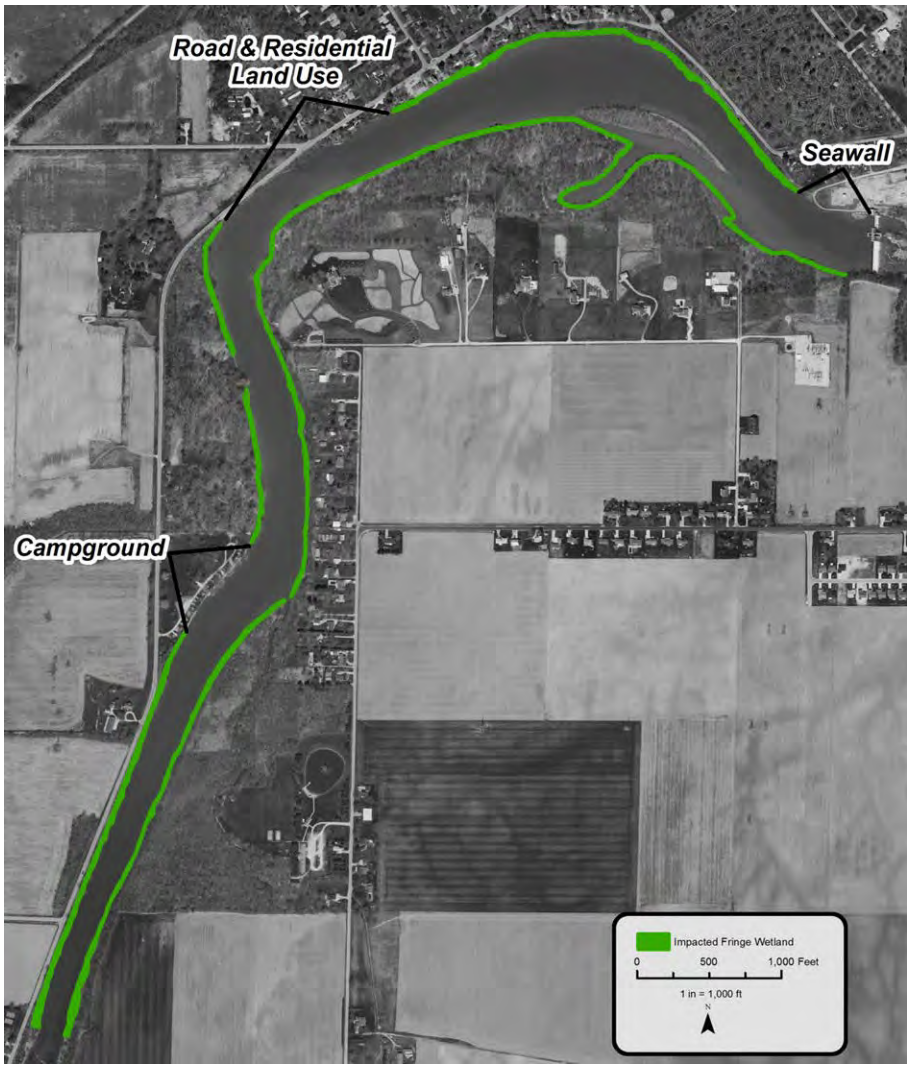

Figure 8-7. Gaps in the fringe wetlands along riparian corridor, 4 acres of fringe wetland

8.3.1.2.3 Forested Floodplain Wetland Characteristics and Function

A large amount of the areas surrounding the reservoir are seasonally inundated with floodwaters and have developed into a wide floodplain forested wetland with intermittent vernal pools (Figure 8-8).

Figure 8-8. Category 3 habitat: variety and interspersion of plant communities, forest canopy, rich floristic communities, vernal pools with swamp like characteristics, providing valuable habitat for amphibians (Wetland 4)

Figure 8-9. Proposed Indirect Impacts to Forested Floodplain Wetlands

These wetlands (Figure 8-9) have unnatural lacustrine characteristics, but because of the large size, interspersed vernal pools and ponded water, diverse floristic communities and forest community, a few locations within these wetlands possess quality habitat for amphibians and other forms of wildlife. For more details on Wetland 4 see Appendix C.

8.3.1.2.4 Wetland Functional Assessment Summary

The role each wetland has within the project area is controlled by the following:

1. The condition of the Sandusky River (is it a Riverine or Lacustrine system)
2. The position the wetland is on the landscape relative to the Sandusky River
3. The amount of anthropomorphic disturbance

Generally speaking, the wetland types on site have similar functional value since they are all associated with the Sandusky River. The major difference is whether the wetland is located upstream (lacustrine system) or downstream (riverine system) of the Ballville Dam.

Table 8-5. Functional Assessment of Existing Wetlands in Project Area

Function/ Value*	Wetland Types within the Riparian Corridor								
	Fringe			In Stream					Floodplain Forest
	PFO	PEM	PSS	PFO	PEM	PSS	RLPRS	RIS	PFO
Ground Water Exchange	x	x	x	x	x	x	-	-	x
Nutrient Removal and/or transformation	x	x	x	x	x	x	x	-	x
Sediment and/or Contaminant Retention	x	x	x	x	x	x	x	-	x
Water Storage/ Flood Control	x	x	x	+	x	x	-	-	+
Sediment Stabilization	+	x	x	x	x	x	x	-	x
Shoreline Stabilization	+	x	+	+	x	-	-	+	x
Maintenance of Biodiversity	+	+	+	x	x	x	x	x	+
Recreation	+	+	+	x	x	x	x	x	x
Education and Research	x	x	x	x	x	x	x	x	x
Habitat for Threatened or Endangered Species	x	x	x	+	x	x	x	x	x

***** "-" means that the function is not present; "X" means that the function is present and is of low quality; and "+" means the function is present and is of high quality; * function list provided in Ohio Administrative Code 3745-1-54 Antidegradation

In this analysis the “In Stream” type is considered those wetlands formed from natural river processes while the “Fringe” and “Floodplain Forest” were formed from floodwaters upstream of the dam (Table 8-5). Currently, the wetlands downstream of the dam support and maintain a natural river system while the wetlands above the dam are part of an unnatural and impaired water resource.

8.3.2 Project Impacts to Wetlands

According to these preliminary ORAM scores (Appendix A), there will be approximately 54.6 acres of wetlands that will be impacted as either temporary fill, permanent fill, removal or indirectly lost to the drawdown (See Section 6) by the Ballvillle Dam removal. Of this acreage, 97 percent has been categorized as Category 3 quality and function (Table 8-6).

Table 8-6. Impacted Wetlands by ORAM Category

ORAM Category	Acres Directly Impacted	Acres Indirectly Impacted	Total Acres Impacted
1	0.09	0.00	0.09
Modified 2	0.00	0.18	0.18
2	0.01	1.23	1.24
3	0.57	52.49	53.06
Total	0.67	53.90	54.57

8.3.2.1 Direct Impacts

Wetlands will be impacted by activities requiring permanent placement of fill or excavation of existing ground surfaces as a result of construction activities (Section 7-Construction Drawings). The specific fill and excavation activities to WUS are described in Section 1.5 (401 application) and again in Section 2.4 (404 application). The impact acreages to WUS features are described in Section 6 of this permit application. The permanent impacts (0.67 acres) to Wetlands 6, 17, 18 and 19 will occur around the removed Ballville Dam. Temporary impacts will occur in Wetlands 18 and 19 associated with the demolition of Ballville Dam. Some additional permanent impacts to Wetlands 14 and 15 may take place if needed near the intake of the new raw water reservoir.

8.3.2.2 Secondary Impacts

Secondary impacts include all impacts to WUS that occur indirectly as a result of the project. These are defined in the Ohio Administrative Code (OAC) as “Indirect Impacts” under Wetland definitions 3745-1-50(U). In the context of this project they refer to wetlands affected by hydrologic alteration or indirect fill as result of sediment transport.

Stantec proposes there will be no quantifiable indirect impacts to wetlands below the dam as a result of sediment transport. As part of the preferred design, Stantec proposes to control the release of sediment downstream by incremental notching. It is our best estimate that the vast majority of sediment will be transported through the high gradient stream section below the dam and will begin to deposit sediment along the low gradient section between Brady’s island and

Sandusky Bay (approximately a 20 mile stretch). Although some additional deposition may occur in the jurisdictional boundaries surrounding the dam, there will be no proposed permanent impacts to these wetlands. Therefore, there are a total of 3.2 acres of delineated jurisdictional wetland below the dam that will not be impacted by the project.

It appears from modeling the existing 1-year storm event at 6000 cfs that the jurisdictional wetland boundaries relatively match the water surface elevation (Figure 8-10). Moreover, these features surrounding the reservoir coincide with the 1 year storm event of the Sandusky River. The jurisdictional wetland boundaries above the dam are expected to no longer receive annual flooding as depicted in the modeled future storm event.

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Wetland Inundation Map

Ballville Dam Removal
Sandusky County, Ohio

The information on this map has been compiled by Stantec staff from a variety of sources and is subject to change without notice. Stantec makes no representations or warranties, express or implied, as to accuracy, completeness,timeliness, or rights to the use of such information.

Figure 8-10

Therefore, a majority of the wetland areas upstream of the dam are expected to undergo a hydrology alteration and will no longer be WUS (Table 8-7; Figure 6-3).

Table 8-7. Secondary Impacted Wetland Features

Water Feature ID	Flow Regime & Corps Descriptions	ORAM Evaluation	Estimated Amount of Aquatic Resource (hydrology alteration)
Wetland 1	Emergent / Scrub-Shrub / Forested	71.5 (Category 3)	2.49 acres
Wetland 2	Emergent / Scrub-Shrub / Forested	71.5 (Category 3)	0.04 acres
Wetland 3	Emergent / Scrub-Shrub / Forested	71.5 (Category 3)	0.19 acres
Wetland 4	Emergent / Scrub-Shrub / Forested	71.5 (Category 3)	34.11 acres
Wetland 5	Emergent / Scrub-Shrub / Forested	71.5 (Category 3)	2.47 acres
Wetland 13	Emergent / Scrub-Shrub / Forested	42.5 (Modified 2)	0.18 acres
Wetland 14	Emergent / Scrub-Shrub / Forested	75 (Category 3)	2.30 acres
Wetland 15	Emergent / Scrub-Shrub / Forested	75 (Category 3)	10.89 acres
Wetland 16	Emergent / Scrub-Shrub / Forested	52 (Category 2)	1.23 acres
		Total	**53.90 acres**

8.3.2.2.1 Exceptions (not subject to hydrology alteration from dam removal)

While not including Wetland 17 (above the dam and directly filled), there are a total of **59.38** acres of delineated wetlands above the dam subject to secondary impacts. However, after the detailed modeling and analysis it was determined that **5.48** acres will not be impacted because their source of hydrology is partly or wholly independent from the Sandusky River. The following are descriptions of these exceptions labeled with E - # in each figure.

1.) **0.18** acres: The fringe portion of Wetland 1 surrounding Stream 1 (Figure 8-11, Figure 8-12); it is probable that this fringe wetland portion will stay intact because Stream 1 will continue to provide a hydrology source. This fringe habitat continues well past the extent of the 1 year event (Figure 8-13). This provides evidence that this feature does not solely rely on hydrology from the backwater of the Sandusky River.

Figure 8-11. Viewing upstream of Stream 1, approximately 1,000 linear feet upstream of culvert, with abutting fringe portion of Wetland 1

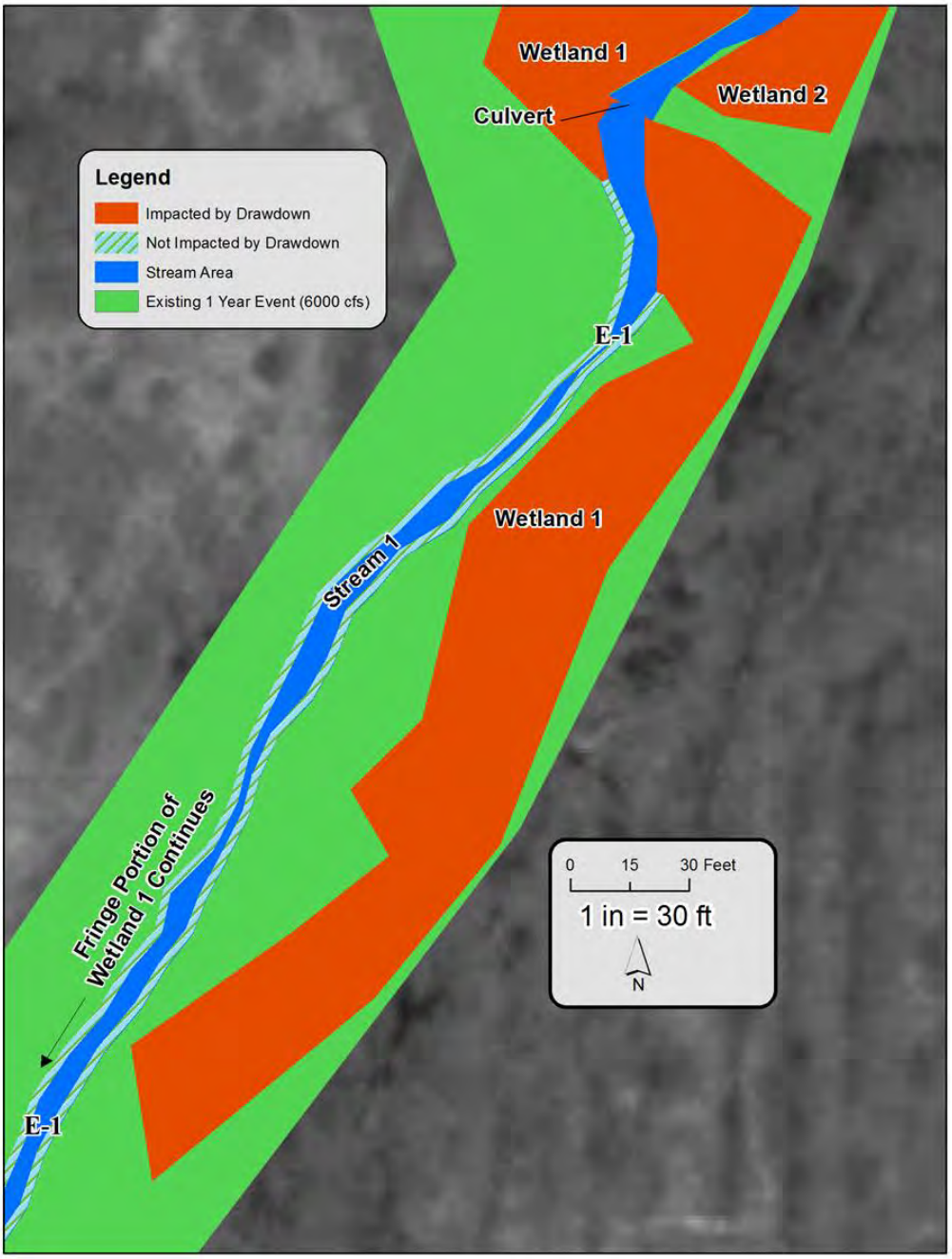


Figure 8-12. Exception #1 Fringe Portion of Wetland 1 surrounding Stream 1

2.) **1.94** acres: These two portions of Wetland 1 are not annually flooded by either direct overtopping of the Sandusky River or from the backwater from the Sandusky River flooding into Stream 1 (Figure 8-13, Figure 8-14, and Figure 8-15).

