

**Section 401 Application for  
Ohio EPA Water Quality  
Certification**

**LAK-Vrooman Road  
PID 5669/85131  
Vrooman Road Bridge and  
Roadway  
Improvement Project**

**Prepared for:  
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**Baker**

**August 7, 2014**

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# APPLICATION FOR OHIO EPA SECTION 401 WATER QUALITY CERTIFICATION

Effective October 1, 1996

Revised August, 1998

This application must be completed whenever a proposed activity requires an individual Clean Water Act Section 401 Water Quality Certification (Section 401 certification) from Ohio EPA. A Section 401 certification from the State is required to obtain a federal Clean Water Act Section 404 permit from the U.S. Army Corps Engineers, or any other federal permits or licenses for projects that will result in a discharge of dredged or fill material to any waters of the State. To determine whether you need to submit this application to Ohio EP A, contact the U. S. Army Corps of Engineers District Office with jurisdiction over your project, or other federal agencies reviewing your application for a federal permit to discharge dredged or fill material to waters of the State, or an Ohio EPA Section 401 Coordinator at (614) 644-2001.

The Ohio EPA Section 401 Water Quality Certification Program is authorized by Section 401 of the Clean Water Act (33 U.S.C. 1251) and the Ohio Revised Code Section 6111.03(p). Ohio Administrative Code (OAC) Chapter 3745-32 outlines the application process and criteria for decision by the Director of Ohio EPA. In order for Ohio EPA to issue a Section 401 certification, the project must comply with Ohio's Water Quality Standards (OAC 3745-1) and not potentially result in an adverse long-term or short-term impact on water quality. Included in the Water Quality Standards is the Antidegradation Rule (OAC Rule 3745-1-05), effective October 1, 1996, revised October, 1997 and May, 1998. The Rule includes additional application requirements and public participation procedures. **Because there is a lowering of water quality associated with every project being reviewed for Section 401 certification, every Section 401 certification applicant must provide the information required in Part 10 (pages 3 and 4) of this application.** In addition, applications for projects that will result in discharges of dredged or fill material to wetlands must include a wetland delineation report approved by the Corps of Engineers, a wetland assessment with a proposed assignment of wetland category(ies), official documentation on evaluation of the wetland for threatened or endangered species, and appropriate avoidance, minimization, and mitigation as prescribed in OAC 3745-1-50 to 3745-1-54. Ohio EPA will evaluate the applicant's proposed wetland category assignment and make the final assignment.

Information provided with the application will be used to evaluate the project for certification and is a matter of public record. If the Director determines that the application lacks information necessary to determine whether the applicant has demonstrated the criteria set forth in OAC Rule 3745-32-05 (A) and OAC Chapter 3745-1, Ohio EP A will inform the applicant in writing of the additional information that must be submitted. The application will not be accepted until the application is considered complete by the Section 401 Coordinator. An Ohio EPA Section 401 Coordinator will inform you in writing when your application is determined to be complete.

Please submit the following to "Section 401 Supervisor, Ohio EPA/DSW, P.O. Box 1049, Columbus, Ohio 43216-1049:

- Four (4) sets of the completed application form, including the location of the project (preferably on a USGS quad) and 8-1/2 x 11" scaled plan drawings and sections.
- One (1) set of original scaled plan drawings and cross-sections (or good reproducible copies).

**(See Application Primer for detailed instructions)**

1. The federal permitting agency has determined this project: (check appropriate box and fill in blanks)

- a. \_\_\_\_\_ requires an individual 404 permit/401 certification- Public Notice # (if known) \_\_\_\_\_
- b.  requires a Section 401 certification to be authorized by Nationwide Permit # \_\_\_\_\_
- c. \_\_\_\_\_ requires a modified 404 permit/401 certification for original Public Notice # \_\_\_\_\_
- d. \_\_\_\_\_ requires a federal permit under \_\_\_\_\_ jurisdiction identified by # \_\_\_\_\_
- e. \_\_\_\_\_ requires a modified federal permit under \_\_\_\_\_ jurisdiction identified by # \_\_\_\_\_

2. Application number (to be assigned by Ohio EPA):

3. Name and address of applicant: Telephone number during business hours:  
Lake County Engineer's Office  
James R. Gills, P.E., P.S. (440) 350-2770 (Office)  
550 Blackbrook Road (440) 352-8133 (Fax)  
Painesville, Ohio 44077

3a. Signature of Applicant: *James R. Gills* Date: *8-6-2014*

4. Name, address and title of authorized agent: Telephone number during business hours:  
Debra E. White (216) 776-6612 (Office)  
Michael Baker Jr., Inc (216) 664-6532 (Fax)  
1228 Euclid Avenue, Suite 1050  
Cleveland, Ohio 44115

4a. Statement of Authorization: I hereby designate and authorize the above-named agent to act in my behalf in the processing of this permit application, and to furnish, upon request, supplemental information in support of the application.

Signature of Applicant: *James R. Gills* Date: *8-6-2014*

5. Location on land where activity exists or is proposed. Indicate coordinates of a fixed reference point at the impact site (if known) and the coordinate system and datum used.

The proposed project is located on Vrooman Road between the Interstate 90 interchange and State Route 84. The existing bridge is located approximately 1.4 miles north of Interstate 90.  
Latitude 41.7233 N  
Longitude -81.181699 W

Street, Road, Route, and Coordinates, or other descriptive location

Watershed	County	Township	City	State	Zip Code
GRAND RIVER	LAKE	LEROY/ PERRY TOWNSHIPS		OHIO	

6. Is any portion of the activity for which authorization is sought complete?  Yes  No  
If answer is "yes," give reasons, month and year activity was completed.

7. List all approvals or certifications and denials received from other federal, interstate, state or local agencies for any structures, construction, discharge or other activities described in this application.

<u>Issuing Agency</u>	<u>Type of Approval</u>	<u>Identification No.</u>	<u>Date of Application</u>	<u>Date of Approval</u>	<u>Date of Denial</u>
FHWA	FONSI	PID 5669/85131		5/29/2014	
USACE	Section 404 Permit		6/9/2014		
ODNR	Scenic Rivers	PID 5669		6/25/2012 and 10/03/2012	
USFWS	Section 7	PID 5669		1/22/2013	
SHPO	Section 106	PID 5669		9/25/2008	

8. **DESCRIPTION OF THE ACTIVITY (fill in information in the following four blocks - 8a, 8b, 8c & 9)**

8a. Activity: Describe the Overall Activity:  
The proposed project will replace the existing Vrooman Road Bridge over the Grand River located in Leroy and Perry Townships, Lake County, Ohio with a new bridge located approximately 1,000 feet upstream of the existing structure. Construction activities will include the improvement of 0.6 miles of Vrooman Road, construction of a high level bridge on a new alignment that connects to the intersection of SR 84 (Lane Road) and Vrooman Road. River Road will be detached from the existing intersection and a cul-de-sac will be constructed. A new connecting roadway between State Route 84 and River Road (Adams Road) will be constructed approximately 1,400 feet east of the existing intersection. The project also includes the realignment of the existing Vrooman Road between Seeley Road and State Route 84, and the existing bridge superstructure and pier will be removed and a new pedestrian bridge will span between the existing abutments.

The proposed project will impact the Grand River, Borden's Ditch, Stream 3, and four forested wetlands.

8b. Purpose: Describe the purpose, need and intended use of the activity:

The primary purpose of this project is to provide a safe and adequate transportation facility that addresses the deficient condition and design of the existing Vrooman Road Bridge (SFN 4337107), eliminates flooding of the existing bridge and approach roadway, addresses deficient design elements of the existing Vrooman Road and its intersections, improves the safety of the study area and maintains connectivity.

See attached 401 Block 8b summarizing additional information regarding the project purpose.

8c. Discharge of dredged or fill material: Describe type, quantity of dredged material (in cubic yards), and quantity of fill material (in cubic yards). (OAC 3745-1-05(B)(2)(a))

Materials being discharged into Waters of the United States include clean non-erodible fill for the construction of the haul road and temporary access pad, concrete for the construction of the bridge piers, pipe for the culvert construction and extensions, and rock channel protection.

See Table 3 in Appendix A for a breakdown of discharge materials by impacted feature.

9. Waterbody and location of waterbody or upland where activity exists or is proposed, or location in relation to a stream, lake, wetland, wellhead or water intake (if known). Indicate the distance to, and the name of any receiving stream, if appropriate.

The proposed project temporarily affects the Grand River, an exceptional Warmwater Habitat and state-designated Wild and Scenic River. The project also affects Borden's Ditch, Stream 3, and four abutting forested wetlands.

See Tables 1 and 2 in Appendix A for a breakdown of Streams and Wetlands affected by the project.

10. **To address the requirements of the Antidegradation Rule, your application must include a report evaluating the:**

- o Preferred Design (your project) and Mitigative Techniques
- o Minimal Degradation Alternative (s) (scaled-down version(s) of your project) and Mitigative Techniques
- o Non-Degradation Alternative(s) (project resulting in avoidance of all waters of the state)

At a minimum, item a) below must be completed for the Preferred Design, the Minimal Degradation Alternative(s), and the Non-Degradation Alternative(s), followed by completion of item b) for each alternative, and so on, until all items have been discussed for each alternative (see Primer for specific instructions). (Application and review requirements appear at **OAC 3745-1-05(B)(2), OAC 3745-1-05(C)(6), OAC 3745-1-05(C)(1) and OAC 3745-1-54**).