3.) **1.68** acres: This is the approximate point on the right descending bank of the Sandusky River where the future one year event (6000 cfs) water surface elevation is regularly below fringe portion of Wetland 1. It is at this point moving downstream that Wetland 1 will not be regularly flooded on an annual basis (Figure 8-13).

4.) **1.50** acres: This is the approximate point on the left descending bank of the Sandusky River where the future one year event (6000 cfs) water surface elevation is regularly below fringe portion of Wetland 13. It is at this point moving downstream that Wetland 13 will not be regularly flooded on an annual basis (Figure 8-13).

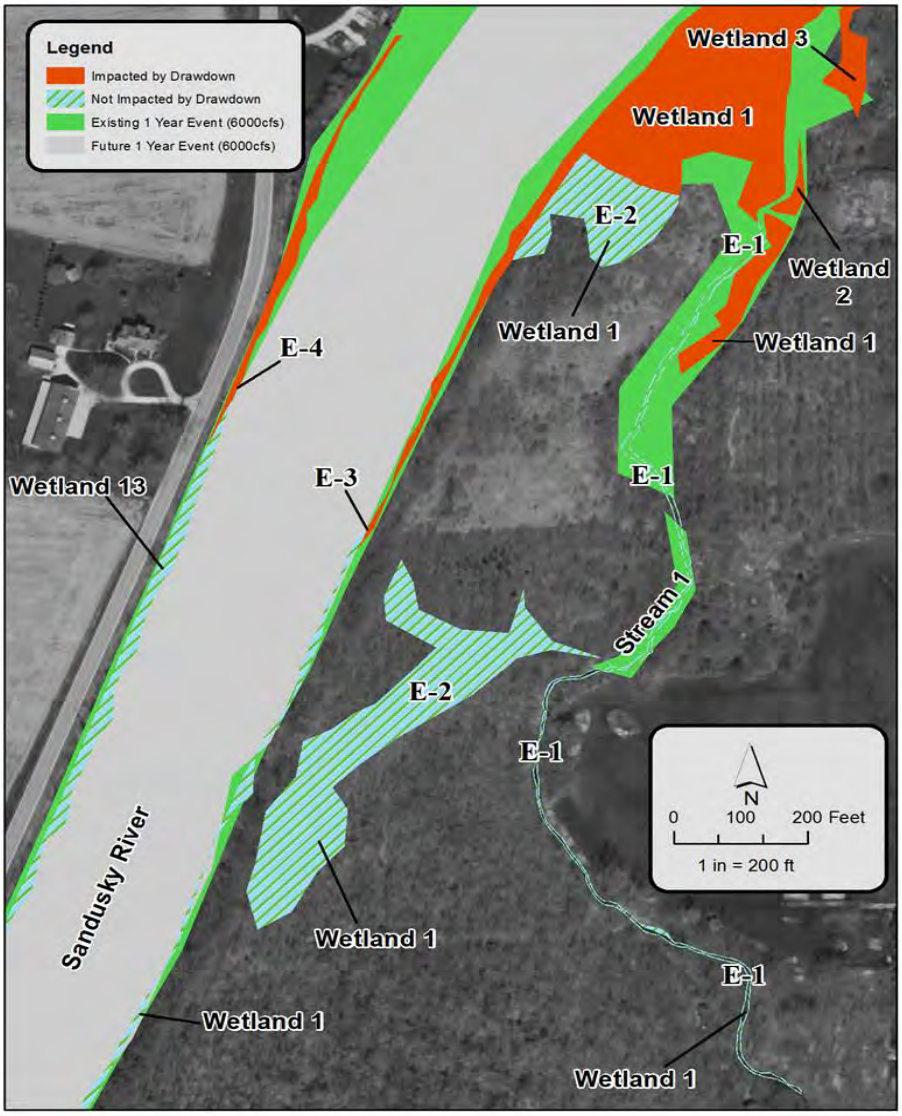


Figure 8-13. Exceptions 1, 2, 3, and 4 – an overview of wetland features not expected to undergo a hydrology alteration

Figure 8-14. A view of north portion of E-2 (Figure 8-13); area outside of 1 year event; area appeared to have more upland characteristics

Figure 8-15. A view of south portion of E-2 from above Figure 8-13; Wetland 1 with water stained leaves and water marks on lower trunks of trees; area outside of 1 year event

5.) **0.18** acres: the fringe portion of Wetland 14 surrounding Stream 2; it is probable that this fringe wetland area will stay intact because the source of hydrology from the Stream 2 will continue to supply a hydrology for this narrow wetland feature (Figure 8-16 and Figure 8-17).

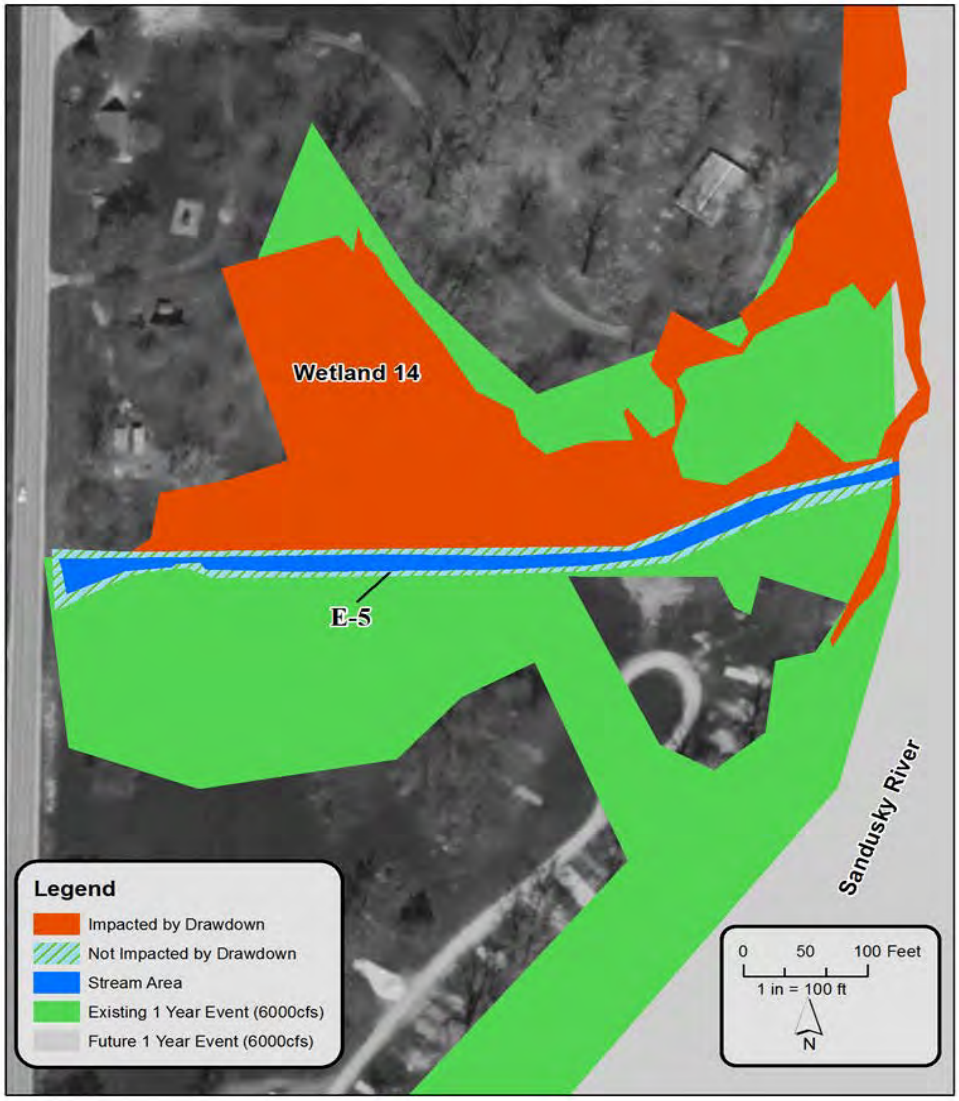


Figure 8-16. Exception # 5-fringe portion of Wetland 14 surrounding Stream 2

Figure 8-17. Viewing downstream of Stream 2 with fringe portion of Wetland 14 abutting stream

8.3.2.3 Summary of Existing Jurisdictional Wetlands Relative to the Project

There were a total of 63 acres (Table 8-1) of jurisdictional wetlands delineated in the project area, and 54.57 acres (Table 8-6) will be affected by the proposed project. Hydrologic alteration is the largest source of impact and accounts for approximately 53.90 acres. The following are the proposed action to the wetland aquatic resources surveyed:

1. Hydrology Alteration = 53.90 acres (all upstream of dam)

Hydrology Alteration = the wetland areas that will be potentially altered due to the drawdown of the reservoir. This area was defined as the area inside the 1 year event or 6000cfs at ½ bankfull.

2. Direct Fill and Excavation = 0.67 acres (.25 downstream of dam, .42 upstream of dam)

Direct Fill = the wetland areas that will have place of fill or removal of existing ground surface as a result of construction activities.

3. Not Impacted (downstream of dam) = 2.97 acres

Not Impacted (downstream) = wetlands downstream of the dam proposed to not be impacted but may experience some temporary sediment deposition

4. Not Impacted (Exceptions 1-5 discussed above) = 5.48 acres

Not Impacted (Exceptions discussed above) = see above for details, wetland portions above the dam that are not in the existing 1 year flood event or fringe sections of wetlands along smaller tributaries.

8.3.3 Proposed Wetland to Form Following Dam Removal

8.3.3.1 In-Stream Wetlands Development

When the dam is removed and the impounded area reverts to pre-dam conditions, the potential for the development of these in-stream wetland systems is enhanced. The amount of new in-stream wetland habitat was quantified by measuring the length of the impounded area probable of creating this habitat, and summing the amount of existing habitat which included the entire area of Wetlands 6, 9, 10, & 11 and portions of Wetlands 19 (See Figure 8-19). Wetland 18 (Figure 8-18) was not included in this analysis because it was not considered a natural wetland due to the sluice gates blocking channel flows.

Figure 8-18. Wetland 18 with sluice gates directly behind. Two spillways on both sides of gates not directly releasing water through area which has formed this island

The formula used to calculate the creation of this wetland type was the following: Equation 2

$$\frac{(1.74)}{(3135)} = \frac{(x)}{(8{,}676)}$$

1.74 = the total amount existing in-stream wetland in acres

3135 = the distance in linear feet along stream centerline of Sandusky River from the dam to the last downstream wetland included in analysis. This is the point where hydrology alteration was estimated to occur among existing wetlands.

x = potential wetland creation in acres

8676 = the distance in linear feet along stream centerline of Sandusky River from the dam to the point upstream on the river where the existing wetlands are regularly outside the modeled future 6000cfs flood event. This distance covers the area where potential wetland may develop.

Figure 8-19. Existing In-Stream Wetland

The total amount of potential wetland to develop is 4.8 acres in the impounded area. There are both Category 2 and 3 wetlands below the dam, so we expect both types to form with similar quality and functional value.

8.3.3.2 Proposed Wetlands to Form Based on Hydrology Model

All secondary impacts will occur above the dam as a result of hydrology alteration totaling 53.9 acres. As per guidance from USACE-Buffalo district, the mitigation ratio for secondary impacts is under investigation and will be negotiated specific to this project. Therefore, the standard OEPA ratio by ORAM category will not be employed.

For this project, the creation of new wetlands depends on the relocated stream channel and the development of the new land areas regularly flooded in the wet season. These wetlands occur in the annual floodplain of the Sandusky River and the tributaries. Depending on the location and the size and shape these wetlands vary in functionality. In the following discussion the functional values and quality surrounding wetlands Sandusky River are separated into fringe and floodplain forest. This is based off of the varying degree of functionality each system possesses, and it presents a logical approach in predicting the formation of new wetlands using hydrologic modeling.

8.3.3.2.1 Fringe Wetland Development (lacustrine to riverine)

The development of new fringe wetlands was quantified by abstracting the difference between the future water surface at flood stage (6000 cfs; 1 year flood event) and the future low flow (300 cfs) water surface. There were approximately 14 acres of fringe wetland calculated using this model (Figure 8-20). With the channel relocation and realignment there is potential for the fringe wetlands to become continuous without interruptions (Figure 8-7). The fringe wetlands will develop along a natural meandering river system similar to the fringe portions that currently exist downstream of the dam (Figure 8-19). Some of this may develop to be long narrow features while others may be the edge of a wider forested floodplain wetland surrounding a point bar.