10a) Provide a detailed description of any construction work, fill or other structures to occur or to be placed in or near the surface water. Identify all substances to be discharged, including the cubic yardage of dredged or fill material to be discharged to the surface water. (**OAC 3745-1-05(B)(2)(b)**)

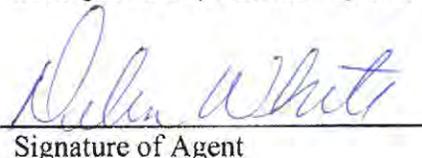
10b) Describe the magnitude of the proposed lowering of water quality. Include the anticipated impact of the proposed lowering of water quality on aquatic life and wildlife, including threatened and endangered species (include written comments from Ohio Department of Natural Resources and U.S. Fish and Wildlife Service), important commercial or recreational sport fish species, other individual species, and the overall aquatic community structure and function. Include a Corps of Engineers approved wetland delineation. (**OAC 3745-1-05(C)(6)(a, b) and OAC 3745-1-54**)

- 10c) Include a discussion of the technical feasibility, cost effectiveness, and availability. In addition, the reliability of each alternative shall be addressed (including potential recurring operational and maintenance difficulties that could lead to increased surface water degradation.) (OAC 3745-1-05(C)(6)(h, j-k) and OAC 3745-1-54)
- 10d) For regional sewage collection and treatment facilities, include a discussion of the technical feasibility, cost effectiveness and availability, and long-range plans outlined in state or local water quality management planning documents and applicable facility planning documents. (OAC 3745-1-05(C)(6)(i))
- 10e) To the extent that information is available, list and describe any government and/or privately sponsored conservation projects that exist or may have been formed to specifically target improvement of water quality or enhancement of recreational opportunities on the affected water resource. (OAC 3745-1-05(B)(2)(g))
- 10f) Provide an outline of the costs of water pollution controls associated with the proposed activity. This may include the cost of best management practices to be used during construction and operation of the project. (OAC 3745-01-05(C)(6)(g))
- 10g) Describe any impacts on human health and the overall quality and value of the water resource. (OAC 3745-1-05(C)(6)(c) and OAC 3745-1-54)
- 10h) Describe and provide an estimate of the important social and economic benefits to be realized through this project. Include the number and types of jobs created and tax revenues generated and a brief discussion on the condition of the local economy. (OAC 3745-1-5(B)(2)(e), and OAC 3745-1-05(C)(6)(i))
- 10i) Describe and provide an estimate of the important social and economic benefits that may be lost as a result of this project. Include the effect on commercial and recreational use of the water resource, including effects of lower water quality on recreation, tourism, aesthetics, or other use and enjoyment by humans. (OAC 3745-1-05(B)(2)(e,f), and OAC 3745-105(C)(6)(e))
- 10j) Describe environmental benefits, including water quality, lost and gained as a result of this project. Include the effects on the aquatic life, wildlife, threatened or endangered species. (OAC 3745-1-05 (B)(2)(e,f), OAC 3745-1-05 (C)(6)(b) and OAC 3745-1-54)
- 10k) Describe mitigation techniques proposed (except for the Non-Degradation Alternative):
  - o Describe proposed Wetland Mitigation (see OAC 3745-1-54 and Primer)
  - o Describe proposed Stream, Lake, Pond Mitigation (see Primer)

11. Application is hereby made for a Section 401 Water Quality Certification. I certify that I am familiar with the information contained in this application and, to the best of my knowledge and belief, such information is true, complete and accurate. I further certify that I possess the authority to undertake the proposed activities or I am acting as the duly authorized agent of the applicant.

  
 \_\_\_\_\_  
 Signature of Applicant

8-6-2014  
 \_\_\_\_\_  
 Date

  
 \_\_\_\_\_  
 Signature of Agent

*(The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in Block 3 has been filled out and signed.)*

**Do not send a certification processing fee with this application. The appropriate fee will be assessed when a certification is issued.**

# 401 PERMIT APPLICATION SUPPLEMENT

## **8b. Purpose**

The existing Vrooman Road Bridge over the Grand River is structurally deficient and functionally obsolete. The existing bridge has fracture critical floor beams and lower chord and diagonal segments. The floor beam connections are in poor condition, as approximately 35 percent of the rivet-bolt fasteners have extensive corrosion to the nut (2002 Physical Condition Report, HNTB). The existing bridge was posted for a reduced load carrying capacity of 16 tons on September 13, 2005, hence the structurally deficient designation. The load rating and subsequent posting followed procedures defined in the Ohio Department of Transportation (ODOT) *Bridge Design Manual*. In accordance with the ODOT *Location and Design (L&D) Manual, Volume 2*, the existing bridge is too narrow for two lanes of traffic, has poor approach geometry and regularly closes during flood events. These substandard features contribute to the “functionally obsolete” designation.

The roadway approach elevations in the immediate vicinity of the bridge (631.0 feet and 632.0 feet above mean sea level) are subject to flooding. This is a result of their being below the design year, 25-year flood elevation of 641.02 feet above mean sea level. The approach roadway to the structure also exhibits severe geometric deficiencies, specifically, substandard horizontal curves and excessively steep grades. The intersection of Vrooman Road (CR 227) with SR 84 exhibits poor intersection geometry, including a substandard intersection angle (40 degrees versus 90 degrees preferred, and 60 degrees minimum) and excessively steep approach grades (12 percent grade on the south side of the Grand River Valley and 15 percent grade on the north side). These deficiencies lead to insufficient intersection sight distances. All of these substandard roadway features along Vrooman Road and SR 84 within the study area result in safety deficiencies and high crash rates.

## 10.0 ANTIDegradation ANALYSIS

**10a. Provide a detailed description of any construction work, fill or other structures to occur or to be placed in or near the surface water. Identify all substances to be discharged, including the cubic yardage of dredged or fill material to be discharged to the surface water.**

**Preferred Design:** The proposed project includes the construction of a new, six-span, steel girder and composite reinforced concrete bridge deck, founded on reinforced concrete piers and reinforced concrete stub abutments over the Grand River, an Exceptional Warmwater Habitat (EWWH) stream and state designated Scenic River. Bridge construction activities under the preferred design result in permanent impacts to 0.224 acres of wetlands resulting from the placement of concrete material for the construction of the bridge piers.

Access to the construction area during the bridge construction activities will be provided through two temporary haul roads. In order to avoid impacts to the Grand River, one haul road will be located on the north side of the river and one haul road will be located on the south side of the river. For construction of the north haul road, approximately 1,135 cubic yards of clean, non-erodible fill will be placed into 0.352 acre of Wetland J. One temporary culvert will be placed in Borden's Ditch resulting in 22 linear feet of impact and placement of 32 cubic yards of clean non-erodible fill for the north haul road. For construction of the south haul road, approximately 1,000 cubic yards of clean, non-erodible fill will be temporarily placed into 0.286 acres of wetlands. Upon completion of the bridge construction, both the north and south haul roads will be removed and the impacted wetlands and stream will be restored.

The preferred design also includes the upgrade of the existing Vrooman Road to meet current design standards. Vrooman Road will be reconstructed to include two-lane pavement designed for a width of 24 feet with a 4 foot treated and graded shoulder on each side of the roadway. Drainage design for the project will utilize existing roadway ditches and culverts and include the extension of three existing culverts on Stream 3. The three culvert extensions (17 linear feet, 36 linear feet, and 46 linear feet) will result in the placement of 12 cubic yards of rock channel protection into Stream 3.

Construction of Adams Road will result in the placement of one 60-foot culvert on Borden's Ditch. Approximately 60 linear feet of Type A pipe and 84 cubic yards of rock channel protection will be placed into Borden's Ditch.

The preferred design also includes the removal of the center pier of the existing Vrooman Road Bridge. This is a result of regulatory agency coordination conducted as part of the Environmental Assessment that was completed for FHWA. As part of the Scenic River's coordination for the project, ODNR requested that the center pier of the existing Vrooman Road bridge be removed in order to allow better flow of the Grand River. In order to remove the pier, a temporary access pad and cofferdam will be constructed, with dewatering and removal completed in accordance with ODNR Scenic Rivers Program's guidance. Temporary impacts to the Grand River for the removal of the bridge pier will consist of the placement of approximately 1,389 cubic yards of clean, non-erodible granular material that will be placed below the ordinary high water mark of the Grand River. Flow will be maintained since the temporary causeway will only extend half way across the river channel. Upon completion of construction activities, the causeway will be removed and the substrate

of the Grand River will be restored to pre-construction topography. No permanent rock channel protection will be placed below the ordinary high water mark of the Grand River at the completion of the project.

**Minimal Degradation Alternative:** The minimal degradation alternative, as with the preferred design will include the construction of a new, six-span, steel girder and composite reinforced concrete bridge deck, founded on reinforced concrete piers and reinforced concrete stub abutments over the Grand River. Bridge construction activities under the minimal degradation alternative result in permanent impacts to 0.224 acres of wetlands resulting from the placement of concrete material for the construction of the bridge piers.

The minimal degradation option is provided to reduce the total temporary and indirect impacts to the Wetland J and Borden's Ditch. For the minimal degradation alternative, access to the construction area during the bridge construction activities will be provided through one haul road utilizing a temporary causeway over the Grand River. This will be accomplished by constructing a temporary causeway across the Grand River for construction access, thus eliminating the need for the northern haul road. The construction of the temporary causeway will impact 95 linear feet of the Grand River. The temporary access fill will be constructed within the Grand River over a total area of 0.55 acres, with an overall length of 250' from bank to bank. The temporary access fill will consist of approximately 4,545 cubic yards of clean, non-erodible granular material that will be placed below the ordinary high water mark of the Grand River.

Flow will likely be maintained by a pre-fabricated culverts installed below the causeway to convey water from the Grand River during construction activities. Upon completion of the construction activities, the causeway and culverts will be removed and the substrate of the Grand River will be restored to pre-construction topography. No permanent rock channel protection will be placed below the ordinary high way mark for the Grand River at the completion of the project. The causeway will need to be constructed, used, and removed within the in-stream work dates established by the regulatory agencies. With these limitations, the construction schedule would be extended and would require at least one additional, if not more, construction seasons for completion of the project.

As with the Preferred Design, construction of the south haul road will include the placement of approximately 1,000 cubic yards of clean, non-erodible fill into 0.286 acres of wetlands. Upon completion of the bridge construction, the south haul road will be removed and the impacted wetlands and Grand River will be restored.

As with the preferred design, the minimal degradation alternative also includes the upgrade of the existing Vrooman Road to meet current design standards. Vrooman Road will be reconstructed to include two-lane pavement designed for a width of 24 feet with a 4 foot treated and graded shoulder on each side of the roadway. Drainage design for the project will utilize existing roadway ditches and culverts and include the extension of three existing culverts on Stream 3. The three culvert extensions (17 linear feet, 36 linear feet, and 46 linear feet) will result in the placement of 12 cubic yards of rock channel protection into Stream 3.

Like the preferred design, construction of Adams Road will result in the placement of one 60-foot culvert on Borden's Ditch. Approximately 60 linear feet of Type A pipe and 84 cubic yards of rock channel protection will be placed into Borden's Ditch.

Both the preferred design and minimal degradation design also includes the removal of the center pier of the existing Vrooman Road Bridge. This is a result of regulatory agency coordination conducted as part of the Environmental Assessment that was completed for FHWA. As part of the Scenic River's coordination for the project, ODNR requested that the center pier of the existing Vrooman Road bridge be removed in order to allow better flow of the Grand River. In order to remove the pier, a temporary access pad and cofferdam will be constructed, with dewatering and removal completed in accordance with ODNR Scenic Rivers Program's guidance. Temporary impacts to the Grand River for the removal of the bridge pier will consist of the placement of approximately 1,389 cubic yards of clean, non-erodible granular material that will be placed below the ordinary high water mark of the Grand River. Flow will be maintained since the temporary causeway will only extend half way across the river channel. Upon completion of construction activities, the causeway will be removed and the substrate of the Grand River will be restored to pre-construction topography. No permanent rock channel protection will be placed below the ordinary high water mark of the Grand River at the completion of the project.

When compared to the preferred alternative, the minimal degradation alternative is a reduction of temporary impacts to Wetland J and to Borden's Ditch. The minimal degradation alternative is technically feasible. However this alternative would result in an unacceptable increase in project costs due to the limited construction schedule that would be required to meet regulatory agency commitments regarding appropriate dates for in-stream water work. In-stream water work is limited and can only occur between August 1<sup>st</sup> and September 15<sup>th</sup>.

**Non-Degradation Alternative:** Since the project is water dependent, the non-degradation alternative for this project would involve the no-build alternative. Consequently, there would be no work associated with the project, and no placement of fill into or near regulated waters. The non-degradation alternative would be to maintain the existing Vrooman Road Bridge in its current condition. The non-degradation alternative will not address the deficient condition and design of the existing Vrooman Road Bridge, will not address the deficient roadway conditions or any of the safety issues associated with the crash patterns along Vrooman Road. As such, the non-degradation alternative will not meet the purpose and need for the project.

***10b. Describe the magnitude of the proposed lowering of water quality. Include the anticipated impact of the proposed lowering of water quality on aquatic life and wildlife, including threatened and endangered species (include written comments from Ohio Department of Natural Resources and U.S. Fish and Wildlife Service), important commercial or recreational sport fish species, other individual species, and overall aquatic community structure and function. Include a Corps of Engineers approved wetland delineation.***

**Preferred Design:** The quality of the Grand River is not expected to decrease as a result of the construction of the Vrooman Road Bridge. No long term loss of the Grand River will result from this project. Temporary impacts to the Grand River are a result of the removal of the center pier of the existing bridge. These impacts are a result of regulatory agency coordination conducted as part of the Environmental Assessment that was completed for FHWA. As part of the Scenic River's coordination for the project, ODNR requested that the center pier of the existing Vrooman Road bridge be removed in order to allow better flow of the Grand River. In order to remove the pier, a temporary access pad and cofferdam will be

constructed, with dewatering and removal completed in accordance with ODNR Scenic Rivers Program's guidance. In-stream activities will only be conducted between August 1<sup>st</sup> and September 15<sup>th</sup>.

Impacts to wetlands for the preferred design includes 0.224 acres of permanent impacts and 0.638 acres of temporary impacts for the construction of the bridge piers and haul roads. An additional 4.217 acres of indirect wetland impacts have been included based on discussions with OEPA. The indirect impacts are associated with the loss of canopy to the forested wetlands as well as the potential for impacts due to salt spray from the new bridge.

According to the USFWS, the project will have no effect on the Kirtland's Warbler (*Setophaga kirtlandii*), piping plover (*Charadrius melodus*), and bald eagle (*Haliaeetus leucocephalus*); therefore, impacts to these species are not anticipated.

Suitable habitat for mussels was found in the Grand River within the project area. A mussel survey was conducted by EnviroScience Inc. between August 13 and August 16, 2012. The survey covered the section of the Grand River from 279 feet upstream to 508 feet downstream of the existing Vrooman Road centerline. EnviroScience malacologists reported that the stream substrate in the immediate area of the bridge was predominantly bedrock covered with a thin layer of silt, with good mussel habitat found upstream and downstream from the bridge. The surveyors reported a total of 1,946 living mussels, representing 14 species, were found during the survey, including one live male snuffbox. The live snuffbox was found during quadrat sampling at midstream approximately 145 m downstream of from the bridge centerline. Based on the findings of the mussel survey and commitments to implement the avoidance and minimization measures, the USFWS determined that this project *may affect, but is not likely to adversely affect* the snuffbox.

To determine the potential for project-related impacts to the Indiana Bat, a mist net survey was conducted by EnviroScience Inc. from July 26 through July 31, 2012. No bats were captured during the survey; and very few bats were otherwise seen or detected using acoustic monitoring equipment. Based on the results of this survey the USFWS determined that the project *may affect, but is not likely to adversely affect* the Indiana Bat.

On October 2, 2013, USFWS proposed to list the northern long-eared bat (*Myotis septentrionalis*) as federally endangered. Suitable habitat for the northern long-eared bat exists within the project area; however, no bats were captured during the previously completed bat survey. No caves or mine portals that could be acting as a day roost or winter hibernacula were observed within the project area. Due to the absence of bats captured during the mist net survey, it is presumed that the bridge replacement project *may affect, but is not likely to adversely affect* the northern long-eared bat.

The following environmental commitments have been made in response to USFWS recommendations.

1. Removal of the existing bridge by the contractor will be carried out in accordance with the guidance and recommendations provided by the ODNR-SRP to minimize impacts to mussel populations located upstream and downstream of the project construction limits. Any material that enters the water during the demolition process will be removed immediately.
2. The contract will construct the temporary access pad and cofferdam (used in

removing the existing bridge and in-stream pier) will be constructed, with dewatering and removal also carried out, in accordance with ODNR SRP's guidance and recommendations.

3. The contractor will perform all in-stream work during low-flow conditions (Aug 1- Oct 31). ODNR has exclusionary dates for in-stream construction/work activities that ODOT must follow. The contractor will need to follow the Scenic River exclusionary dates of November 1 to July 31 and the Seasonally Salmonid dates of September 15 to June 30. These dates in combination with USFWS restrict dates give ODOT a narrow window of in-stream work from August 1 to September 15. These dates will be included in the contract via a plan note stating all in-stream work will be conducted during low-flow conditions from August 1 to September 15.
4. The contractor will develop and implement on site prior to commencement of earthwork a sediment and erosion control plan. The contractor must properly maintain all controls in place until final site stabilization is achieved. The contractor will be required to comply with ODOT CMS 107.19 Environmental Protection and 207 Temporary Sediment and Erosion Controls. Spec. 207.03 requires the contractor to develop a SWPPP. This specification ensures that the contractor will have erosion control measures in place before, during, and after earthwork activities. These controls will be monitored and repaired as necessary to ensure effective performance.
5. ODOT will invite a biologist from the USFWS Columbus, Ohio Field Office to attend the pre-construction meeting with the contractor to clarify these recommendations and address any concerns, as needed. This request will be added as a plan note to call the USFWS Columbus, Ohio Field Office, (614) 416-8993 Ext 23. USFWS will be invited to the pre-construction meeting with the contractor to clarify recommendation and concerns.
6. ODOT must keep USFWS apprised of the construction schedule for this project and give USFWS the opportunity to conduct periodic site visits. This request will be added as a plan note that the ODOT must keep USFWS apprised of the construction schedule for this project and give USFWS the opportunity to conduct periodic site visits during the course of the action.
7. The clearing of trees in the construction zone will be done only between September 30 and April 1.

The Grand River also supports diverse fish and aquatic macroinvertebrate communities. Significant impacts to fish species are not anticipated, due to the mobile nature of these species. Non-mobile aquatic macroinvertebrates may be lost due to the project, but losses of individuals beneath the Vrooman Road bridge over the Grand River should not cause population stress, and should not have a substantive effect on these species. Additionally, limiting in-stream work from August 1 to September 15 will also help avoid impacts to these species.

A jurisdictional determination from the U.S. Army Corps of Engineers is included in Appendix F. ODNR, USFWS, and ODNR Scenic River authorization is included in Appendix F.

**Minimal Degradation Alternative:** The quality of the Grand River is not expected to decrease as a result of the minimal degradation alternative. While temporary and indirect

wetland impacts have been reduced in the minimal degradation alternative, temporary impacts to the Grand River have increased in the minimal degradation alternative. Temporary impacts to the Grand River for the minimal degradation alternative total 185 linear feet (0.636 acres) compared to the 90 linear feet (0.086 acre) of impacts for the preferred alternative. These impacts are a result of constructing a temporary causeway across the river for construction access as well as the removal of the center pier of the existing bridge. The removal of the center pier impacts are a result of regulatory agency coordination conducted as part of the Environmental Assessment that was completed for FHWA. As part of the Scenic River's coordination for the project, ODNR requested that the center pier of the existing Vrooman Road bridge be removed in order to allow better flow of the Grand River. In order to remove the center pier, a temporary access pad and cofferdam will be constructed, with dewatering and removal completed in accordance with ODNR Scenic Rivers Program's guidance. In-stream activities will only be conducted between August 1<sup>st</sup> and September 15<sup>th</sup>. Construction of the temporary access causeway will temporarily lower the water quality of the Grand River. The temporary causeway has the potential to affect the mussel beds located within the project area. These mussel beds may contain the federally endangered Snuffbox.

Impacts to wetlands for the minimal degradation alternative include 0.224 acres of permanent impacts and 0.286 acres of temporary impacts for the construction of the bridge piers and southern haul road. An additional 1.871 acres of indirect wetland impacts have been included based on discussions with OEPA. The indirect impacts are associated with the loss of canopy to the forested wetlands as well as the potential for impacts due to salt spray from the new bridge.

While temporary and indirect wetland impacts have been reduced in the minimal degradation alternative, impacts to the Grand River and potential threatened and endangered species have slightly increased with the minimal degradation alternative. Temporary impacts to areas below the ordinary high water mark of the Grand River are greater in the minimal degradation alternative. However, the permanent lowering of water quality of the Grand River is not expected to change as a result of the project.

**Non-Degradation Alternative:** There will be no lowering of water quality with the non-degradation alternative, and no impacts to aquatic species or federal or state endangered species will occur.

***10c. Include a discussion of the technical feasibility, cost-effectiveness, and availability. In addition, the reliability of each alternative shall be addressed (including potential recurring operational and maintenance difficulties that could lead to increased surface water degradation).***

**Preferred Design:** The preferred design is technically feasible, cost-effective, and available. By constructing the new Vrooman Road Bridge, this design will substantially reduce the public safety hazard posed by deficient geometrics and flooding. Once the proposed project is complete, future maintenance activities will be minimal and are not expected to lead to future surface water degradation. The preferred design has a total estimated cost of approximately \$31.4 million. The estimated project cost includes approximately \$27.6 million for the bridge structure and River Road bypass, \$0.35 million for right-of-way, and \$3.5 million for the Vrooman Road improvement project.

**Minimal Degradation Alternative:** The minimal degradation alternative is technically feasible and available with costs greater than those for the preferred alternative. It is estimated that the construction of the causeway will add approximately \$3 million to the cost of the project. The use of a causeway may also require at least one additional construction season for the construction of the bridge, due to the instream work restriction dates for the Grand River. Additionally, the reduced and phased access will limit construction options for the contractor.

The minimal degradation alternative is technically feasible however, increased construction cost as well as an extended construction schedule is not acceptable. Furthermore, the additional temporary impacts to the Grand River are unacceptable to the ODNR Scenic Rivers Programs and USFWS.

**Non-Degradation Alternative:** The non-degradation alternative is feasible; however, it will not meet the purpose and need for the project, *i.e.*, it will not eliminate the conditions that contribute to the recurring maintenance issues associated with Vrooman Road within the project area. It will not address the safety concerns related to the poor approach geometry or the recurring flooding. LCEO has a responsibility to maintain the roadways under its jurisdiction and to look after public welfare; consequently, the non-degradation alternative is not a technically feasible option for LCEO.