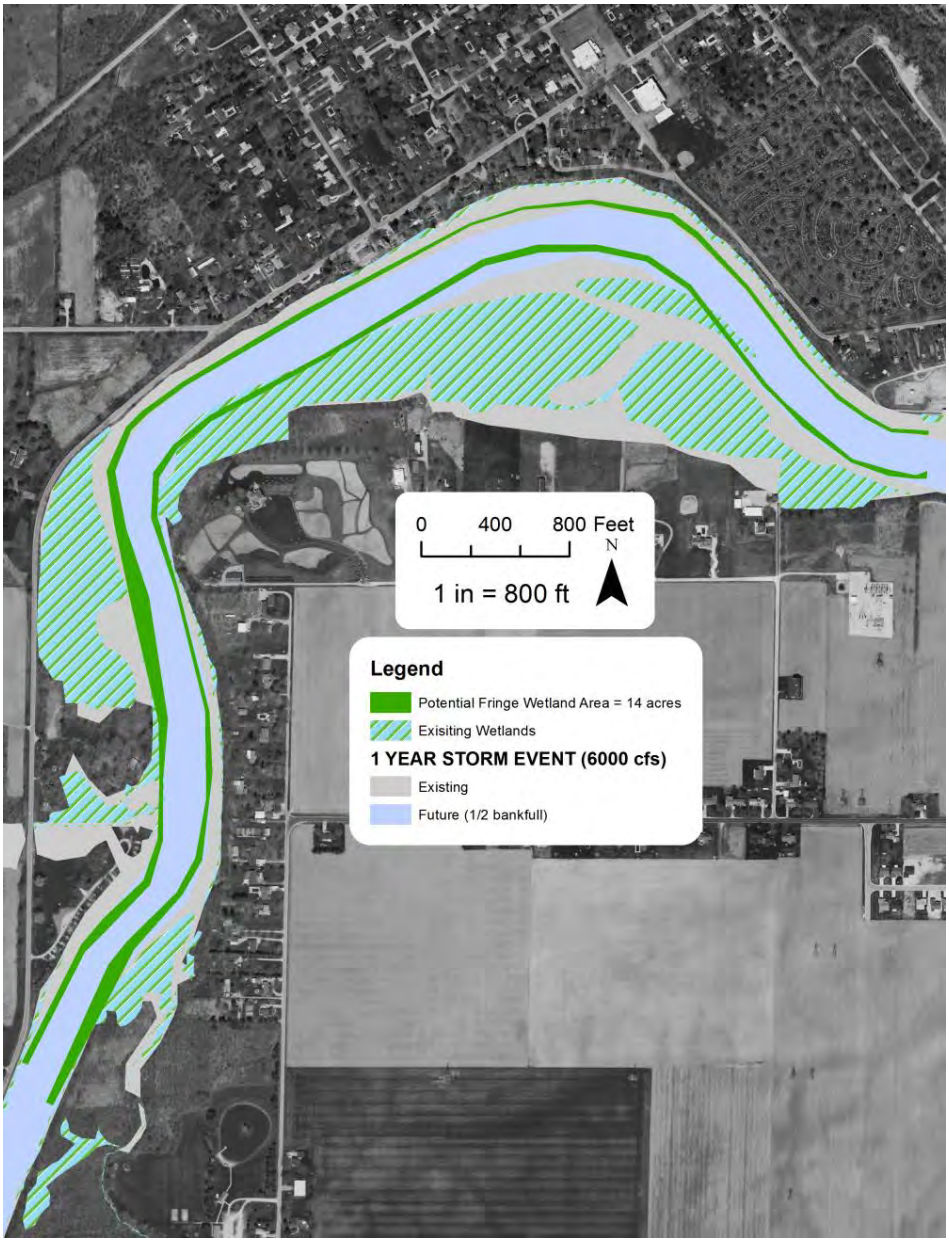


Figure 8-20. Modeled Fringe Wetland along New Channel Alignment

8.3.3.2.2 Forested Floodplain Development

According to the model an estimated 49.9 acres of this habitat may revert to upland habitat because these areas will no longer be annually flooded (Figure 8-10, Figure 6-3). The general hydroperiod for floodplain forest is approximately two months (between Feb-April the water table is above ground level) out of the year (Tiner, 1999, p33). The forest canopy which is dominated by facultative species such as silver maple, red maple, American sycamore, eastern cottonwood, box elder, American elm, and green ash and will remain and continue to germinate

new species. Upland woody species will also begin to establish. The plants most susceptible to immediate succession will be the herbaceous obligate and facultative wet species. The valuable habitat for amphibians will diminish as vernal pools dry up and obligate shrub species will die off. These areas will keep their forest presence but will lose the required indicators for hydrology and soil listed in the Corp's North Central and Northeast Regional supplement regional supplement. Therefore, they will no longer be JD features. They will most likely keep their hydric vegetation status for many years after the dam has been removed.

Although 50 acres of existing JD wetland may be lost, there is the potential for the development of additional forested floodplain wetland (Figure 8-21) habitat surrounding the relocated river.

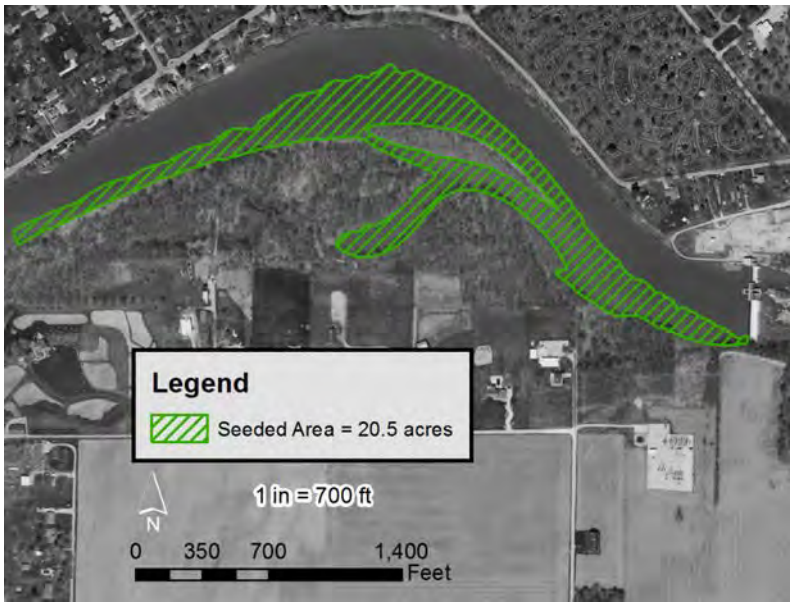


Figure 8-21. Seeded area after initial notch of dam

Some additional areas (Figure 8-22) totaling 15.3 acres between the extent of the future 6000 cfs model and the existing stream channel will have exposed sediment.

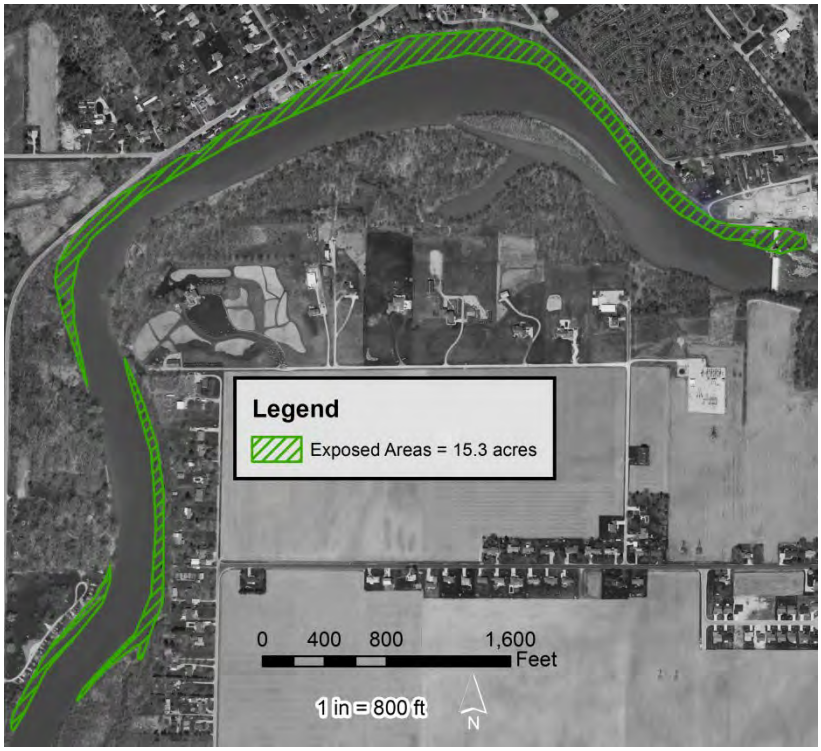


Figure 8-22. Additional exposed area according to model

These areas could potentially form floodplain wetlands depending on sediment transport and the location of the new channel. According to the future model flood elevation, annual inundation by floodwaters at 6000 cfs is not expected (Figure 8-10). However, it is hard to predict sediment transport and the formation of inside depositional features with the capacity to hold water long enough to form new jurisdictional boundaries. For example, a noticeable wetland (confirmed NWI feature, Figure 3-2) is located in the south part of Figure 8-10. This feature has developed naturally outside the impoundment.

In both these exposed sediment areas presented in Figure 8-21 and Figure 8-22, the new alignment of the meandering river will dictate the formation of steep cutbanks and scour on one bank and the formation of sand and gravel depositional point bars on the other bank. In some cases the steep cutbanks may not be so steep and can harbor depositional areas. The depositional areas that form wide sand and gravel point bars will be riverine wetland systems with braided channels similar to the systems outside of the project area. However, the steepness of the newly exposed banks may not be conducive to braided channels.

8.3.4 Proposed Planting Plan

All of the following proposed mitigation actions will occur on site within the jurisdictional determination survey area (Figure 8-2). The mitigation plan will employ an adaptive

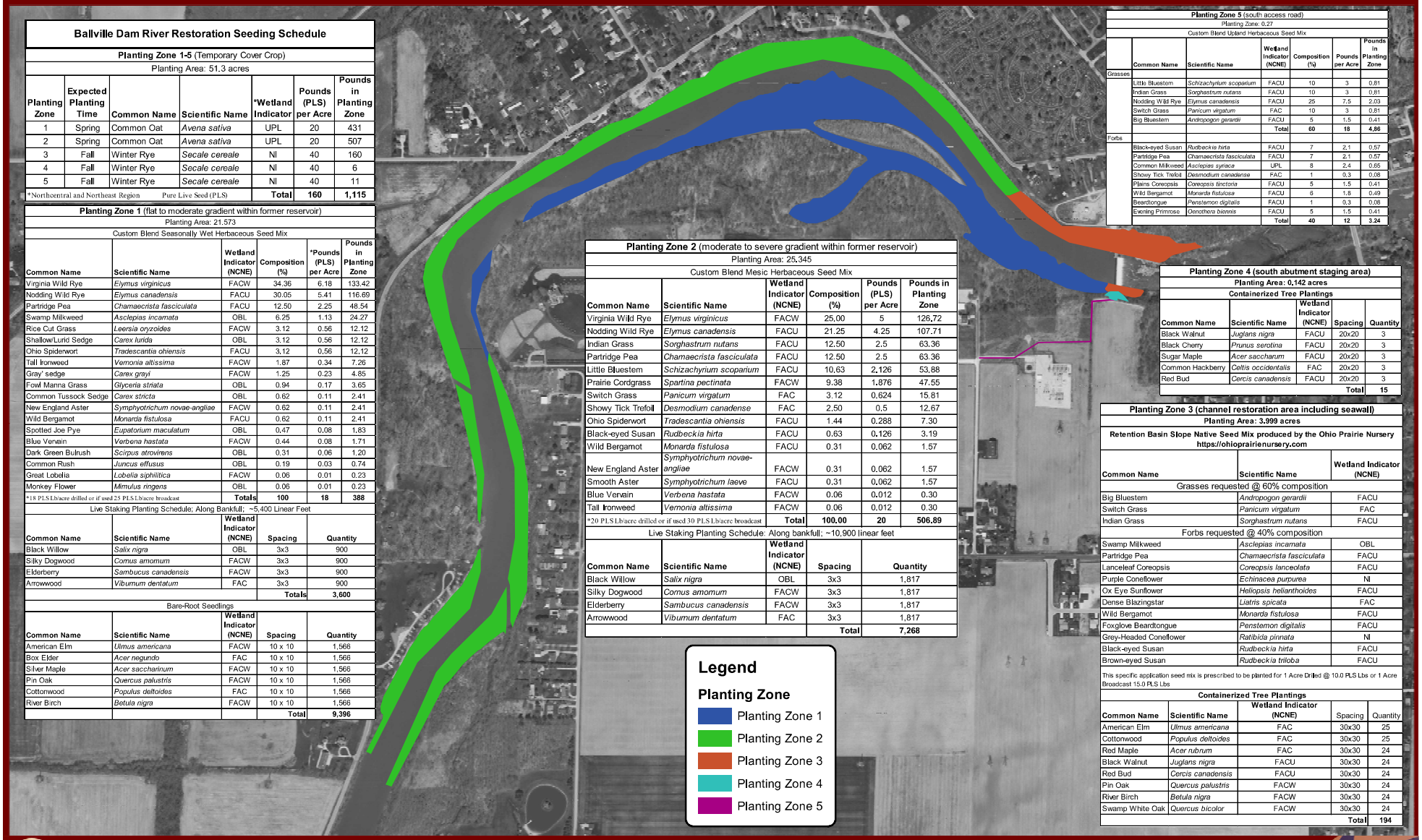
management strategy that will allow the system to naturally equilibrate. The generated models cannot accurately predict the sediment transport and the formation of inside depositional areas that may harbor wetlands. Our models can only allow us attempt to predict the location of exposed sediment. The acreage and location of planting zones are subject to change and can only be confirmed after the reservoir is dewatered and sediment is settled over time.

The mitigation planting areas are dependent on cooperation from private land owners as well.

8.3.4.1 Seeding and Planting Schedule

By seeding in these areas we hope to stabilize soil and control erosion, establish native plant communities, maintain plant biodiversity and aesthetics, enhance the establishment of new wetland plant communities, and decrease the spread of invasive species. When developing these planting plans, Stantec understands the significance to enhance the establishment of new JWUS wetlands by planting facultative species. However, in order to promote substrate stability it is important to plant a variety of upland and wetland species. Thus, new wetland development in some areas may be colonized by volunteer wetland species from the local seed bank.

We propose to the re-vegetate and seed the following on-site areas (Figure 8-23) over the course of the project (Table 8-8): access roads and disturbed staging areas (Planting Zones 4 &5), exposed areas as a result of the incremental drawdown of the reservoir (Planting Zones 1 & 2), and areas directly impacted from construction activities surrounding the Ballville dam and seawall (Planting Zone 3).