**10d. For regional sewage collection and treatment facilities, include a discussion of the technical feasibility, cost effectiveness and availability, and long-range plans outlined in state or local water quality management planning documents and applicable facility planning documents.**

**Preferred Design:** n/a

**Minimal Degradation Alternative:** n/a

**Non-Degradation Alternative:** n/a

**10e. To the extent that information is available, list and describe any government and/or privately sponsored conservation projects that exist or may have been formed to specifically target improvement of water quality or enhancement of recreational opportunities on the affected water resource.**

**Preferred Design:** No government or privately sponsored conservation projects have been developed to specifically target improvement of water quality or enhancement of recreational opportunities on the water resources adjacent to this project. However, in the early 1990's, several conservation agencies operating within the watershed recognized the existence of threats to the river's quality and moved to develop ways to maintain the relatively natural condition of the Grand River Watershed. This coalition of public and private agencies was originally known as the Grand River Partners, Inc. In 2010, the Grand River Partners, Inc. merged to the Western Reserve Land Conservancy to work together to share information and ideas about the Grand River watershed.

The Grand River is a state-designated Wild and Scenic River. Passed in 1968, the Scenic Rivers Act created a state program to protect Ohio's remaining high quality streams for future generations. The Scenic River program and ODNR strive to meet this goal by

carefully reviewing all public projects that may have an impact on the protected Scenic River resource, providing assistance and education to landowners along the river, and enhancing the resource through habitat and water quality improvements within the riparian corridor. Additionally, the Scenic Rivers Act requires that a citizen's advisory council representing local officials, landowners and conservation organizations, be appointed for each designated river. These councils provide advice about local river protection and preservation concerns. The Grand Wild and Scenic River Advisory Council serves in this capacity for the Grand River.

**Minimal Degradation Alternative:** Same as Preferred Design.

**Non-Degradation Alternative:** Same as Preferred Design.

***10f. Provide an outline of the costs of water pollution controls associated with the proposed activity. This may include the cost of best management practices to be used during construction and operation of the project.***

**Preferred Design:** Areas disturbed during construction will be immediately stabilized with appropriate measures including vegetative cover to reduce runoff and transport of sediment in accordance with item 207-Temporary Soil and Erosion Control in ODOT's Construction and Material specifications. Furthermore, the project will conform to OEPA's NPDES permit requirements for stormwater erosion control discharge.

In accordance with the environmental commitments in the FONSI, the highway contractor will develop and implement a Storm Water Pollution Prevention Plan (SWPPP) as required by Ohio Environmental Protection Agency. The plan will govern all earth disturbing activities during the construction of the project.

Costs for the installation of erosion control materials and preparation of a Stormwater Pollution Prevention Plan for the preferred design are estimated to be approximately \$95,418.21.

**Minimal Degradation Alternative:** Costs for the installation of erosion control materials and preparation of a Stormwater Pollution Prevention Plan for the minimal degradation alternative are estimated to be the same as the preferred design.

**Non-Degradation Alternative:** Since the non-degradation alternative is a no-build alternative, there is no cost for water pollution controls associated with this alternative.

***10g. Describe any impacts on human health and the overall quality and value of the water resource.***

**Preferred Design:** Construction of the Vrooman Road Bridge piers within the forested wetlands and temporary impacts associated with the construction haul roads and removal of the existing center bridge pier will result in a lowering of water quality of the water resources within the construction area. However, this loss of water resources will not have a significant negative effect on the overall quality or value of the Grand River. The Preferred Alternative is not expected to result in a lowering of the aquatic use designations (i.e. exceptional warmwater habitat) for the Grand River.

Additionally, temporary impacts to wetlands as a result of the construction of the haul roads are expected to be restored upon completion of the construction.

Potential temporary impacts to recreational users of the Mason's Landing Park and Indian Point Park during construction may occur. The Federal Highway Administration determined that the proposed project supports the long-term plans and goals associated with Mason's Landing Park and Indian Point Park. The new replacement facilities, the new park bridge, the additional protected Indian Point Park Land, the ability to expand the multi-use trails within the park, and direct access to the former Anzelc property, will allow the public use opportunities to be enhanced. Appropriate commitments to minimize impacts to Mason's Landing Park and Indian Point Park have been incorporated into the project and include the following:

1. Access to Lake County Metroparks' (LMP) Mason's Landing Park will be maintained during construction of the bridge and Vrooman Road roadway improvements. Vrooman Road, from SR 84 to the entrance to the park, will be used to transport construction supplies and materials to the construction site on the north side of the river. Infrequent, short-term closures of Vrooman Road and access to Mason's Landing Park from SR 84 may be necessary.
2. Mason's Landing Park facilities (Steelhead Run Trail, parking lot, canoe access, picnic area with grills, fishing, playground, and portable restrooms) will remain open until the new facilities (parking lot, canoe access, picnic area with grills, fishing, playground, and portable restrooms) are ready for use on the south side of the Grand River.
3. Short-term closures of the Mason's Landing Park's Steelhead Run Trail may be necessary due to access constraints and safety concerns for persons using this trail during removal of the park's parking lot, canoe access, picnic area with grills, fishing, playground, and portable restrooms and construction of the pedestrian bridge (on the location of the existing Vrooman Road Bridge). The park's trail will be re-opened once these activities are completed. The closure is expected to be temporary and will be of short duration and less than the total time needed for construction of the project. Precautions will be taken to protect the park from damage. Mason's Landing Park will not be used for the staging of construction equipment or materials. It is anticipated that construction vehicles and activities during the removal of park equipment may result in voids, pits, and ruts in the ground; changes in grading; or the removal or destruction of vegetation. BMPs will be incorporated in the design and utilized as appropriate during construction. This property will be repaired and re-graded at the conclusion of construction activity.
4. A former farmstead (residence and an outbuilding) at 5343 Vrooman Road is present on the south ridge of the Grand River Valley in Indian Point Park. LMP rents this property to park employees. Access to this property will be maintained during all phases of the project. During construction of the project, it may be necessary to provide a temporary driveway to maintain access to the property from Vrooman Road. Permanent access to this property will be restored as part of the project.
5. A portion of existing Seeley Road is used by vehicular traffic to connect visitors to Indian Point Park from Vrooman Road. This route will be used for construction access and will be reconstructed to a condition at least as good as or better than that which existed prior to the project. Construction traffic on this road during the

project could present a safety issue for park visitors. Signs notifying park visitors that the road is being used by construction vehicles will be posted. Should it be necessary to use portions of Seeley Road for construction staging activities, visible detours will be established to route all park visitors and vehicular traffic to access Indian Point Park from alternative roadways. The project will not involve the relocation of Seeley Road from its current location adjacent to the Grand River.

6. A portion of Indian Point Park will be used for construction activities and haul roads. It is anticipated that construction vehicles and activities may result in voids, pits, and ruts in the ground; changes in grading; or the removal or destruction of vegetation to current LMP property during the construction period. BMPs will be incorporated in the design and utilized as appropriated during construction. This property will be repaired or restored at the conclusion of construction activity.
7. If there is an opportunity through final bridge design to identify ways to reduce noise from vehicles on the bridge deck and joints, LMP feels it would be beneficial to the project and the park below. A cost-effective bridge design that would reduce the noise on the proposed bridge would include the use of longitudinal grooves instead of traverse grooves.
8. Certain Mason's Landing Park facilities will be removed from the north side of the river and replaced in-kind on the south side of the river, including the parking lot; playground; canoe access; and amenities (picnic tables, grills, and portable toilets).
9. Access from the south side to the north side of the Grand River will be maintained with a replacement pedestrian bridge suitable for pedestrian and light park service vehicles. This ADA-compliant replacement bridge will be at the same location as the existing Vrooman Road Bridge. The existing bridge and center pier will be removed and replaced with a single-span pedestrian bridge on the existing abutments. LMP will assume ownership of the Vrooman Road pedestrian replacement bridge. This will maintain LMP's direct access to its property from the south side of the Grand River.
10. The Sidley Property (14.92 acres) along the north side of the Grand River, adjacent to the east side of Vrooman Road, has been identified as an acceptable replacement property for the permanent acquisition of 3.50 acres from Indian Point Park and exceeds the amount of replacement land acquired. This property will be owned by LMP and will include all necessary and appropriate conservation easements (USDA Wetland Reserve Program Easement and Great Lakes Coastal Restoration Grant Deed Restriction). This will replace and expand the existing easements on the acquired property.
11. Vacated portions of the current Vrooman Road right-of-way will be transferred to LMP (approximately 2.62 acres). Prior to transfer, the asphalt will be removed from the vacated right-of-way. The specific locations for the removal of asphalt will be determined during detail design and in consultation with LMP.
12. The LMP will assume ownership of the existing retaining wall and will be responsible for its maintenance. The remaining portion of the roadway bed may be converted to an LMP trail from SR 84 to their property on the north side of the Grand River. ODOT will maintain SR 84.

The preferred design will positively affect human health, as conditions which contribute to high accident rates will be addressed. The poor intersection geometry and excessively steep approach grades will no longer pose a threat to the public.

In addition, closure of Vrooman Road due to flooding will no longer be a concern. Any closure of the roadway causes lengthy detours because the closest interchanges on I-90 to the Vrooman Road interchange are located 7.5 miles to the east (I-90/SR 528) and 4.5 miles to the west (I-90)/SR44) requiring detour routes of approximately 16.25 miles and 11.75 miles, respectively. Upon completion of the preferred design, Vrooman Road will no longer be closed due to flooding.

**Minimal Degradation Alternative:** Construction of the Vrooman Road Bridge piers within the forested wetlands and temporary impacts associated with the southern haul road and removal of the existing center bridge pier will result in a lowering of water quality of the water resources within the construction area. However, this loss of water resources will not have a significant negative effect on the overall quality or value of the Grand River. While the Minimal Degradation Alternative will decrease the amount of temporary wetland impacts, temporary impacts to the Grand River are greater due to the placement of a temporary causeway which may temporarily result in a lowering of the aquatic use designations (i.e. exceptional warmwater habitat) for the Grand River.

The minimal degradation alternative will positively affect human health, as conditions which contribute to high accident rates and road closures will be addressed.

**Non-Degradation Alternative:** The non-degradation alternative will not impact the quality or value of the Grand River and abutting wetlands. However, conditions along the Vrooman Road corridor that contribute to high accident rates and flooding will not be addressed. Human health could be negatively impacted under the non-degradation alternative, as injury and crashes will still occur at rates above acceptable levels as documented in the 2013 Environmental Assessment included in Appendix F.

***10h. Describe and provide an estimate of the important social and economic benefits to be realized through this project. Include the number and types of jobs created and tax revenues generated and a brief discussion of the local economy.***

**Preferred Design:** While economic development is not a primary objective of the Vrooman Road Bridge and Roadway Project, construction of the preferred design will have a positive impact on Lake County by providing much needed construction and other jobs in the community. LCEO estimates that the construction of the preferred design will generate 477 full-time construction jobs for two construction seasons (18 months) at an average hourly wage of \$27.25/hour (including fringe benefits). Using a standard 40-hour work week, this translates to an average annual salary of \$42,500 per worker and a total payroll of \$20,272,500.