Ballville Dam River Restoration Seeding Schedule

Planting Zone 1-5 (Temporary Cover Crop)

Planting Area: 51.3 acres

Planting Zone	Expected Planting Time	Common Name	Scientific Name	*Wetland Indicator	Pounds (PLS) per Acre	Pounds in Planting Zone
1	Spring	Common Oat	*Avena sativa*	UPL	20	431
2	Spring	Common Oat	*Avena sativa*	UPL	20	507
3	Fall	Winter Rye	*Secale cereale*	NI	40	160
4	Fall	Winter Rye	*Secale cereale*	NI	40	6
5	Fall	Winter Rye	*Secale cereale*	NI	40	11
*Northcentral and Northeast Region			Pure Live Seed (PLS)	**Total**	**160**	**1,115**

Planting Zone 1 (flat to moderate gradient within former reservoir)

Planting Area: 21.573

Custom Blend Seasonally Wet Herbaceous Seed Mix

Common Name	Scientific Name	Wetland Indicator (NCNE)	Composition (%)	*Pounds (PLS) per Acre	Pounds in Planting Zone
Virginia Wild Rye	*Elymus virginicus*	FACW	34.36	6.18	133.42
Nodding Wild Rye	*Elymus canadensis*	FACU	30.05	5.41	116.69
Partridge Pea	*Chamaecrista fasciculata*	FACU	12.50	2.25	48.54
Swamp Milkweed	*Asclepias incarnata*	OBL	6.25	1.13	24.27
Rice Cut Grass	*Leersia oryzoides*	FACW	3.12	0.56	12.12
Shallow/Lurid Sedge	*Carex lurida*	OBL	3.12	0.56	12.12
Ohio Spiderwort	*Tradescantia ohiensis*	FACU	3.12	0.56	12.12
Tall Ironweed	*Vernonia altissima*	FACW	1.87	0.34	7.26
Gray' sedge	*Carex grayi*	FACW	1.25	0.23	4.85
Fowl Manna Grass	*Glyceria striata*	OBL	0.94	0.17	3.65
Common Tussock Sedge	*Carex stricta*	OBL	0.62	0.11	2.41
New England Aster	*Symphyotrichum novae-angliae*	FACW	0.62	0.11	2.41
Wild Bergamot	*Monarda fistulosa*	FACU	0.62	0.11	2.41
Spotted Joe Pye	*Eupatorium maculatum*	OBL	0.47	0.08	1.83
Blue Vervain	*Verbena hastata*	FACW	0.44	0.08	1.71
Dark Green Bulrush	*Scirpus atrovirens*	OBL	0.31	0.06	1.20
Common Rush	*Juncus effusus*	OBL	0.19	0.03	0.74
Great Lobelia	*Lobelia siphilitica*	FACW	0.06	0.01	0.23
Monkey Flower	*Mimulus ringens*	OBL	0.06	0.01	0.23
*18 PLS Lb/acre drilled or if used 25 PLS Lb/acre broadcast		**Totals**	**100**	**18**	**388**

Live Staking Planting Schedule; Along Bankfull; ~5,400 Linear Feet

Common Name	Scientific Name	Wetland Indicator (NCNE)	Spacing	Quantity
Black Willow	*Salix nigra*	OBL	3x3	900
Silky Dogwood	*Cornus amomum*	FACW	3x3	900
Elderberry	*Sambucus canadensis*	FACW	3x3	900
Arrowwood	*Viburnum dentatum*	FAC	3x3	900
			Totals	**3,600**

Bare-Root Seedlings

Common Name	Scientific Name	Wetland Indicator (NCNE)	Spacing	Quantity
American Elm	*Ulmus americana*	FACW	10 x 10	1,566
Box Elder	*Acer negundo*	FAC	10 x 10	1,566
Silver Maple	*Acer saccharinum*	FACW	10 x 10	1,566
Pin Oak	*Quercus palustris*	FACW	10 x 10	1,566
Cottonwood	*Populus deltoides*	FAC	10 x 10	1,566
River Birch	*Betula nigra*	FACW	10 x 10	1,566
			Total	**9,396**

Planting Zone 2 (moderate to severe gradient within former reservoir)

Planting Area: 25.345

Custom Blend Mesic Herbaceous Seed Mix

Common Name	Scientific Name	Wetland Indicator (NCNE)	Composition (%)	Pounds (PLS) per Acre	Pounds in Planting Zone
Virginia Wild Rye	*Elymus virginicus*	FACW	25.00	5	126.72
Nodding Wild Rye	*Elymus canadensis*	FACU	21.25	4.25	107.71
Indian Grass	*Sorghastrum nutans*	FACU	12.50	2.5	63.36
Partridge Pea	*Chamaecrista fasciculata*	FACU	12.50	2.5	63.36
Little Bluestem	*Schizachyrium scoparium*	FACU	10.63	2.126	53.88
Prairie Cordgrass	*Spartina pectinata*	FACW	9.38	1.876	47.55
Switch Grass	*Panicum virgatum*	FAC	3.12	0.624	15.81
Showy Tick Trefoil	*Desmodium canadense*	FAC	2.50	0.5	12.67
Ohio Spiderwort	*Tradescantia ohiensis*	FACU	1.44	0.288	7.30
Black-eyed Susan	*Rudbeckia hirta*	FACU	0.63	0.126	3.19
Wild Bergamot	*Monarda fistulosa*	FACU	0.31	0.062	1.57
New England Aster	*Symphyotrichum novae-angliae*	FACW	0.31	0.062	1.57
Smooth Aster	*Symphyotrichum laeve*	FACU	0.31	0.062	1.57
Blue Vervain	*Verbena hastata*	FACW	0.06	0.012	0.30
Tall Ironweed	*Vernonia altissima*	FACW	0.06	0.012	0.30
*20 PLS Lb/acre drilled or if used 30 PLS Lb/acre broadcast		**Total**	**100.00**	**20**	**506.89**

Live Staking Planting Schedule: Along bankfull; ~10,900 linear feet

Common Name	Scientific Name	Wetland Indicator (NCNE)	Spacing	Quantity
Black Willow	*Salix nigra*	OBL	3x3	1,817
Silky Dogwood	*Cornus amomum*	FACW	3x3	1,817
Elderberry	*Sambucus canadensis*	FACW	3x3	1,817
Arrowwood	*Viburnum dentatum*	FAC	3x3	1,817
			Total	**7,268**

Legend

Planting Zone

- Planting Zone 1
- Planting Zone 2
- Planting Zone 3
- Planting Zone 4
- Planting Zone 5

Planting Zone 5 (south access road)

Planting Zone: 0.27

Custom Blend Upland Herbaceous Seed Mix

	Common Name	Scientific Name	Wetland Indicator (NCNE)	Composition (%)	Pounds per Acre	Pounds in Planting Zone
Grasses						
	Little Bluestem	*Schizachyrium scoparium*	FACU	10	3	0.81
	Indian Grass	*Sorghastrum nutans*	FACU	10	3	0.81
	Nodding Wild Rye	*Elymus canadensis*	FACU	25	7.5	2.03
	Switch Grass	*Panicum virgatum*	FAC	10	3	0.81
	Big Bluestem	*Andropogon gerardii*	FACU	5	1.5	0.41
			Total	**60**	**18**	**4.86**
Forbs						
	Black-eyed Susan	*Rudbeckia hirta*	FACU	7	2.1	0.57
	Partridge Pea	*Chamaecrista fasciculata*	FACU	7	2.1	0.57
	Common Milkweed	*Asclepias syriaca*	UPL	8	2.4	0.65
	Showy Tick Trefoil	*Desmodium canadense*	FAC	1	0.3	0.08
	Plains Coreopsis	*Coreopsis tinctoria*	FACU	5	1.5	0.41
	Wild Bergamot	*Monarda fistulosa*	FACU	6	1.8	0.49
	Beardtongue	*Penstemon digitalis*	FACU	1	0.3	0.08
	Evening Primrose	*Oenothera biennis*	FACU	5	1.5	0.41
			Total	**40**	**12**	**3.24**

Planting Zone 4 (south abutment staging area)

Planting Area: 0.142 acres

Containerized Tree Plantings

Common Name	Scientific Name	Wetland Indicator (NCNE)	Spacing	Quantity
Black Walnut	*Juglans nigra*	FACU	20x20	3
Black Cherry	*Prunus serotina*	FACU	20x20	3
Sugar Maple	*Acer saccharum*	FACU	20x20	3
Common Hackberry	*Celtis occidentalis*	FAC	20x20	3
Red Bud	*Cercis canadensis*	FACU	20x20	3
			Total	**15**

Planting Zone 3 (channel restoration area including seawall)

Planting Area: 3.999 acres

Retention Basin Slope Native Seed Mix produced by the Ohio Prairie Nursery https://ohioprairienursery.com

Common Name	Scientific Name	Wetland Indicator (NCNE)
Grasses requested @ 60% composition		
Big Bluestem	*Andropogon gerardii*	FACU
Switch Grass	*Panicum virgatum*	FAC
Indian Grass	*Sorghastrum nutans*	FACU
Forbs requested @ 40% composition		
Swamp Milkweed	*Asclepias incarnata*	OBL
Partridge Pea	*Chamaecrista fasciculata*	FACU
Lanceleaf Coreopsis	*Coreopsis lanceolata*	FACU
Purple Coneflower	*Echinacea purpurea*	NI
Ox Eye Sunflower	*Heliopsis helianthoides*	FACU
Dense Blazingstar	*Liatris spicata*	FAC
Wild Bergamot	*Monarda fistulosa*	FACU
Foxglove Beardtongue	*Penstemon digitalis*	FACU
Grey-Headed Coneflower	*Ratibida pinnata*	NI
Black-eyed Susan	*Rudbeckia hirta*	FACU
Brown-eyed Susan	*Rudbeckia triloba*	FACU

This specific application seed mix is prescribed to be planted for 1 Acre Drilled @ 10.0 PLS Lbs or 1 Acre Broadcast 15.0 PLS Lbs

Containerized Tree Plantings

Common Name	Scientific Name	Wetland Indicator (NCNE)	Spacing	Quantity
American Elm	*Ulmus americana*	FAC	30x30	25
Cottonwood	*Populus deltoides*	FAC	30x30	25
Red Maple	*Acer rubrum*	FAC	30x30	24
Black Walnut	*Juglans nigra*	FACU	30x30	24
Red Bud	*Cercis canadensis*	FACU	30x30	24
Pin Oak	*Quercus palustris*	FACW	30x30	24
River Birch	*Betula nigra*	FACW	30x30	24
Swamp White Oak	*Quercus bicolor*	FACW	30x30	24
			Total	**194**

Stantec

Feet

0 300 600 1,200

1 in = 600 ft

N

11687 Lebanon Rd, Cincinnati, OH 45241-2012 Phone 513-842-8200 Fax 513-842-8250 www.stantec.com

Figure 8-23. Planting Zones

Ballville Dam Removal and River Restoration Project
Fremont, OH

NOT TO SCALE

Table 8-8. Approximate Planting Schedule

Planting Zone	Acreage	Cover Crop	Initial Plantings	Additional Wetland Plantings (If Needed)
Planting Zone 1	21.573	Spring 2015	Spring 2015	Fall 2016
Planting Zone 2	25.345	Spring 2015	Spring 2015	Fall 2016
Planting Zone 3	3.999	Fall 2015	Spring 2016	Fall 2017
Planting Zone 4	0.142	Fall 2014	Spring 2015	N/A
Planting Zone 5	0.271	Fall 2014	Spring 2015	N/A
Total	**51.330**			

8.3.4.1.1 Cover Crop

Temporary winter rye or cereal rye (*Secale cereale*) would be more appropriate for fall and early winter plantings and common oat (*Avena sativa*) is a common spring cover crop. Cover crops are recommended to be broadcasted for all 5 planting zones at moderate amounts. A lower amount (lbs/per acre) of cover crop seed is recommended when broadcasted in conjunction with drilling the main perennial seed mixture.

8.3.4.1.2 Planting Zone 1

Zone 1 is representing the flat to gentle gradients surrounding the de-watered reservoir. The cover crop would be broadcasted conjunctively with the main herbaceous seed mix. The herbaceous seed mixture is a wetland seed mix composed of obligate and facultative graminoids, sedges and forbs. A large amount of perennial rye grass seed will be in the mix to combat reed canarygrass. Due to the time of the year (Table 8-12), conditions will be wet, we recommend drilling where seeds are planted 2 inches depth into the soil. Bare-root seedlings and livestakes that typically grow in wetlands will also be planted in this zone pending the amount of exposed rocky substrate.

8.3.4.1.3 Planting Zone 2

Planting Zone 2 is representative of exposed sediment surrounding the de-watered reservoir that is moderate to severe gradient with possible exposed cliff and upper zone (i.e. Figure 8-1). The soil in these areas is projected to be wet close to the water's edge to wet-mesic further up the riparian zone. Therefore, a mix of facultative wetland species will be planted in this zone with a large amount of facultative to upland grasses to compact and stabilize soil. Livestakes within the lower margin area will also be planted pending the rocky substrate exposure.

8.3.4.1.4 Planting Zone 3

Zone 3 will be the side slopes surrounding the channel restoration and seawall modification areas. After the grading, these channel side slopes will be moderate and will surround parts of the ice control structure. A specific application seed mix called the Retention Basin Slope Native Seed Mix from Ohio Prairie Nursery will be drilled in the spring following the broadcasted fall cover crop. This seed mix is designed for side slopes where water flows but does not collect. It is recommended to have a large amount (60%) of grass within the mixture to combat reed canarygrass. Containerized tree plantings will be planted for bank stability and for general public aesthetics.

8.3.4.1.5 Planting Zone 4

Zone 4 is the small tree removal area that will allow construction equipment to notch the dam at the south abutment. Temporary cover crop will be broadcasted following notching activities are complete. This is an upland riparian area well above the OHWM of the Sandusky River, therefore dry to mesic containerized trees (4-6 ft) will be planted.

8.3.4.1.6 Planting Zone 5

Zone 5 is the access road leading to the south abutment notching area. This is currently an upland field along a tree line. It will be seeded with a fall cover crop and then in the following spring it will receive an upland herbaceous dry mesic mix.

8.4 PROPOSED CONCEPTUAL MITIGATION PLAN

The Ballville Dam removal project is one of those rare restoration projects that will deliver ecological benefits at local, regional, and international scales. At the local level an artificially created lacustrine habitat will be converted to a riverine ecosystem. Improvements to the structural and functional elements of aquatic habitat in the impounded reach of the Sandusky River will yield substantial improvements to Aquatic Life Uses. At the regional scale, an additional 22 miles of the Sandusky River will be opened to migratory fish species including walleye, white bass, and the State-threatened Greater redhorse. Riverine walleye populations in the Sandusky system are currently constrained by access to approximately 20 acres of spawning habitat. Access to the upper river basin will increase available spawning habitat to approximately 300 acres. The supply of coarse-grained sediments will also be restored to sediment starved reaches downstream of the dam thereby replenishing critical but diminishing spawning habitats. Increased reproductive success at the regional scale will yield benefits far beyond the project site as people throughout Lake Erie will be able to catch fish that originated in the Sandusky River.

The project also provides several important social and economic benefits. First, the City of Fremont will be able to avoid costly repairs that are needed to address progressive deterioration of the dam. Second, the current seawall configuration represents a substantial safety hazard that puts the citizens of Fremont at risk. No funds are currently allocated for this repairs that could easily exceed $4 million. Funds are available, however, to remove the dam and restore the river. The USFWS awarded Ohio DNR a $2,000,000 grant to remove the dam and Ohio

EPA committed $5.8 million from the WRRSP program. Beyond these benefits it is estimated that increases in recreational angling alone could contribute 20 – 340 million dollars to the regional economy. Other economic benefits associated with increased opportunities for recreational water craft, jobs associated with the project itself, and for local businesses such as hotels and restaurants have not been quantified but are certain to occur. Studies suggest that 30 jobs are created for every $1,000,000 spent in aquatic restoration effort.

This conceptual mitigation proposal was prepared with these benefits in mind:

- Acre to acre accounting will not replace all of the Category 3 wetlands currently present in the project area
- The functionality of the ecosystem will be increased
- When adding the increased functions of the river together with the wetlands that will be created, the out-of-kind and in-kind restoration will offset the loss of wetland acreage resulting from the dam removal

8.4.1 Permanent Impacts to Wetlands

As per guidance provided by OEPA and the nature of a dam removal project (ecological restoration) Stantec is under the assumption that the applicant would be required to mitigate for wetlands that will be permanently filled/excavated as a result of the project to meet this agency's requirement. Under this assumption, the required mitigation would be for the 0.67 acres of directly impacted wetlands surrounding the dam which calculates to 1.94 acres of required wetland creation. The appropriate mitigation ratio (Ohio EPA, Section 3745-1-55) per category are presented below (Table 8-9).

Table 8-9. Required Wetland Mitigation to Directly Impacted Wetlands

Wetland	Corp's Description	Cowardin	Impact Acreage	ORAM	Impact Type	Mitigation Ratio	Required Wetland Creation
Wetland 6	Emergent/Scrub-Shrub	RLPRS	0.01	46.5 (Category 2)	installation of ICS (permanent), place soil and rock fill for channel restoration (permanent)	2:1	0.02
Wetland 14	Emergent/Scrub-Shrub/Forested	PFO	0.06	75 (Category 3)	place soil fill (permanent) for bank stabilization (if needed) near intake for raw water reservoir	3:1	0.18
Wetland 15	Emergent/Scrub-Shrub/Forested	PFO	0.03	75 (Category 3)	place soil fill (permanent) for bank stabilization (if needed) near intake for raw water reservoir	3:1	0.09
Wetland 17	Emergent	PEM	0.09	14.5 (Category 1)	remove earth material for channel restoration (permanent)	2:1	0.18

Wetland	Corp's Description	Coward in	Impact Acreage	ORAM	Impact Type	Mitigati on Ratio	Required Wetland Creation
Wetland 18	Emergent/Scrub -Shrub/Forested	PSS	0.18	68.5 (Category 3)	place rock and soil fill for access ramp (temporary), place soil and rock fill for channel restoration (permanent), installation of ICS (permanent)	3:1	0.54
Wetland 19	Emergent/Scrub -Shrub/Forested	RIS	0.21	68.5 (Category 3)	place rock and soil fill for access ramp (temporary), place soil and rock fill for channel restoration (permanent)	3:1	0.63
Wetland 19	Emergent/Scrub -Shrub/Forested	PFO	0.10	68.5 (Category 3)	place rock and soil fill for access ramp (temporary), place soil and rock fill for channel restoration (permanent)	3:1	0.30
Totals	**Wetlands**		**0.67**				**1.94**

8.4.2 Secondary Impacts to Wetlands

Currently there are 53.90 acres of wetlands upstream of the dam composed of fringe and floodplain features susceptible to loss if the Ballville Dam is removed. The OHWM of the reservoir will drop which will change the frequency and extent of inundation to the surrounding floodplains. As per guidance by CORP-Buffalo district it is required that we demonstrate in this plan that new wetland acreage will develop, and combined with the ecological benefits of returning the Sandusky River to a free flowing river, will offset this loss.

8.4.3 Mitigation for Project Impacts (Permanent and Secondary)

The proposed conceptual mitigation strategy will provide wetland creation and the establishment of function that will compensate for both permanent and secondary impacts. The following wetland mitigation plan is written under Stantec's professional opinion that a wetland acreage amount, or in-kind" mitigation (post dam removal) would be required, and combined with proposed out-of-kind mitigation associated with the restoration of the Sandusky River would meet Corp's requirements.

As previously discussed, predicting the exact size and location of newly formed wetlands post dam removal cannot be certain. Stantec has classified the existing wetlands (fringe, in-stream and forested floodplain) and has presented models that allow us to predict the post dam removal wetland acreages (23-55 acres, section 8.3.3). And with this same model we have forecasted the exposed sediment areas which have allowed us to develop planting zones (Section 8.3.4). Because of their position on the landscape, planting zones 1-3 (51 acres) have the potential to form into JWUS wetland features as either fringe, in-stream or forested floodplain wetland types.

The estimated loss (53.90 acres) of wetlands upstream of the dam was calculated based on the 6000 cfs model and field observations. It is not exactly certain how many acres will actually be lost upstream of the dam. Whether the wetlands remain or develop it is Stantec's professional opinion that at least an estimated **14.5** acres of "in-kind" wetland mitigation will exist in the former impoundment area after the dam is removed.

As a product of removing the Ballville Dam from the Sandusky River, geomorphic and hydrologic processes would be restored leading to wetland development.

8.4.3.1 Fringe Wetland Development

A new riparian corridor will form surrounding the modified bankfull elevation and by the very least the section closest to the bank would develop into narrow/shelf fringe wetland. Presently, there are a total of 4 acres upstream of the dam classified as fringe that will be impacted by the project (Figure 8-7). According to the model we could see as many as 14 acres (Figure 8-20) develop which represents a potential net gain of 10 acres. More conservatively we predict at least 60% (**8 acres**) of these 14 acres will become JWUS features.

8.4.3.1.1 Fringe Wetland Enhancement

In order to facilitate the establishment of fringe wetlands, where permitted, (land owner permission) native riparian trees and livestake shrubs will be planted to stabilize the new banks and to lower the potential for invasive species to establish. However many of these fringe areas may be of rocky substrate similar to the in stream wetlands and planting may not be effective or necessary because of the opportunistic nature of species that occupy these habitats. After the initial seeding and planting (Section 8.3.4), additional adaptive planting zones may be implemented where possible. Also to control the spread of reed canarygrass, a cover crop such as Virginia wildrye may be planted (Orr and Koenig, 2006). Other invasive species management techniques may be used such as spraying or burning.

8.4.3.2 In-Stream Wetland Development

The in-stream wetlands will form from substrate deposition, bed and bank erosion, and vegetation establishment. Removing the dam will allow these in-stream wetlands to form which will restore the river and improve the quality and function of the current impounded area. Currently there are a total of approximately 1.92 acres of in-stream wetlands (e.g. Wetland 11) delineated in the JD survey below the dam (Figure 8-19). When the dam is removed an estimated 4.80 acres (Section 8.3.3.1) of in-stream wetlands may develop in the current impounded area. Of this modeled 4.8 acres we conservatively predict approximately half (**2.5 acres**) will be JWUS features.

8.4.3.2.1 In-Stream Wetland Enhancement

The wetlands that will be directly impacted by the project will be restored by the river's fluvial processes. Over time, the in-stream wetland types will develop within the current impounded

area. Fluvial landforms will begin to develop with scrub-shrub species like willow and dogwood and tree species like cottonwood and sycamore will begin to colonize providing the quality and function similar to wetland's below the dam.

Since these are rocky substrates it will be difficult to start trees, shrub live stakes or to germinate a herbaceous seed mix. Therefore, additional planting is not expected. The development of these wetlands will be a self-mitigating ecological enhancement indicator and will be monitored for their development. We expect to see some of these wetland types within the first year following dam removal.

We also believe that the quality and function of the existing in-stream wetlands below the dam will be improved. It has been discussed that some of these in-stream wetlands below the dam are of low quality and function because the presence of the dam. The dam hinders natural processes to accumulate depositional features. Removing the dam would expose new areas within the channel to the natural deposition of sediment and debris thereby potentially increasing the size and complexity of in-stream wetland features.

8.4.3.3 Forested Floodplain Wetland Development

In summary, there are approximately 50 acres of forested floodplain that will be lost due to the drawdown. There will be an estimated 36 acres of exposed sediment. It is uncertain how much will become jurisdictional wetland features but potential development could range between 4 and 36 acres.

An estimated 4 to 36 acres of floodplain forest habitat could develop along the newly formed river channel as a result of flood events and the development of sand point bars along the meanders. Examples of these wetland (i.e. NWI wetland in south part of Figure 3-2) types were noted both upstream and downstream of the impounded waters. It is Stantec's professional opinion that, of this modeled range, we conservatively predict at least **4 acres** will maintain JWUS features.

8.4.3.3.1 Forested Floodplain Wetland Enhancement

After the initial notch of the south spillway a large area surrounding the island and inlet approximately 20.5 acres of exposed sediment will be seeded with native riparian vegetation (Figure 8-21) to stabilize sediment during the slow draw down period. It will also be important to seed to minimize the invasion of reed canarygrass into these exposed sediment areas.

An additional 15.3 acres of exposed sediment (Figure 8-22) will be seeded to promote the establishment of native riparian species and prevent the spread of invasive species. Virginia wildrye may be planted in multiple years to keep the invasion of reed canarygrass to a minimum. Seeding will be adaptive with regards to actual exposed areas location, substrate and property ownership.

Together when combining the two seeded areas (Figure 8-21 & 8-22), an estimated total of 36 acres of exposed sediment will be potentially seeded and monitored for wetland formation. It is unknown as to the amount of wetland that will remain within these exposed sediments in the long term. However, it is also unrealistic to believe that all of this area will no longer maintain wetland characteristics.

Removing the dam will allow the river to mature into a natural meandering riverine system which will begin to form cutbanks of one side and wide point bars on the other. During flood stage, these inside depositional features have secondary braided channels that can form wide forested floodplain wetlands similar to the wetlands located off site at RM 21 (upstream of site) and at RM 17 (downstream of site). We expect some of the exposed sediment areas to form these sand and gravel point bars susceptible to wetland formation. The exposed areas will be planted with native riparian seed mixes and planted with grasses to minimize the invasion of reed canarygrass.

Currently there are approximately about 50 acres of forested floodplain wetland that exist above the dam. These forested floodplain wetlands are unnatural water features that were developed on the Sandusky River as a result of man-made, specifically, the installation of the Ballville Dam. These systems function to filter poor quality reservoir water. The current wetlands function more like a lacustrine system with homogenous vegetation, flat contour, and a fluctuation of alluvial silt deposits.

A naturalized channel and riparian corridor will promote the formation of riverine floodplain system with slope and mixed sediment deposits that will promote high-biodiversity and high flow refuge for fish and mussels. These replacement wetlands will be valuable habitat for wildlife and serve as important filter for the river.

8.4.3.4 Wetland Seeding Enhancements

After the initial seeding and planting (Section 8.3.4.1) and the site has settled, if needed and applicable during the monitoring process, we propose to enhance wetland re-establishment by planting hydrophytic vegetation in newly developed wetland areas such as low lying swales, point bars or braided channels. And, if needed (during the monitoring process), we propose to continue to combat the further invasion of reed canary grass and other invasive species. Controlling the spread of invasive plants may require further seeding, burning or herbicide spraying. The selected species (Table 8-10) are based on the existing site wetland plant assemblages and controlling reed canarygrass.

Table 8-10. Additional Seeding and Planting Species List

If Needed, Additional Wetland Seeding			
	Common Name	Scientific Name	Wetland Indicator(NCNE)
Grasses	Rice Cut Grass	*Leersia oryzoides*	FACW
	White Grass	*Leersia virginica*	FACW
	Freshwater Cord Grass	*Spartina pectinata*	FACW
	Fowl Manna Grass	*Glyceria striata*	OBL
	River-Bank Wild Rye	*Elymus riparius*	FACW
	Virginia Wild Rye	*Elymus virginicus*	FACW
Sedges and Rushes	Gray' sedge	*Carex grayi*	FACW
	Woolly-Fruit Sedge	*Carex lasiocarpa*	OBL
	Lamp Rush	*Juncus effusus*	OBL
Forbs	Round-Leaf Thimbleweed	*Anemone canadensis*	FACW
	Greendragon	*Arisaema dracontium*	FACW
	Swamp Milkweed	*Asclepias incarnata*	OBL
	Devil's-Pitchfork	*Bidens frondosa*	FACW
	Small-Spike False Nettle	*Boehmeria cylindrica*	OBL
	Spotted Touch-Me-Not	*Impatiens capensis*	FACW
	Pale- Yellow Iris	*Iris pseudacorus*	OBL
	Virginia Blueflag	*Iris virginica*	OBL
	Canadian Wood-Nettle	*Laportea canadensis*	FACW
	Great Blue Lobelia	*Lobelia siphilitica*	FACW
	Cardinal Flower	*Lobelia cardinalis*	OBL
	Cut-Leaf Water-Horehound	*Lycopus americanus*	OBL
	Fringed Yellow-Loosestrife	*Lysimachia ciliata*	FACW
	Creeping-Jenny	*Lysimachia nummularia*	FACW
	Allegheny Monkey-Flower	*Mimulus ringens*	OBL
	Golden Groundsel	*Packera aurea*	FACW
	Ditch-Stonecrop	*Penthorum sedoides*	OBL
	Swamp smartweed	*Persicaria hydropiperoides*	OBL
	Smooth phlox	*Phlox glaberrima*	FACW
	Wedgeleaf	*Phyla lanceolata*	OBL
	Canadian Clearweed	*Pilea pumila*	FACW
	Green-Head Coneflower	*Rudbeckia laciniata*	FACW
	Bitter Dock	*Rumex obtusifolius*	FAC
	Swamp Dock	*Rumex verticillatus*	OBL
	Lizard's-Tail	*Saururus cernuus*	OBL

If Needed, Additional Wetland Seeding			
	Mad Dog Skullcap	*Scutellaria lateriflora*	OBL
	Late Goldenrod	*Solidago giganteae*	FACW
	Farewell-Summer	*Symphyotrichum lateriflorum*	FAC
	Farewell-Summer	*Symphyotrichum novae-angliae*	FACW
	Simpler's Joy	*Verbena hastata*	FACW
	Wingstem	*Verbesina alternifolia*	FACW
Shrubs, Trees and Woody Vines	Black Willow	*Salix nigra*	OBL
	American Elm	*Ulmus americana*	FACW
	Cottonwood	*Populus deltoides*	FAC
	Silver Maple	*Acer saccharinum*	FACW
	Box Elder	*Acer negundo*	FAC
	Rough-Leaf Dogwood	*Cornus drummondii*	FAC
	River-Bank Grape	*Vitis riparia*	FAC
If Needed Reed Canarygrass Invasive Control			
	Virginia Wild Rye	*Elymus virginicus*	FACW
	Hairy Wild Rye	*Elymus villosus*	FACU
Note: some seeds in this plant list may not be for sale at time of planting			

8.4.4 Summary of "In-Kind" and "Out-of-Kind" Wetland Mitigation

The summary of the wetland impacts are provided below (Table 8-11). These represent both permanent and secondary impacts that could potentially result from the removal of the Ballville Dam. The required mitigation acreage for the permanent wetland impacts is also shown.

Table 8-11. Summary of Impacts for Mitigation

Wetlands	ORAM	Permanent Impact Acreage	Mitigation Acreage for Permanent Impacts	Secondary Impact Acreage
Wetland 6	2	0.01	0.02	0
Wetland 14	3	0.06	0.18	0
Wetland 15	3	0.03	0.09	0
Wetland 17	1	0.09	0.18	0
Wetland 18	3	0.18	0.54	0
Wetland 19	3	0.31	0.93	0
Wetland 1	3	0	0	2.49
Wetland 2	3	0	0	0.04

Wetlands	ORAM	Permanent Impact Acreage	Mitigation Acreage for Permanent Impacts	Secondary Impact Acreage
Wetland 3	3	0	0	0.19
Wetland 4	3	0	0	34.11
Wetland 5	3	0	0	2.47
Wetland 13	Modified 2	0	0	0.18
Wetland 14	3	0	0	2.3
Wetland 15	3	0	0	10.89
Wetland 16	2	0	0	1.23
	Total	**0.67**	**1.94**	**53.9**

8.4.4.1 Summary of "In-kind" Wetland Mitigation Following Dam Removal

The summary of the estimated wetland mitigation following dam removal is summarized below (Table 8-12). The estimated wetland creation following dam removal shown in the final column of the table, represents Stantec's professional conservative opinion of what will form wetland from totals predicted within the Modeled Development and Exposed Sediment column.