The U.S. Census Bureau (<http://quickfacts.census.gov/qfd/states/39/39085.html>) reports that 229,857 people lived in Lake County in 2013. This is a 0.1% decrease from the population in 2010, when 230,038 people were reported to live in the county. Between 2008 and 2012, the median household income in the county was \$56,231 which was more than the statewide median household income of \$48,246. The U.S. Census Bureau also reported that between 2008 and 2012, 9.3% of the people in Lake County lived below the poverty level. According to statistics published by the Ohio Department of Jobs and Family

Services, Office of Workforce Development (July 2013), Lake County had an unemployment rate of 6.5%, slightly below the Ohio average unemployment rate of 7.3%.

In addition to the direct economic impact that will be realized by construction workers who are employed on this project, indirect economic benefits will occur as these construction workers spend portions of their salaries to purchase goods and services in and around the construction site and in their own communities.

Aesthetics will likely improve within Mason's Landing Park upon completion of the construction, due to the Scenic River mitigation that will be conducted in coordination with ODNR. Scenic river mitigation activities will include the removal of the existing center pier of the bridge and replacement with a pedestrian bridge. In addition, Mason's Landing Park facilities will be relocated to the south side of the Grand River and include ADA compliant facilities.

Adjacent property values are not expected to increase as a result of the construction of the preferred design.

**Minimal Degradation Alternative:** The economic benefits of the minimal degradation alternative are expected to be similar to those of the preferred design, both during and after construction.

**Non-Degradation Alternative:** No social or economic benefits will be derived from the non-degradation alternative for this project. Commercial enterprises that operate both north and south of the project area may in fact be negatively affected by the non-degradation alternative for the project, as conditions which contribute to the safety and flooding issues will not be rectified. Recreational opportunities in the area will not be affected, either positively or negatively, by the project. Aesthetic improvements associated with the Scenic River mitigation will not occur as a result of the no-build alternative.

***10i. Describe and provide an estimate of the important social and economic benefits that may be lost as a result of this project. Include the effect on commercial and recreational use of the water resource, including effects of lower water quality on recreation, tourism, aesthetics, or other use and enjoyment by humans.***

**Preferred Design:** No important social and economic benefits will be lost as a result of the construction of the preferred design for this project. Tourism and aesthetics will not be adversely affected by the construction of the preferred design.

Recreational use of the Lake County Metroparks' Mason's Landing Park will be maintained during construction of the bridge and Vrooman Road roadway improvements. The Federal Highway Administration determined that the proposed project supports the long-term plans and goals associated with Mason's Landing Park and Indian Point Park. The new replacement facilities, the new park bridge, the additional protected Indian Point Park Land, the ability to expand the multi-use trails within the park, and direct access to the former Anzels property, will allow the public use opportunities to be enhanced. Appropriate commitments to minimize impacts to Mason's Landing Park and Indian Point Park have been incorporated into the project.

**Minimal Degradation Alternative:** Similar to the preferred design, no important social and economic benefits will be lost as a result of the construction of the minimal degradation

alternative for this project. Tourism and aesthetics will not be adversely affected by the construction of the minimal degradation alternative.

As with the preferred design, the project will result in temporary impacts to Mason's Landing Park and Indian Point Park. Appropriate commitments to minimize impacts to these parks have been incorporated into the project.

**Non-Degradation Alternative:** Commercial and recreational use of water resources has the potential to be adversely impacted by the no-build alternative. Social and economic benefits may be lost as a result of the continuing safety and flooding issues associated with the Vrooman Road bridge. Normal maintenance is not considered adequate to cope with these deficiencies. These deficiencies could eventually lead to the need permanently close Vrooman Road between SR 84 and Mason's Landing Park. Lake Metroparks is reliant on this bridge for access to Mason's Landing and Indian Point Park. The closure of the bridge or Vrooman Road would lead to lengthy detours on less improved roads to reach the parks. This could lead to a decline in the use of both Mason's Landing and Indian Point Park.

***10 j. Describe environmental benefits, including water quality, lost or gained as a result of this project. Include the effects on the aquatic life, wildlife, threatened or endangered species.***

**Preferred Design:** The preferred design will not result in permanent loss of area below the ordinary high water mark of the Grand River. Four wetlands located within the project area will be impacted by the construction of Seeley Road and haul roads. Although there will be permanent loss of 0.224 acres of wetlands and temporary loss of 0.638 acres of wetlands within the project area, it is anticipated that the total wetland loss will be 0.224 acres, as impacts resulting from the temporary access road will be restored upon completion of the project. Overall, the losses will result in a slight decrease in water quality within the Grand River watershed.

The project will result in environmental benefits related to the Scenic River mitigation activities that will be undertaken in coordination with ODNR. These activities include the removal of the center pier of the bridge to allow unrestricted flow of the Grand River.

As part of this project, the LCEO will acquire the 14.92 acre Sidley property for replacement/mitigation of the NOAA impacts associated with the project. A total of 1.7 acres of this parcel will be used for the NOAA mitigation. The remaining 13.22 acres of this parcel will be utilized for stream and wetland mitigation associated with the project.

Impacts to aquatic life, mussels, wildlife, threatened and endangered species are anticipated to be negligible under the preferred design.

**Minimal Degradation Alternative:** The minimal degradation alternative will involve greater temporary impacts to the Grand River and reduced impacts to wetlands located within the project area. Permanent impacts to wetlands are the same as the preferred design; however temporary impacts to wetlands have been reduced in the minimal degradation alternative. Temporary impacts to the Grand River and potential mussel beds have been increased in the minimal degradation alternative. Similar avoidance and minimization efforts to limit potential impacts to aquatic species are present in the minimal degradation

alternative. ODNR mitigation activities for Scenic Rivers and Coastal Zone Management will still occur in the minimal degradation alternative.

Impacts to terrestrial species will be similar to those resulting from the preferred design.

**Non-Degradation Alternative:** As the non-degradation alternative is the no-build alternative, no loss of water quality or impacts to aquatic or terrestrial species will occur. Environmental benefits related to the ODNR mitigation will not take place under the non-degradation alternative.

**10k. Describe mitigation techniques proposed (except for the Non-Degradation Alternative):**

- **Describe proposed Wetland Mitigation**
- **Describe Proposed Stream Mitigation**

**Preferred Design:** Mitigation for direct impacts to wetlands total 0.862 acres. Based upon the table provided in OAC-3745-1-54, impacts to 0.862 acres of Category 3, forested wetlands will require a total of 2.16 acres of mitigation at a 2.5:1 impact to mitigation ratio. When using a combination of mitigation methods (i.e. creation, enhancement, and/or preservation), a 1:1 mitigation ratio must be met and then additional preservation can be added. With this methodology, 0.862 acres of wetland restoration and 2.586 acres of wetland preservation would be necessary for the project.

For the preferred design, LCEO proposes to provide on-site mitigation for wetland and stream impacts on the Sidley property. This property consists of 14.92 acres. A total of 1.70 acres of this parcel will be utilized for the National Oceanic and Atmospheric Administration (NOAA) mitigation. The remaining 13.22 acres of this site will be utilized for mitigation for the stream and wetland impacts. Wetland impacts will be mitigated as follows: Wetland J is located entirely within this parcel and totals 2.91 acres. Approximately 2.698 acres of this wetland will be directly and indirectly impacted by the proposed northern haul road. The direct impacts to Wetland J total 0.352 acres for the construction of the haul road. At the request of OEPA, 2.346 acres of this wetland will be indirectly impacted by the proposed project due to the opening of the forest canopy as well as salt spray from the new bridge. Mitigation for wetland impacts will consist of 0.352 acre of restoration of Wetland J, as well as 2.56 acres of wetland preservation of Wetland J. To further meet the proposed mitigation requirements, an additional 9 acres of upland buffer preservation is being proposed for the remaining portions of the Sidley property.

Stream mitigation will be provided at a 2:1 impact to mitigation ratio. For impacts to 271 linear feet of the Grand River, 542 linear feet of mitigation will be required. This mitigation will compensate for the lost functions and values at the project site. Approximately 925 linear feet of the Grand River is located along the Sidley Property. As mitigation for stream impacts, LCEO will preserve 542 linear feet of the Grand River and riparian buffers along the river to meet stream mitigation requirements.

Indirect impacts to wetlands within the study area as a result of salt spray from the new bridge will be mitigated in the following way: LCEO will commit to not using salt to treat the bridge for snow and ice. LCEO will utilize a combination of brine and beet juice to treat the bridge surface. This will eliminate the potential for indirect impacts to wetlands associated with the direct use of salt on the bridge.

LCEO will coordinate with the Lake Metroparks to establish a conservation easement for areas identified for stream and wetland mitigation for the proposed project. As a required commitment in the FONSI, the Sidley Property will be owned by Lake Metroparks and will include all necessary and appropriate conservation easements (USDA Wetland Reserve Program Easement and Great Lakes Coastal Restoration Grant Deed Restriction). In addition, wetland and stream mitigation conservation easements will be developed as part of these documents. The proposed restoration plan is included in Appendix H.

Although not specifically proposed for stream mitigation purposes, scenic river mitigation associated with the removal of the existing center pier will also result in net environmental benefits to the Grand River at the project site.

**Minimal Degradation Alternative:** For the minimal degradation alternative, mitigation for direct impacts to wetlands total 0.51 acres. Based upon the table provided in OAC-3745-1-54, impacts to 0.51 acres of Category 3, forested wetlands will require a total of 1.28 acres of mitigation at a 2.5:1 impact to mitigation ratio. When using a combination of mitigation methods (i.e. creation, enhancement, and/or preservation), a 1:1 mitigation ratio must be met and then additional preservation can be added. With this methodology, 0.51 acres of wetland restoration and 1.53 acres of wetland preservation would be necessary for the project.

For the minimal degradation alternative, LCEO proposes to provide on-site mitigation for wetland and stream impacts on the Sidley property. This property consists of 14.92 acres. A total of 1.70 acres of this parcel will be utilized for the NOAA mitigation. The remaining 13.22 acres of this site will be utilized for mitigation for the stream and wetland impacts. Wetland impacts will be mitigated as follows: Wetland J is located entirely within this parcel and totals 2.91 acres. Wetland J will not be impacted as a result of the minimal degradation alternative. Therefore, 2.91 acres of Wetland J will be preserved on-site. In order to meet the 1:1 replacement requirement, LCEO proposes to preserve an additional 9 acres of upland buffer for the remaining portions of the Sidley property

Stream mitigation will be provided at a 2:1 impact to mitigation ratio. For impacts to 344 linear feet of the Grand River, 688 linear feet of mitigation will be required. This mitigation will compensate for the lost functions and values at the project site. Approximately 925 linear feet of the Grand River is located along the Sidley Property. As mitigation for stream impacts, LCEO will preserve 688 linear feet of the Grand River and riparian buffers along the river to meet stream mitigation requirements.

As with the preferred design, indirect impacts to wetlands within the study area as a result of salt spray from the new bridge will be mitigated in the following way: LCEO will commit to not using salt to treat the bridge for snow and ice. LCEO will utilize a combination of brine and beet juice to treat the bridge surface. This will eliminate the potential for indirect impacts to wetlands associated with the direct use of salt on the bridge.

LCEO will coordinate with the Lake County Metroparks to establish a conservation easement for all areas identified as mitigation for the proposed project.

Although not specifically proposed for stream mitigation purposes, scenic river mitigation associated with the removal of the existing center pier will also result in net environmental benefits to the Grand River at the project site.

**APPENDIX A**  
**SUPPLEMENTAL DATA TABLES**

**Table 1 - Streams Affected by the Proposed Project**

Site/Feature	USGS Coordinates	Description and Length Impacted	Drainage Basin	Total Length	Receiving Stream	Distance to Receiving Stream	Drainage Area/Area at impact Site	QHEI/HHEI Score/ OEPA Use Designation	Riparian Corridor and Adjacent Habitats
Grand River	41.7259 N -81.1841 W	Temporary Impacts: 90 LF	Grand River	1,660	Lake Erie	~14 miles	287 Sq. Miles	76, EWH	Successional Forest
Borden's Ditch	41.7279 N -81.1810 W	Temporary Impacts: 22 LF Permanent Impacts: 60 LF	Grand River	1,032	Grand River	Adjacent	<0.50 Sq. Miles	63, Class I	Successional Forest
Stream 3	41.7141 N -81.1767 W	Permanent Impacts: 99 LF	Grand River	271	Grand River	Adjacent	<0.50 Sq. Miles	27, Class 1	Residential

**Table 2 - Wetlands Affected by the Proposed Project**

Feature	USGS Coordinates	Drainage Basin	Wetland Description	ORAM v. 5.0 Score	OEPA Category	Total Size	Adjacent Habitat	Proximity to Other Surface Waters
Wetland M	41.7246 N -81.1807 W	Grand River	Forested	62	Category 3	1.25	Successional Forest	Adjacent
Wetland I	41.7256 N -81.1806 W	Grand River	Forested	62	Category 3	3.54	Successional Forest	Adjacent
Wetland K	41.7274 N -81.1805 W	Grand River	Forested	79	Category 3	1.32	Successional Forest	Adjacent
Wetland J	41.7275 N -81.1829 W	Grand River	Forested	63	Category 3	2.91	Successional Forest	Adjacent

**Table 3 - Nature of Activities by Impacted Feature for the Preferred Alternative**

<b>A. STREAMS</b>										
Site/Feature	Approx. Station Location	Proposed Structure or Action	Existing Channel Disturbed Due to Placement of Proposed Structure, Highway Fill, Channel Change or Channel Protection					Existing Channel Disturbed Due to Temporary Crossing		
			Length of Channel Disturbed	Excavation Below OHW		Fill Below OHW		Length of Channel Disturbed	Excavation/Fill Below OHW	
				Volume	Area	Volume	Area		Volume	Area
Grand River	102+00	Temporary causeway for the Removal of existing bridge pier						90 LF	1,389 Cu. Yds, clean non-erodible fill	0.086 ac.
Borden's Ditch	11+50	North Haul Road Culvert						22 LF	32 Cu. Yds, clean, non-erodible fill	0.01 ac.
	25+15	Adams Road Culvert	60 LF			84 Cu. Yds, Type A Pipe, Rock channel protection	0.026 ac.			
Stream 3	51+72.94	Culvert replacement/extension	17 LF			1.9 Cu. Yds, Rock Channel Protection, Type C with filter	0.001 ac.			
Stream 3	63+73.00	Culvert replacement/extension with concrete headwalls and rock channel protection	36 LF			3.9 Cu. Yds, Rock channel protection, Type C with filter	0.002 ac.			
Stream 3	66+61.56	Culvert replacement / extension with headwalls and rock channel protection	46 LF			6.2 Cu. Yds, Rock channel protection, type C with filter	0.002 ac			
<b>Total Permanent Stream Impacts:</b>			<b>159 LF 0.03 ac.</b>			<b>Total Temporary Stream Impacts:</b>			<b>112 LF 0.096 ac.</b>	

<b>B. WETLANDS</b>								
Feature	Location	Description	Total Area Impacted	Proposed Action	Direct Impacts			Indirect Impact Area
					Volume Excavated	Volume Filled	Area Excavated and/or Filled	
Wetland M	41.7246 N -81.1807 W	Forested	1.042 ac.	Haul Road Construction, Pier construction, and Seeley Road Construction		1,013 Cu. Yds, clean non-erodible fill, concrete	0.315 ac.	0.727 ac.
Wetland I	41.7256 N -81.1806 W	Forested	0.859 ac.	Construction of Haul Road and 2 bridge piers		630 Cu. Yds, clean non-erodible fill, concrete	0.178 ac.	0.681 ac.
Wetland K	41.7274 N -81.1805 W	Forested	0.480 ac.	Haul Road construction		56 Cu. Yds., clean non-erodible fill	0.017 ac.	0.463 ac.
Wetland J	41.7275 N -81.1829 W	Forested	2.698 ac.	North Haul Road Construction		1,135 Cu. Yds., clean non-erodible fill	0.352 ac.	2.346 ac.
<b>Total Wetland Impacts</b>			<b>5.079 acres</b>	<b>Total Direct Impacts</b>		<b>0.862 acres</b>	<b>Total Indirect Impacts</b>	<b>4.217 acres</b>

<b>C. WETLAND IMPACTS BY IMPACT TYPE</b>				
Feature	Permanent Impacts (Acres)	Temporary Impacts (Acres)	Indirect Impacts (Acres)	Total (Acres)
Wetland M	0.136	0.179	0.727	1.042
Wetland I	0.088	0.090	0.681	0.859
Wetland K	0.00	0.017	0.463	0.480
Wetland J	0.00	0.352	2.346	2.698
<b>TOTAL IMPACTS</b>	<b>0.224</b>	<b>0.638</b>	<b>4.217</b>	<b>5.079</b>

**Table 4 - Nature of Activities by Impacted Feature for the Minimal Degradation Alternative**

<b>A. STREAMS</b>										
Site/Feature	Approx. Station Location	Proposed Structure or Action	Existing Channel Disturbed Due to Placement of Proposed Structure, Highway Fill, Channel Change or Channel Protection					Existing Channel Disturbed Due to Temporary Crossing		
			Length of Channel Disturbed	Excavation Below OHW		Fill Below OHW		Length of Channel Disturbed	Excavation/Fill Below OHW	
				Volume	Area	Volume	Area		Volume	Area
Grand River	102+00	Temporary causeway for the Removal of existing bridge pier						90 LF	1,389 Cu. Yds, clean non-erodible fill	0.086 ac.
Grand River	Begin 98+75 +/- End 101+25+/-	Temporary causeway for bridge construction						95 LF	4,545 Cu. Yds, clean non-erodible fill	0.55 ac.
Borden's Ditch	25+15	Adams Road Culvert	60 LF			84 Cu. Yds, Type A Pipe, Rock channel protection	0.026 ac.			
Stream 3	51+72.94	Culvert replacement/extension	17 LF			1.9 Cu. Yds, Rock Channel Protection, Type C with filter	0.001 ac.			
Stream 3	63+73.00	Culvert replacement/extension with concrete headwalls and rock channel protection	36 LF			3.9 Cu. Yds, Rock channel protection, Type C with filter	0.002 ac.			
Stream 3	66+61.56	Culvert replacement / extension with headwalls and rock channel protection	46 LF			6.2 Cu. Yds, Rock channel protection, type C with filter	0.002 ac			
<b>Total Permanent Stream Impacts:</b>			<b>159 LF 0.03 ac.</b>			<b>Total Temporary Stream Impacts:</b>			<b>185 LF 0.636 ac.</b>	

**Table 4 - Nature of Activities by Impacted Feature for the Minimal Degradation Alternative**

<b>B. WETLANDS</b>								
Feature	Location	Description	Total Area Impacted	Proposed Action	Direct Impacts			Indirect Impact Area
					Volume Excavated	Volume Filled	Area Excavated and/or Filled	
Wetland M	41.7246 N -81.1807 W	Forested	1.042 ac.	Haul Road Construction, Pier construction, and Seeley Road Construction		1,013 Cu. Yds, clean non-erodible fill, concrete	0.315 ac.	0.727 ac.
Wetland I	41.7256 N -81.1806 W	Forested	0.859 ac.	Construction of Haul Road and 2 bridge piers		630 Cu. Yds, clean non-erodible fill, concrete	0.178 ac.	0.681 ac.
Wetland K	41.7274 N -81.1805 W	Forested	0.480 ac.	Haul Road construction		56 Cu. Yds., clean non-erodible fill	0.017 ac.	0.463 ac.
<b>Total Wetland Impacts</b>			<b>2.381 acres</b>	<b>Total Direct Impacts</b>		<b>0.51 acres</b>	<b>Total Indirect Impacts</b>	<b>1.871 acres</b>

<b>C. WETLAND IMPACTS BY IMPACT TYPE</b>				
Feature	Permanent Impacts (Acres)	Temporary Impacts (Acres)	Indirect Impacts (Acres)	Total (Acres)
Wetland M	0.136	0.179	0.727	1.042
Wetland I	0.088	0.090	0.681	0.859
Wetland K	0.00	0.017	0.463	0.480
<b>TOTAL IMPACTS</b>	<b>0.224</b>	<b>0.286</b>	<b>1.871</b>	<b>2.381</b>

**Table 5 – Proposed Lowering of Water Quality by the Preferred and Antidegradation Alternatives**

Alternative	Expected Impacts by Alternative								Summary for Alternative
	Permanent Stream Impacts	Temporary Stream Impacts	Aquatic Habitat/Use Designation	Aquatic Biota	T & E Species	Permanent Wetland Impacts	Temporary Wetland Impacts	Indirect Wetland Impacts	
Preferred	159 LF	112 LF	90LF EWH 181 LF Class I	No Impacts	No Impacts	0.224	0.638	4.217	271 LF Stream 5.079 ac. Wetland
Minimal Degradation	159 LF	185 LF	185 LF EWH 159 LF Class I	No Impacts	Potential impact to mussel beds (Snuffbox)	0.224	0.286	1.871	344 LF Stream 2.381 ac. wetland
Non-degradation	0 LF	0 LF	No Impacts	No impacts	No impacts	No impacts	No Impacts	No Impacts	No Impacts