Table 8-12. Summary of Wetland Developments

Primary Wetland Mitigation			
Upstream of the Dam Wetland Acreage			
Wetland Type	Present Condition	Modeled Development and Exposed Sediment	Estimated Wetland Development
In-Stream	0	5	2.5
Fringe	4	14	8
Forested Floodplains	49.9	4-36 range	4
Totals	**53.9**	**23-55 range**	**14.5**

Table 8-13 was prepared to summarize the functional traits of proposed wetland development following dam removal in the project area in relation to what exist today. Table 8-13, provides a summary of those benefits and assigns their increased function to a credit value compared to the debit value of what will be lost. Functional equivalence ratios were determined by evaluating the functional quality of existing and proposed aquatic and wetland resources.

Table 8-13. Summary of "In-Kind" Wetland Mitigation and Associated Functional Equivalence

Waterbody	Existing Acreage	Functional Equivalence Ratio	Functional Equivalence Debits	Proposed Acreage	Functional Equivalence Ratio	Functional Equivalence Credits	Equivalency Calculations (Permanent Wetland Impacts)
Permanent Wetland Impacts	0.67	2.89	1.94	N/A	N/A	N/A	ORAM Cat.1 - 0.09 acres impacted (Mitigation ratio 2:1) ORAM Cat.2 - 0.01 acres impacted (Mitigation ratio 2:1) ORAM Cat.3 - 0.57 acres impacted (Mitigation ratio 3:1) Combined Mitigation Ratio = 2.89:1
Instream Wetlands	0.00	0.00	0.00	2.50	1.00	2.50	**Expected Functional Improvement in Proposed Habitats** · High flow refugia for fish · Fish spawning areas during high flow season · Seed catches for foraging birds · Increased production of leaf litter · Hyporheic exchange and nutrient exchange · Important lateral habitat for rearing juvenile fish · Amphibian breeding sites · Contribute to pool riffle sequences
Fringe Wetlands	4.00	1.00	4.00	8.00	1.00	8.00	· Provide continuous riparian corridor connecting upstream and downstream reaches · Plant community will transition from lacustrine fringe dominated by submergent aquatic macrophytes to riverine emergent · Increase in plant diversity · Reduce invasive exotic species · Increase instream cover through overhanging vegetation, root wads & root mats, and vegetative bank stabilization · Increase sediment and nutrient retention · Increase groundwater exchange · Important lateral habitat for rearing juvenile fish · Improved aesthetics · Increased production of leaf litter
Total	4.67		5.94	10.50		10.50	

Based on this functional evaluation approximately 5.94 debits and 10.5 credits were generated as part of the proposed project. Therefore, demolition of Ballville Dam and restoration of the Sandusky River represents a 1.8:1 ratio of compensation to loss in “in-kind” mitigation.

8.4.4.2 Summary of “Out-of-Kind” Mitigation Following Dam Removal

Approximately 53.9 wetland acres may potentially be lost through secondary impacts resulting from the demolition of Ballville Dam and the subsequent reduction in flood frequency. However, the proposed project offers real and tangible improvements to the waters of the United States including improved fish and aquatic macroinvertebrate communities, improved habitat structure and function, improved water quality, and increased habitat connectivity for migratory fish and other species. Table 8-14 was prepared to evaluate the functional traits of existing and proposed wetland and aquatic resources in the project area for the purpose of determining appropriate mitigation for secondary project impacts. Specifically this table calculates necessary out-of-kind compensation, consistent with regulatory guidance letter (No. 01-1), from the balance of “debits” associated with wetland losses and “credits” realized through habitat improvements in the Sandusky River.

Table 8-14. Summary of Out-of-Kind" Wetland Mitigation and Associated Functional Equivalence

Waterbody	Existing Acreage	Functional Equivalence Ratio	Functional Equivalence Debits	Proposed Acreage	Functional Equivalence Ratio	Functional Equivalence Credits	Expected Functional Improvement in Proposed Habitats
Riverine	77.00	0.20	15.40	31.00	5.00	155.00	· Fish community IBI's improve from 35 to between 44 and 55 (126 to 157% increase) · Macroinvertebrate ICI's improve from 6 to between 34 and 58 (567 to 967% increase) · Qualitative Habitat Evaluation Indices improve from low 30's to 70's (233% increase) o Restore bedrock/boulder substrates o Develop pool/riffle sequences o Restore mosaic of velocity/depth combinations o Increase in cover types · Eliminate sediment oxygen demand and water column anoxia · Increase spawning habitat for walleye from 8 ha (20 acres) to 122 ha (301 acres)(1,525% increase) · Increase accessible mainstem river miles from 18.5 to 40.5 (219% increase) · Restore connectivity to Sandusky Bay and Lake Erie
Floodplain Forests	49.90	1.50	74.87	4.00	0.67	2.67	· Increased structural and functional heterogeneity o Increased topographic variability from riverine sediment deposition (e.g. oxbow lakes, swale deposits, meander scrolls, point bars) o Increased substrate variability including mineral, sand, and silt/clay o Increased structural vegetation complexity resulting from flood disturbance intensity · Increased species richness and diversity · High flow refugia for fish · Amphibian breeding habitats · Increased flood pulsing of organic leaf litter resulting from velocity change · Greater stage changes resulting from narrower cross section distribute flood disturbance across a wider range of elevations · Reduce invasive exotic species
Total	126.90		90.27	35.00		157.67	

The regulatory guidance letter (No. 01-1) entitled “Guidance for the Establishment and Maintenance of Compensatory Mitigation Projects Under the Corps Regulatory Program Pursuant to Section 404(a) of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899” provides concepts that are intended to fully support the national no overall net loss policy for wetlands and to provide a basis for formulating decisions that will more effectively and fully mitigate impacts to other aquatic resources, such as flowing streams.

This regulatory guidance letter recognizes that out-of-kind compensation may be appropriate because the Corps decisions should take into account the functions of the aquatic environment, including wetlands, within both the landscape mosaic as well as the watershed context. The Corps decisions to allow out-of-kind mitigation are based on the amount of debits assigned to the impact site in comparison to the credits assigned to the compensatory action. The example that this guidance gives to illustrate this concept is the loss of a degraded site associated with the restoration of a particularly vulnerable or valuable aquatic habitat type.

The applicant believes that this concept of out-of kind mitigation is correlated directly to the Ballville Dam Removal Project and resulting restoration of the Sandusky River. Although the forested wetlands subject to hydrologic change have been categorized as ORAM-Category 3, their primary source of hydrology is a waterway that does not meet attainment use criteria. Therefore, most of the functions that these forested wetlands provide, especially those associated with water quality and storm water attenuation and filtration, are not sustainable under the current hydrologic regime.

The removal of the Ballville Dam restores a valuable aquatic resource, the Sandusky River, and provides benefit to both the local and regional environments. Table 8-14, provides a summary of those benefits and assigns their increased function to a credit value compared to the debit value of what will be lost. Functional equivalence ratios were determined by evaluating the functional quality of existing and proposed aquatic and wetland resources. For example, based on data collected within the Ballville impoundment and from nearby areas in free flowing reaches of the river it is expected that fish community scores will increase by a factor of 1.3 to 1.6, aquatic macroinvertebrate scores should increase by a factor of 5.7 to 9.7, QHEI scores should increase by a factor of 2.3, walleye spawning habitat will increase by a factor of 15, and fish access to mainstem river habitats will increase by a factor of 2.2. Based on these metrics it is reasonable to conclude that the proposed acreage is worth at least 5 times the value of the existing acreage. Debits were calculated using the inverse of this factor (e.g., 1/5). In the case of forested floodplain wetlands it was determined that the existing acreage provided less value than the proposed wetlands, at least in the near term. It is expected that the proposed forested floodplains will surpass the quality of existing wetlands in the project area but decades may be required before this functional lift is realized. Because of this temporal loss, the functional equivalence ratio for credits was low (0.67) and its inverse was high (1.50) in the calculation of debits. Based on this functional evaluation approximately 90 debits and 158 credits were generated as part of the proposed project. Therefore demolition of Ballville Dam and restoration of the Sandusky River represents a 1.8:1 ratio of compensation to loss in “out-of-kind”.

8.5 CONCLUSION

Currently, the wetlands interact with a “stagnant” pool behind the dam and the watershed delivers poor quality water due to high nitrate levels.

Overall, the Ballville Dam removal project will deliver significant ecological benefits at local, regional, and international scales. The re-establishment of the Sandusky River channel within the exposed sediment behind the removed dam will result in a hydrology source to a new type of wetland ecosystem. These wetlands will provide habitat connection from the upper reaches of the Sandusky down to Lake Erie.

The total amount of permanent impact to wetlands through the physical removal of the dam is estimated to be 0.67 acres of permanent fill/excavation. The total amount of secondary impact to the current floodplain wetlands associated with the dam’s impoundment is estimated to be 53.9 acres.

Based on similar studies performed to date, it is assumed that approximately 14 acres of wetland considered “fringe” will form following the removal of the dam, coinciding with the lateral extent of the 6,000 cfs floodplain event. Also using reaches of the Sandusky downstream of the dam as a reference site, it can be interpolated that 4.8 acres of “in-stream” wetland will form in the newly restored reaches of the Sandusky within the footprint of the drained reservoir. In addition, this modeling predicts that approximately 4-36 acres of floodplain forest may develop within the exposed sediments following the dam removal. Approximately 36 acres of sediment exposed following the removal of the dam will either retain wetland characteristics or revert to upland. The amount of wetland that is formed within these 36 acres of exposed sediment is unknown and there are no known models available to predict this.

Therefore, the difference between the wetland acreage that is lost as a result of direct and indirect impacts (54.6) and the acreage formed under the new normal circumstance following the removal of the dam could range from 31.57 net loss to 0.43 net gain.

However, considering the uncertainty of wetland development following the dam removal, it is Stantec’s professional opinion that, of this modeled prediction discussed above, we conservatively predict at approximately 14.5 acres of wetland will maintain JWUS characteristics.

Given the replacement of historic flow conditions to the Sandusky River watershed from its headwaters to its release into the Lake Erie, one cannot directly compare the environmental significance of the wetlands lost as a result of the dam removal to those that will be newly formed when considering mitigation requirement for the project. One must also look to the functions of the newly formed wetland and riverine system in comparison to those that it replaces.

Therefore a method has been proposed to evaluate the functional traits of existing and proposed wetland and aquatic resources in the project area for the purpose of determining appropriate mitigation for permanent and secondary project impacts. Specifically this method calculates necessary “in-kind” and “out-of-kind” compensation, consistent with regulatory guidance letter (No. 01-1), from the balance of “debits” associated with wetland losses and “credits” realized through habitat improvements in the Sandusky River and direct wetland

creation following dam removal. These functional equivalence ratios take into account, temporal losses to floodplain forests, creation of wetland function not previously existing in the current ecosystem, and improvement to known function.

Based on these functional equivalence ratios, Stantec has concluded that through proposed “in-kind” and “out-of-kind” wetland mitigation following the Ballville Dam removal, a mitigation ratio of 1.8 :1 compensation to loss is recognized. These losses include both the permanent and secondary wetland impacts resulting from the project.

For these reasons cited above, it is the Applicant’s position that the amount and increased function of the newly formed wetland system combined with the adaptive seeding and management approach to exposed sediments forms a comprehensive mitigation approach that effectively replaces those wetlands lost as a result of the Ballville Dam removal project.

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APPENDIX A

USACE Jurisdictional Determination

DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

REPLY TO

March 31, 2011

Regulatory Branch

SUBJECT: Jurisdictional Determination for Department of the Army Application No. 2011-00046

Terry Overmeyer, Mayor
323 South Front Street
Fremont, OH 43420

Dear Mayor Overmeyer:

This is in reference to a wetland delineation that was conducted on the approximate 445.4-acre study area for the Ballville Dam Removal/Sandusky River Restoration Project located in the City of Fremont, Sandusky County, Ohio.

The Corps regulates work in or affecting navigable waters of the United States pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 403)and 33 Code of Federal Regulations 322, 329. The Corps also regulates the discharge of dredged or fill material in waters of the United States pursuant to Section 404 of the Clean Water Act and applicable regulations (33 U.S.C. § 1344; 33 C.F.R. 320 et seq.).

The wetland delineation study conducted on August 30, 2011 through September 3, 2011 determined that the study area contains twenty wetlands totaling approximately 63.37-acres, four relatively permanent waters (RPW) totaling approximately 3,488.2 linear feet, and 15,372.7 linear feet of the Sandusky River, a traditional navigable water (TNW) (See Wetland Delineation Maps 1 through 6B, and Tables 1&2). Wetland data sheets are included in Attachment I and Ohio Environmental Protection Agency (Ohio EPA) Ohio Rapid Assessment Method (ORAM) for Wetland Categorization datasheets are included in Attachment II.