**Table 6 – Proposed Stream Mitigation for the Preferred Design and Minimal Degradation Alternative**

Stream Name	Impacted Length	Watershed (8-digit HUC)		QHEI Score, Ohio EPA Use Designation	HHEI Score	Mitigation Ratio	Mitigated Length		Mitigation Type
		Impacted	Mitigated				Onsite	Off-site	
<b>PREFERRED DESIGN</b>									
Grand River	90	04110004	04110004	76, EWH	n/a	2:1	180	0	Preservation
Borden's Ditch	82	04110004	04110004	n/a	63, Class I	2:1	164	0	Preservation
Stream 3	99	04110004	04110004	n/a	27, Class I	2:1	198	0	Preservation
<b>MINIMAL DEGRADATION ALTERNATIVE</b>									
Grand River	185	04110004	04110004	76, EWH	n/a	2:1	370	0	Preservation
Borden's Ditch	60	04110004	04110004	n/a	63, Class I	2:1	120	0	Preservation
Stream 3	99	04110004	04110004	n/a	27, Class I	2:1	198	0	Preservation

**Table 7 – Proposed Wetland Mitigation for the Preferred Design and Minimal Degradation Alternative**

Wetland Name	Impacted Area (Temporary and Permanent Impacts)*	Type of Wetland (Isolated/ Non-isolated)	Watershed (8-digit HUC) Impacted/ Mitigated	ORAM v5.0 Score (OEPA Category)	Mitigation Ratio (Restoration)	Mitigation Type (Restoration)	Mitigation Ratio (Preservation)	Mitigated Area (On-Site)	Proposed Mitigation Type
<b>PREFERRED DESIGN</b>									
Wetland M	0.315	Non-isolated	04110004	62/3			3:1	0.945	Preservation of Wetland J
Wetland I	0.178	Non-isolated	04110004	62/3			3:1	0.534	Preservation of Wetland J
Wetland K	0.017	Non-isolated	04110004	79/3			3:1	0.051	Preservation of Upland Buffer
Wetland J	0.352	Non-Isolated	04110004	63/3	2.5:1	0.352	3:1	1.056	Restoration and Preservation of Wetland J
<b>MINIMAL DEGRADATION ALTERNATIVE</b>									
Wetland M	0.315	Non-isolated	04110004	62/3			3:1	0.945	Preservation of Wetland J
Wetland I	0.178	Non-isolated	04110004	62/3			3:1	0.534	Preservation of Wetland J
Wetland K	0.017	Non-isolated	04110004	79/3			3:1	0.051	Preservation of Wetland J

\* Mitigation for Indirect Impacts will include the use of brine and beet juice for snow and ice treatment on the bridge, eliminating the use of salt on the bridge.

**APPENDIX B**

**GENERAL MAPS AND DESIGN DRAWINGS**

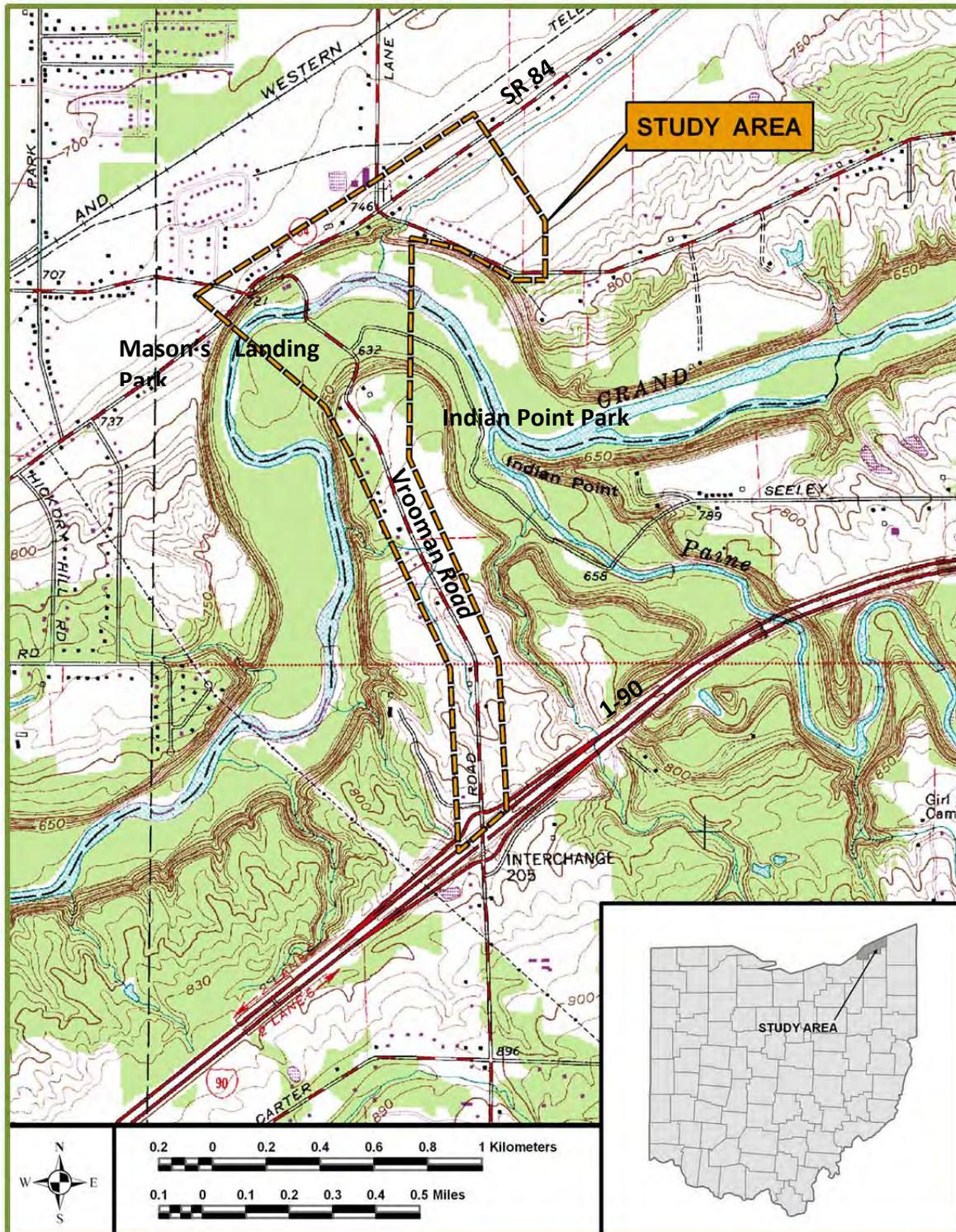
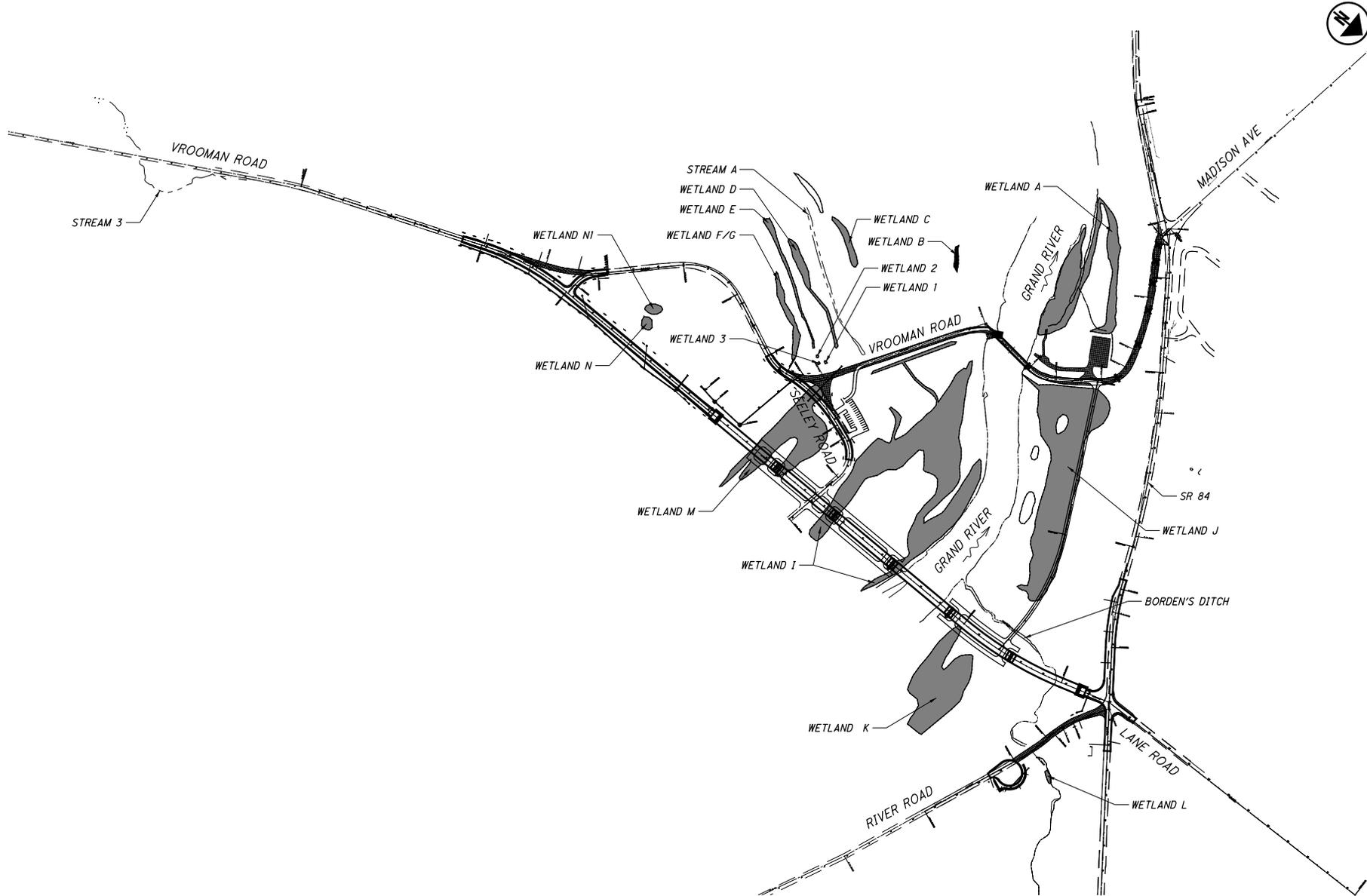


Figure 1 –USGS Topographic Map - 1960 (photo revised 1985) Painesville, Ohio quadrangle



**HYDRAULIC DATA**

DRAINAGE AREA: 626 SQ. MILES  
 STORAGE AREA: 15.60%  
 Q5: 8,331 CFS  
 Q100: 12,986 CFS

	EXIST.	PROP.
HW 5-YR ELEV AT BRIDGE	640.65	640.65
VEL 5-YR AT BRIDGE (FT/SEC)	3.21	3.15
HW 100-YR ELEV AT BRIDGE	641.86	641.90
VEL 100-YR AT BRIDGE (FT/SEC)	3.33	3.98

DESIGN AGENCY: **Baker**  
 1000 WEST 10TH AVENUE  
 DENVER, CO 80202

DATE: 08/2013  
 REVISIONS:  
 JMB 08/2013  
 STRUCTURE FILE NUMBER

DRAWN: MRC  
 CHECKED: LPC  
 DESIGNED: MRA

LAKE COUNTY  
 STA. 101+25.75  
 STA. 103+06.25

PROJECT: VROOMAN ROAD BRIDGE REPLACEMENT PROJECT

LAK-VROOMAN RD.  
 PID No. 5669

DWG NO.: MD-WET



**BENCHMARK DATA**

BM #1 STA. 80+83.88, ELEV. 713.06, OFFSET 31.88 LT  
 BM #2 STA. 81+81.59, ELEV. 714.89, OFFSET 7.08 RT  
 BM #3 STA. 64+00.32, ELEV. 746.68, OFFSET 19.69 RT  
 BM #4 STA. 79+56.83, ELEV. 743.08, OFFSET 19.63 RT

FOR ADDITIONAL BENCHMARK INFORMATION, SEE ROADWAY PLAN SHEET 9300A

**NOTES**

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.  
 SEE ABUTMENT GRADING PLANS SHEETS 24/100 AND 30/100.