Regulatory Branch
SUBJECT: Jurisdictional Determination for Department of the Army Application No. 2011-00046

Table 1. Wetlands Identified within the Ballville Dam Removal Project Study Area

Name	Area (Acres)	Description	Federal Jurisdiction	ORAM Score*
Wetland 1	6.29	Emergent/Scrub-Shrub/Forested	10/404	71.5 (Category 3)
Wetland 2	0.04	Emergent/Scrub-Shrub/Forested	404	71.5 (Category 3)
Wetland 3	0.19	Emergent/Scrub-Shrub/Forested	404	71.5 (Category 3)
Wetland 4	34.11	Emergent/Scrub-Shrub/Forested	10/404	71.5 (Category 3)
Wetland 5	2.47	Emergent/Scrub-Shrub/Forested	10/404	71.5 (Category 3)
Wetland 6	0.08	Emergent/Scrub-Shrub	10/404	46.5 (Category 2)
Wetland 7	0.02	Emergent	10/404	44.5 (Modified 2)
Wetland 8	0.9	Emergent/Scrub-Shrub/Forested	10/404	68.5 (Category 3)
Wetland 9	0.18	Emergent/Scrub-Shrub/Forested	10/404	68.5 (Category 3)
Wetland 10	0.04	Emergent/Scrub-Shrub/Forested	10/404	68.5 (Category 3)
Wetland 11	0.55	Emergent/Scrub-Shrub	10/404	68.5 (Category 3)
Wetland 12	0.05	Emergent/Scrub-Shrub	10/404	68.5 (Category 3)
Wetland 13	1.68	Emergent/Scrub-Shrub/Forested	10/404	42.5 (Modified 2)
Wetland 14	2.47	Emergent/Scrub-Shrub/Forested	10/404	75 (Category 3)
Wetland 15	10.89	Emergent/Scrub-Shrub/Forested	10/404	75 (Category 3)
Wetland 16	1.23	Emergent/Scrub-Shrub/Forested	10/404	52 (Category 2)
Wetland 17	0.09	Emergent	10/404	14.5 (Category 1)
Wetland 18	0.19	Emergent/Scrub-Shrub/Forested	10/404	68.5 (Category 3)
Wetland 19	1.87	Emergent/Scrub-Shrub/Forested	10/404	68.5 (Category 3)
Wetland 20	0.03	Emergent/Scrub-Shrub/Forested	10/404	68.5 (Category 3)

*Preliminary score (OEPA has not verified)

Regulatory Branch
SUBJECT: Jurisdictional Determination for Department of the Army Application No. 2011-00046

Table 2. Streams Identified within the Ballville Dam Removal Project Study Area

Name	Length (linear ft)	Area (Acres)	Description	Federal Jurisdiction
Sandusky River	15,372.7	108.81	TNW	10/404
Stream 1	2,496.6	0.43	RPW	404
Stream 2	691.2	0.20	RPW	404
Stream 3	200.1	0.02	RPW	404
Stream 4	100.3	0.01	RPW	404

Although the wetlands

I am hereby verifying the Federal wetland boundary as shown on the attached wetland delineation maps. This verification was confirmed on 3/31/2011 and will remain valid for a period of five (5) years from the date of this correspondence unless new information warrants revision of the delineation before the expiration. At the end of this period, a new wetland delineation will be required if a project has not been completed on this property and additional impacts are proposed for waters of the United States. Further, this delineation/determination has been conducted to identify the limits of the Corps Clean Water Act jurisdiction for the particular site identified in this request. This delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resource Conservation Service prior to starting work.

Based upon this delineation and on-site observations, I have determined that wetlands1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 totaling approximately 63.14 acres on-site are below the plane of the ordinary high water mark (OHW) of the Sandusky River, a navigable water of the United States and thus subject to regulation under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. Wetlands 2 and 3 totaling 0.23 acres and streams 1, 2, 3, and 4 totaling 3,488.2 linear feet in the study area are part of a surface water tributary system to a navigable water of the United States as noted on the attached Jurisdictional Determination forms (Attachment III). Therefore, wetlands 2 and 3 and streams 1, 2, 3, and 4 are regulated under Section 404 of the Clean Water Act. Department of the Army authorization is required if you propose a discharge of dredged or fill material in any of these areas.

Finally, this letter contains an approved jurisdictional determination for the subject parcel. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal the above determination,

Regulatory Branch
SUBJECT: Jurisdictional Determination for Department of the Army Application No. 2011-00046

you must submit a completed RFA form within 60 days of the date on this letter to the Great Lakes/Ohio River Division Office at the following address:

Ms. Pauline Thorndike
Review Officer
Great Lakes and Ohio River Division
CELRD-PDS-O
550 Main Street, Room 10032
Cincinnati, OH 45202-3222
Phone: 513-684-6212

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 C.F.R. part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **May 30, 2011**.

It is not necessary to submit an RFA to the Division office if you do not object to the determination in this letter.

Questions pertaining to this matter should be directed to me at (716) 879-4109, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207, or by e-mail at: richard.j.ruby@usace.army.mil

Sincerely,

SIGNED

Richard Ruby
Biologist

Enclosures

CC: Scott Peyton, Stantec
Cody Fleece, Stantec
Ben Smith, OEPA
Randy Bournique, OEPA

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: City of Fremont		File Number: 2011-00046	Date: 3/31/2011
Attached is:			See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
	PROFFERED PERMIT (Standard Permit or Letter of permission)		B
	PERMIT DENIAL		C
X	APPROVED JURISDICTIONAL DETERMINATION		D
	PRELIMINARY JURISDICTIONAL DETERMINATION		E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or

objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: Mr. Richard Ruby U.S. Army Corps of Engineers 1776 Niagara Street Buffalo, New York 14207 (716) 879-4109 richard.j.ruby@usace.army.mil	If you only have questions regarding the appeal process you may also contact: Ms. Pauline Thorndike U.S. Army Corps of Engineers Great Lakes and Ohio River Division 550 Main Street, Room 10032 Cincinnati, OH 45202-3222 (513) 684-6212;FAX(513) 684-2460

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Ballville Dam - Eas/South Bank Downstream of Rice Road City/County: Fremont/Sandusky Sampling Date: 31-Aug-10

Applicant/Owner: City of Fremont State: OH Sampling Point: Wetland DP1

Investigator(s): Ruby/Swartz Section, Township, Range: 17, Ballville, T. 4 N / R. 15 E

Landform (hillside, terrace, etc.): River edge Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): _____ Lat: 41.308498 Long: -83.1577 Datum: NAD83

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)
East Bank of the Sandusky River downstream of the Rice Road Bridge.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- x Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- XX Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland DP1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	

Sapling/Shrub Stratum (Plot size: _____)			
1. *Salix esigua*	60	Yes	OBL
2. *Plantus occidentalis*	2	No	FACW
3. *Fraxinus pennsylvanica*	2	No	FACW
4. *Populus deltoides*	1	No	FAC
5.			
6.			
7.			
	65	=Total Cover	

Herb Stratum (Plot size: 5)			
1. *Carex lasiocarpa*	50	Yes	FACW
2. *Phalaris arundinacea*	20	Yes	FACW
3. *Elymus virginicus*	10	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80	=Total Cover	

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	84	x 2 =	168
FAC species	1	x 3 =	3
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	145 (A)		231 (B)

Prevalence Index = B/A = 1.59

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wetland DP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ## Very Shallow Dark Surface (TF12)
- x Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock and Gravel

Depth (inches): Surface

Hydric Soil Present? **Yes** x **No** ___

Remarks:

Wetland and hyrdology growing out of rock and gravel no soils substrate Wetland dominated by OBL and FACW species and upland wetland boundary is abrupt assume soils are present.x

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Ballville Dam - East South Bank - Downstream of Rice Road City/County: Fremont/Sandusky Sampling Date: 31-Aug-10

Applicant/Owner: City of Fremont State: OH Sampling Point: Upland DP1

Investigator(s): Ruby/Swartz Section, Township, Range: 17, Ballville, T. 4 N / R. 15 E

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): _____ Lat: 41.308601 Long: -83.157501 Datum: NAD83

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No x
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Upland DP1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	20	Yes	FACW
2. *Acer saccharinum*	5	No	FACW
3. *Platanus occidentalis*	1	No	FACW
4. *Fraxinus pennsylvanica*	1	No	FACW
5.			
6.			
7.			
	27	=Total Cover	

Sapling/Shrub Stratum (Plot size: _____)			
1. *Fraxinus pennsylvanica*	5	Yes	FACW
2. *Cornus drummondii*	1	No	FAC
3.			
4.			
5.			
6.			
7.			
	6	=Total Cover	

Herb Stratum (Plot size: 5)			
1. *Aster vimineus*	40	Yes	FACW
2. *Soidago canadensis*	40	Yes	FACU
3. *Viola papilionaceas*	10	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90	=Total Cover	

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	72	x 2 =	144
FAC species	1	x 3 =	3
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals:	123 (A)		347 (B)

Prevalence Index = B/A = 2.82

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Upland DP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 4/3	99	10YR 6/6	1	C	C	Loamy/Clayey	Distinct redox concentrations
9-12	10YR 3/2	60	10YR 5/3	20	C	P	Sandy	Faint redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Ballville Dam - East/South Bank - Wetland DP 2 City/County: Fremont/Sandusky Sampling Date: 31-Aug-10

Applicant/Owner: City of Fremont State: OH Sampling Point: Wetland DP2

Investigator(s): Ruby/Swartz Section, Township, Range: 8, Ballville, T. 4 N / R. 15 E

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): _____ Lat: 41.311199 Long: -83.156303 Datum: NAD83

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- X Sediment Deposits (B2)
- x Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland DP2

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Salix exigua*	10	Yes	OBL
2. *Fraxinus pennsylvanica*	20	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	30 =Total Cover		
Herb Stratum (Plot size: 5)			
1. *Spartina pectinata*	85	Yes	OBL
2. *Penthorum sedoides*	5	No	OBL
3. *Elymus virginicus*	10	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100
FACW species	30	x 2 =	60
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	130 (A)		160 (B)

Prevalence Index = B/A = 1.23

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wetland DP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/1	70	7.5YR 4/6	20	C	PL	Sandy	Prominent redox concentrations
			7.5YR 3/4	20	C	M	Loamy/Claye	Prominent redox concentrations
								Rock Layer at 10"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ? Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock Layer

Depth (inches): 10

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Ballville Dam - East/South Bank City/County: Fremont/Sandusky Sampling Date: 31-Aug-10

Applicant/Owner: City of Fremont State: OH Sampling Point: Wetland DP3

Investigator(s): Ruby/Swartz Section, Township, Range: 8, Ballville, T. 4 N / R. 15 E

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): _____ Lat: 41.315601 Long: -83.153503 Datum: NAD83

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- X Sediment Deposits (B2)
- x Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland DP3

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	40	Yes	FACW
2. *Juglans nigra*	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	60	=Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. *Fraxinus pennsylvanica*	1	No	FACW
2. *Ulmus americana*	3	Yes	FACW
3. *Cornus drummondii*	10	Yes	FAC
4.			
5.			
6.			
7.			
	14	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Lysimachia nummularia*	40	Yes	OBL
2. *Aster vimineus*	40	Yes	FAC
3. *Polygonum virginianum*	25	No	FAC
4. *Elymus virginicus*	10	No	FACW
5. *Carex grayii*	5	No	FACW
6. *Geum canadense*	1	No	FACU
7. *Solidago canadensis*	10	No	FACU
8.			
9.			
10.			
11.			
12.			
	131	=Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	59	x 2 =	118
FAC species	75	x 3 =	225
FACU species	31	x 4 =	124
UPL species	0	x 5 =	0
Column Totals:	205 (A)		507 (B)

Prevalence Index = B/A = 2.47

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wetland DP3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/1	90	10YR 5/3	10	C	PL	Sandy	Distinct redox concentrations
7-16	10YR 4/1	80	10YR 4/6	20	RM	C	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ? Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ? Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Ballville Dam - East/South Bank Along Unnamed Trib. City/County: Fremont/Sandusky Sampling Date: 31-Aug-10

Applicant/Owner: City of Fremont State: OH Sampling Point: Wetland DP4

Investigator(s): Ruby/Swartz Section, Township, Range: 8, Ballville, T. 4 N / R. 15 E

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): _____ Lat: 41.314602 Long: -83.151901 Datum: NAD83

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** Yes ___ No x
Hydric Soil Present?	Yes X	No ___	If yes, optional Wetland Site ID: ___
Wetland Hydrology Present?	Yes X	No ___	

Remarks: (Explain alternative procedures here or in a separate report.)
Riparian Wetlands

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland DP4

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Cornus drummondii*	30	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	30 =Total Cover		
Herb Stratum (Plot size: 5)			
1. *Leersia oryzoides*	30	Yes	OBL
2. *Phalaris arundinacea*	30	Yes	FACW
3. *Aster vimineus*	20	Yes	FAC
4. *Pilea pumila*	5	No	FACW
5. *Impatiens capensis*	2	No	FACW
6. *Bidens frondosa*	2	No	FACW
7. *Polygonum hydropiperoides*	1	No	OBL
8.			
9.			
10.			
11.			
12.			
	90 =Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	31	x 1 =	31
FACW species	39	x 2 =	78
FAC species	50	x 3 =	150
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	120 (A)		259 (B)

Prevalence Index = B/A = 2.16

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wetland DP4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 4/2	90	10YR 6/3	10	C	M	Sandy	Sands of various chroma
9-15	10YR 5/2	80	10YR 5/8	10			Sandy	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ? Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

Alluvial deposits. Meets definition of hydric soil.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Ballville Dam - East/South Bank Along Unnamed Trib. City/County: Fremont/Sandusky Sampling Date: 31-Aug-10

Applicant/Owner: City of Fremont State: OH Sampling Point: Upland DP2

Investigator(s): Ruby/Swartz Section, Township, Range: 8, Ballville, T. 4 N / R. 15 E

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): _____ Lat: 41.314499 Long: -83.151901 Datum: NAD83

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No x
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Upland DP2

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tilia americana*	20	Yes	FACU
2. *Juglans nigra*	20	Yes	FACU
3. *Robinia pseudoacacia*	10	No	FACU
4. *Salix nigra*	5	No	FACW
5.			
6.			
7.			
	55	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Robinia pseudoacacia*	30	Yes	FACU
2. *Lonicera*	10	Yes	
3.			
4.			
5.			
6.			
7.			
	40	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Sonicula marilandica*	60	Yes	FACU
2. *Actinomeris alternifolia*	10	No	FACU
3. *Carex*	5	No	FACW
4. *Trifolium hybridum*	2	No	FACU
5. *Toxicodendron radicans*	2	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	79	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	2	x 3 =	6
FACU species	152	x 4 =	608
UPL species	0	x 5 =	0
Column Totals:	164 (A)		634 (B)

Prevalence Index = B/A = 3.87

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Upland DP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Ballville Dam - Portage Park - North Bank City/County: Fremont/Sandusky Sampling Date: 2-Sep-10

Applicant/Owner: City of Fremont State: OH Sampling Point: Wetland DP5

Investigator(s): Ruby/Swartz Section, Township, Range: 8, Ballville, T. 4 N / R. 15 E

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): _____ Lat: 41.320801 Long: -83.152397 Datum: NAD83

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)
Mowed area east of wooded area.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- X Sediment Deposits (B2)
- x Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland DP5

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Phyla nodiflora*	25	Yes	FACW
2. *Lysimachia nummularia*	25	Yes	OBL
3. *Rumex cripus*	10	No	FACU
4. *Toxicodendron radican*	10	No	FAC
5. unknown sedge	5	No	
6. *Polygonum pennsylvanica*	15	Yes	FACW
7. unknown grass	10	No	
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	40	x 2 =	80
FAC species	10	x 3 =	30
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	85 (A)		175 (B)

Prevalence Index = B/A = 2.06

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wetland DP5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 - 8	10YR 4/3	95					Loamy/Clayey	
8 - 15	10YR 4/2	80	10YR 4/4	20	C	M	Loamy/Clayey	Distinct redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Ballville Dam - Portage Park - North Bank City/County: Fremont/Sandusky Sampling Date: 2-Sep-10

Applicant/Owner: City of Fremont State: OH Sampling Point: Upland DP3

Investigator(s): Ruby/Swartz Section, Township, Range: 8, Ballville, T. 4 N / R. 15 E

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): _____ Lat: 41.321098 Long: -83.152397 Datum: NAD83

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No ____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes ____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)
Mowed area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Upland DP3

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5)			
1. unknown grass	100	Yes	
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Upland DP3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

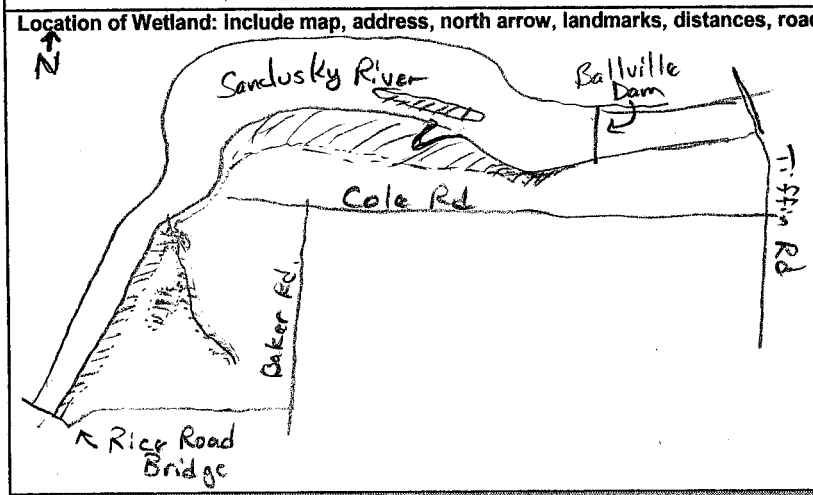
Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Background Information

Name:	Richard Ruby / Brian Swartz
Date:	31 Aug / 1 Sep 2010
Affiliation:	USACE - Buffalo District
Address:	1776 Niagara St., Buffalo, NY 14207
Phone Number:	716-879-4109
e-mail address:	richard.j.ruby@usace.army.mil
Name of Wetland:	Wetlands 1, 2, 3, 4, & 5
Vegetation Communit(ies):	Emergent / Scrub-Shrub / Forested
HGM Class(es):	Riverine

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



East/South Bank of Sandusky River from Rice Rd Bridge to Ballville Dam. Ballville Township Sandusky Co., Ohio.

Lat/Long or UTM Coordinate	Lat: 41.31825 Long: -83.15202
USGS Quad Name	Fremont-West, OHIO
County	Sandusky
Township	Ballville
Section and Subsection	NE¼ 17; E½ 8; N½ 9; SW¼ 4
Hydrologic Unit Code	04100011
Site Visit	31 Aug / 1 Sep. 2010
National Wetland Inventory Map	NWI online
Ohio Wetland Inventory Map	
Soil Survey	NRCS online
Delineation report/map	Yes

Name of Wetland: Wetlands 1, 2, 3, 4 & 5

Wetland Size (acres, hectares): 43.1 acres

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.

- See attached maps (1, 2, 2a, 2b, 2c, 2d, 3, 3a, 3b, & 4)

Comments, Narrative Discussion, Justification of Category Changes:

- Emergent wetland fringe and floodplain forested/scrub-shrub wetland along the east/south bank of the Sandusky River & stream 1 (unnamed perennial tributary to Sandusky River).
- Scored as one wetland

Final score : 71.5 **Category:** 3

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	X	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	X	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	**Mature forested wetlands.** Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands.** Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies.** Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Toffeldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetlands 1,2,3,4,5	Rater(s): Ruby / Swartz	Date: 9/1/2010

5	5
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [x] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

6	11
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [x] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

24.5	35.5
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [x] Seasonal/Intermittent surface water (3)
- [x] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [x] 100 year floodplain (1)
- [x] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [x] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [x] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [ ] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [x] Semi- to permanently inundated/saturated (4)
- [x] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other _____

18	53.5
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [x] None or none apparent (4)
- [ ] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [x] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [x] None or none apparent (9)
- [ ] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

53.5
subtotal this page

last revised 1 February 2001 jjm

Site: Wetlands 1,2,3,4, & 5	Rater(s): Ruby/Swartz	Date: 9/1/2010

53.5
subtotal first page

5	58.5
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [x] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

13	71.5
max 20 pts.	subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [2] Emergent
- [1] Shrub
- [2] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [x] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [x] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [2] Vegetated hummucks/tussucks
- [2] Coarse woody debris >15cm (6in)
- [2] Standing dead >25cm (10in) dbh
- [2] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

71.5

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES (NO)	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES (NO)	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES (NO)	If yes, Category 3.
	Question 4. Significant bird habitat	YES (NO)	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES (NO)	If yes, Category 1.
	Question 6. Bogs	YES (NO)	If yes, Category 3.
	Question 7. Fens	YES (NO)	If yes, Category 3.
	Question 8a. Old Growth Forest	YES (NO)	If yes, Category 3.
	Question 8b. Mature Forested Wetland	(YES) NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES (NO)	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES (NO)	If yes, Category 3
	Question 11. Relict Wet Prairies	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	5	
	Metric 2. Buffers and surrounding land use	6	
	Metric 3. Hydrology	24.5	
	Metric 4. Habitat	18	
	Metric 5. Special Wetland Communities	5	
	Metric 6. Plant communities, interspersion, microtopography	13	
	TOTAL SCORE	71.5	Category based on score breakpoints 3

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score *greater* than the Category 2 scoring threshold (*including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

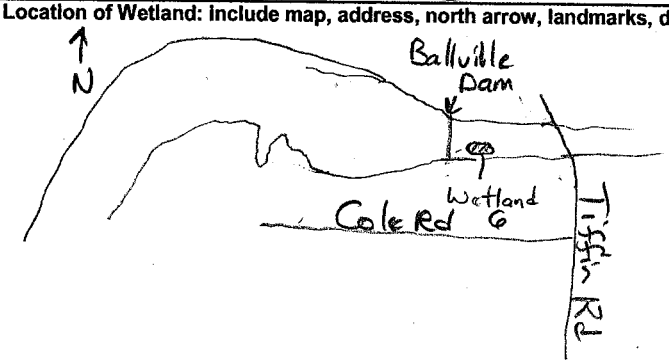
Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Richard Ruby / Brian Swartz
Date:	1 Sep 2010
Affiliation:	USACE - Buffalo District
Address:	1776 Niagara Street, Buffalo, NY 14207
Phone Number:	716-879-4109
e-mail address:	richard.j.ruby@usace.army.mil
Name of Wetland:	Wetland 6
Vegetation Communit(ies):	Emergent / Scrub-Shrub
HGM Class(es):	Riverine

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Small island immediately downstream of Ballville Dam near south Bank of Sandusky River. Ballville Twp, Sandusky Co., Ohio.

Lat/Long or UTM Coordinate	Lat: 41.32559 Long: -83.13533
USGS Quad Name	Fremont-West, Ohio
County	Sandusky
Township	Ballville
Section and Subsection	NW¼ NE¼ 9
Hydrologic Unit Code	04100011
Site Visit	1 Sep 2010
National Wetland Inventory Map	NWI online
Ohio Wetland Inventory Map	
Soil Survey	NRCS online
Delineation report/map	Yes

Name of Wetland: Wetland 6	
Wetland Size (acres, hectares): 0.08 ac.	

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.

- See attached maps 5 & 5a.

Comments, Narrative Discussion, Justification of Category Changes:

- Emergent/Scrub Shrub wetland on sediment island in Sandusky River.

Final score :	46.5	**Category:**	2

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	X	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	X	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Wetland 6	Rater(s): Ruby/Swartz	Date: 9/1/2010

Metric 1. Wetland Area (size).

0	0
max 6 pts.	subtotal

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

6	6
max 14 pts.	subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [x] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

24	30
max 30 pts.	subtotal

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [x] Seasonal/Intermittent surface water (3)
- [x] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [x] 100 year floodplain (1)
- [x] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [x] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [x] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [ ] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [x] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [x] other Dam

Metric 4. Habitat Alteration and Development.

12.5	42.5
max 20 pts.	subtotal

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [x] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [x] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [x] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

42.5
subtotal this page

last revised 1 February 2001 jjm

Site: Wetland 6	Rater(s): Ruby/Swartz	Date: 9/1/2010

42.5
subtotal first page

Metric 5. Special Wetlands.

0	42.5
max 10 pts.	subtotal

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

4	46.5
max 20 pts.	subtotal

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [1] Emergent
- [2] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [X] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [X] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

46.5

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	6	
	Metric 3. Hydrology	24	
	Metric 4. Habitat	12.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	4	
	TOTAL SCORE	46.5	Category based on score breakpoints 2

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score *greater* than the Category 2 scoring threshold (*including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

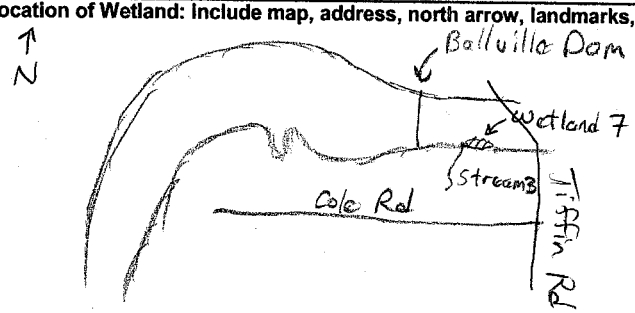
Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Richard Ruby / Brian Swartz
Date:	1 Sep 2010
Affiliation:	USACE - Buffalo District
Address:	1776 Niagara Street, Buffalo, NY 14207
Phone Number:	716-879-4109
e-mail address:	richard.j.ruby@usace.army.mil
Name of Wetland:	Wetland 7
Vegetation Communit(ies):	Emergant
HGM Class(es):	Riverine

Location of Wetland: Include map, address, north arrow, landmarks, distances, roads, etc.



Small Fringe Wetland downstream of confluence of Stream 3 & Sandusky River. The wetland is on south bank of Sandusky River. Balluille Township, Sandusky Co., Ohio

Lat/Long or UTM Coordinate	Lat: 41.325574 Long: -83.134451
USGS Quad Name	Fremont-West, Ohio
County	Sandusky
Township	Balluille
Section and Subsection	NW 1/4 NE 1/4 9
Hydrologic Unit Code	04100011
Site Visit	1 Sep 2010
National Wetland Inventory Map	NWI Online
Ohio Wetland Inventory Map	
Soil Survey	NRCS Online
Delineation report/map	Yes

Name of Wetland: Wetland 7	
Wetland Size (acres, hectares): 0.02 ac.	

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.

- See attached Maps 5 & 5a

Comments, Narrative Discussion, Justification of Category Changes:

- Emergent fringe wetland on south bank of Sandusky River

Final score :	44.5	**Category:**	Mod 2

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	X	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	X	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	**Mature forested wetlands.** Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands.** Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies.** Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland 7	Rater(s): Ruby/Swartz	Date: 9/1/2010

0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

6	6
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [x] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

24	30
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [x] Seasonal/Intermittent surface water (3)
- [x] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [x] 100 year floodplain (1)
- [x] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [x] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [x] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [ ] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [x] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [x] other Dam

11.5	41.5
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [x] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [x] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

41.5
subtotal this page

last revised 1 February 2001 jjm

Site: Wetland 7	Rater(s): Ruby/Swartz	Date: 9/1/2010

41.5
subtotal first page

0	41.5
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

3	44.5
max 20 pts.	subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [0] Aquatic bed
- [2] Emergent
- [0] Shrub
- [0] Forest
- [0] Mudflats
- [0] Open water
- [0] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [X] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [X] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

44.5

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	6	
	Metric 3. Hydrology	24	
	Metric 4. Habitat	11.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	3	
	TOTAL SCORE	44.5	Category based on score breakpoints Mod 2

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score *greater* than the Category 2 scoring threshold (*including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Richard Ruby / Brian Swartz
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Affiliation:	USACE-Buffalo District
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Phone Number:	716-879-4109
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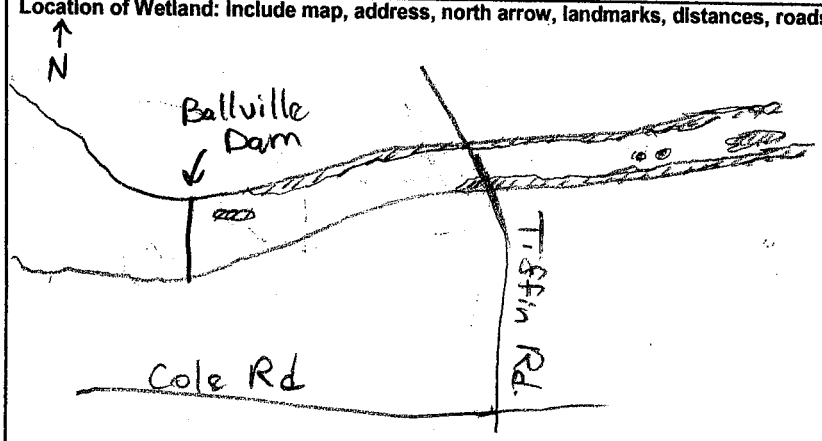
Name of Wetland:	Wetlands 8, 9, 10, 11, 12, 18, 19, 20
Vegetation Communit(ies):	Emergent / Scrub-Shrub / Forested
HGM Class(es):	Riverine

Location of Wetland: Include map, address, north arrow, landmarks, distances, roads, etc.



North/South Bank Fringe Wetlands of Sandusky River from Ballville Dam to Former hydro-Plant downstream of the Tiffin Rd. Bridge in Fremont, Ballville Township, Sandusky Co., Ohio

Lat/Long or UTM Coordinate	Lat: 41.327137 Long: -83.130455
USGS Quad Name	Fremont - West, Ohio
County	Sandusky
Township	Ballville
Section and Subsection	NE 1/4 9, NW 1/4 10
Hydrologic Unit Code	04100011
Site Visit	2-3 Sep 2010
National Wetland Inventory Map	NWI online
Ohio Wetland Inventory Map	
Soil Survey	NRCS online
Delineation report/map	Yes

Name of Wetland: Wetlands 8, 9, 10, 11, 12, 18, 19, 20

Wetland Size (acres, hectares): 4.59 on-site <50 acres offsite

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.

See attached maps
(5, 5a, 6, 6a, & 6b)

Comments, Narrative Discussion, Justification of Category Changes:

- Emergent wetland fringe and floodplain wetland along north & south bank of the Sandusky River Wetlands 8 & 20 extend offsite and become large wetland complex downstream that is likey greater than 25 acres in size but less than 50 acres.
  - River narrows to less than 200 ft wide below Ballville Dam so wetlands on either side were scored as one wetland.

Final score : 68.5 **Category:** 3

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	X	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	X	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	**Mature forested wetlands.** Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands.** Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies.** Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.