**DESIGN TRAFFIC:**

2015 ADT = 6100      2015 ADTT = 367  
 2035 ADT = 6850      2035 ADTT = 411  
 DIRECTIONAL DISTRIBUTION = 58%

SEE SHEET 9/100 FOR INDEX OF SHEETS

**LEGEND**

- BORING LOCATION
- HAUL ROAD

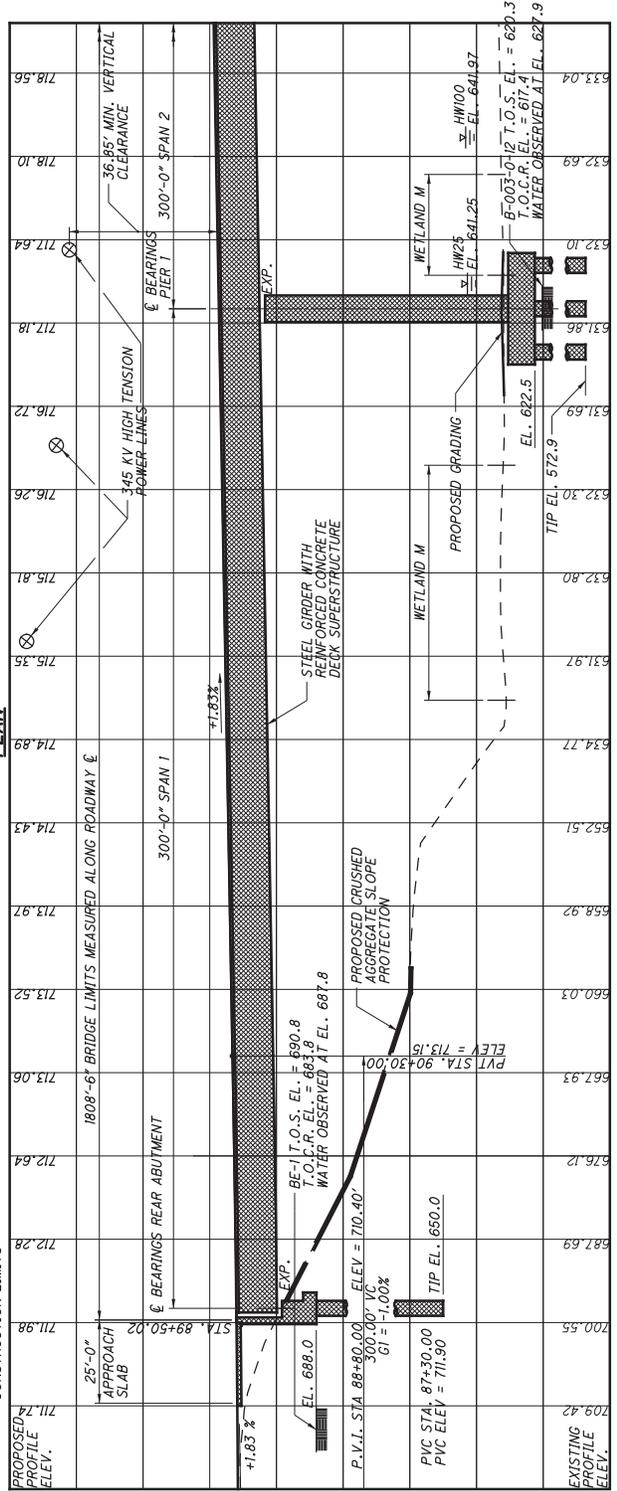
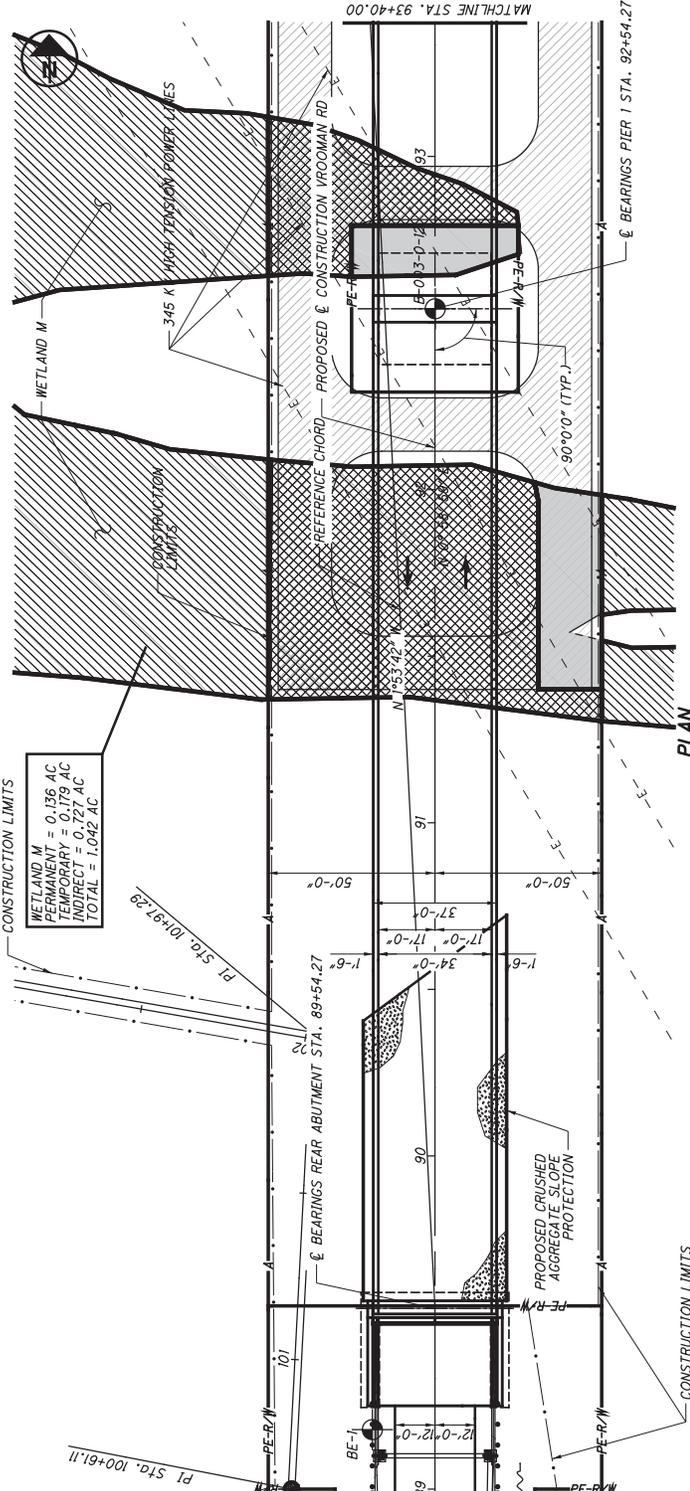
T.O.S. EL. = TOP OF SHALE ELEVATION  
 T.O.C.R. EL. = TOP OF COMPETENT ROCK ELEVATION

**HYDRAULIC DATA**

DRAINAGE AREA = 626 SQ. MILES  
 Q (25) = 11,88 CFS      V (25) = 0.90 FT/S  
 Q (100) = 13,489 CFS      V (100) = 1.01 FT/S  
 STRUCTURE CLEARS THE 100 YEAR DESIGN HW BY 56' FEET.

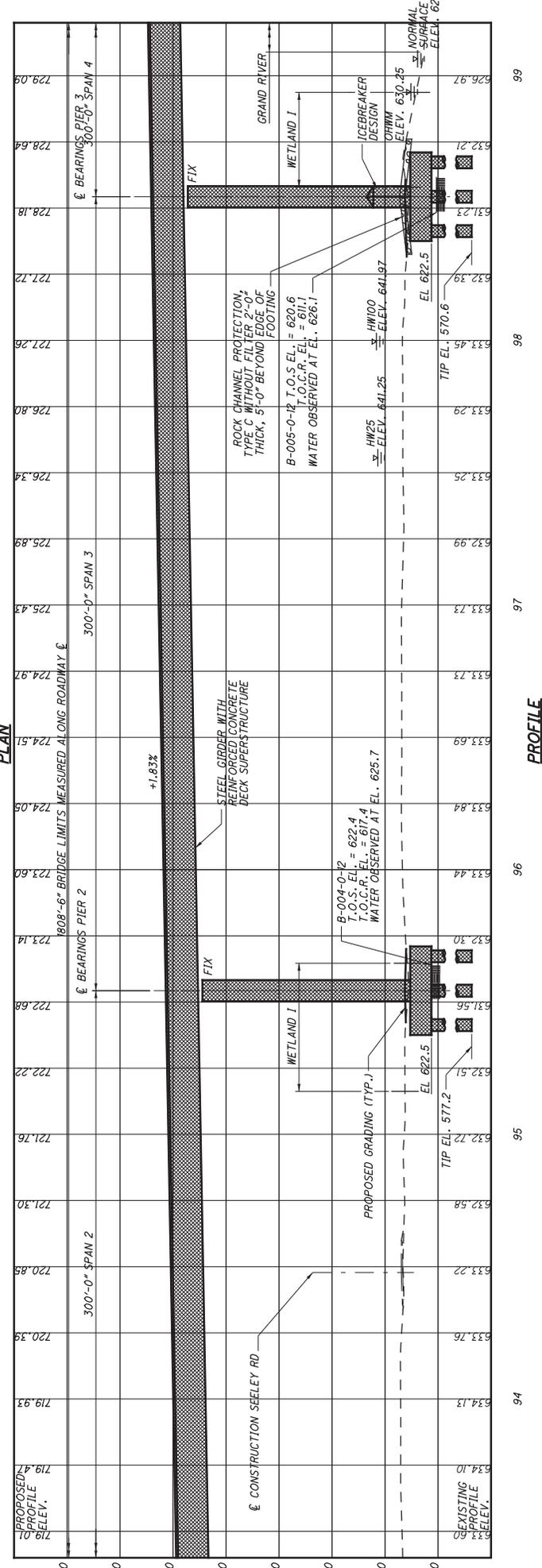
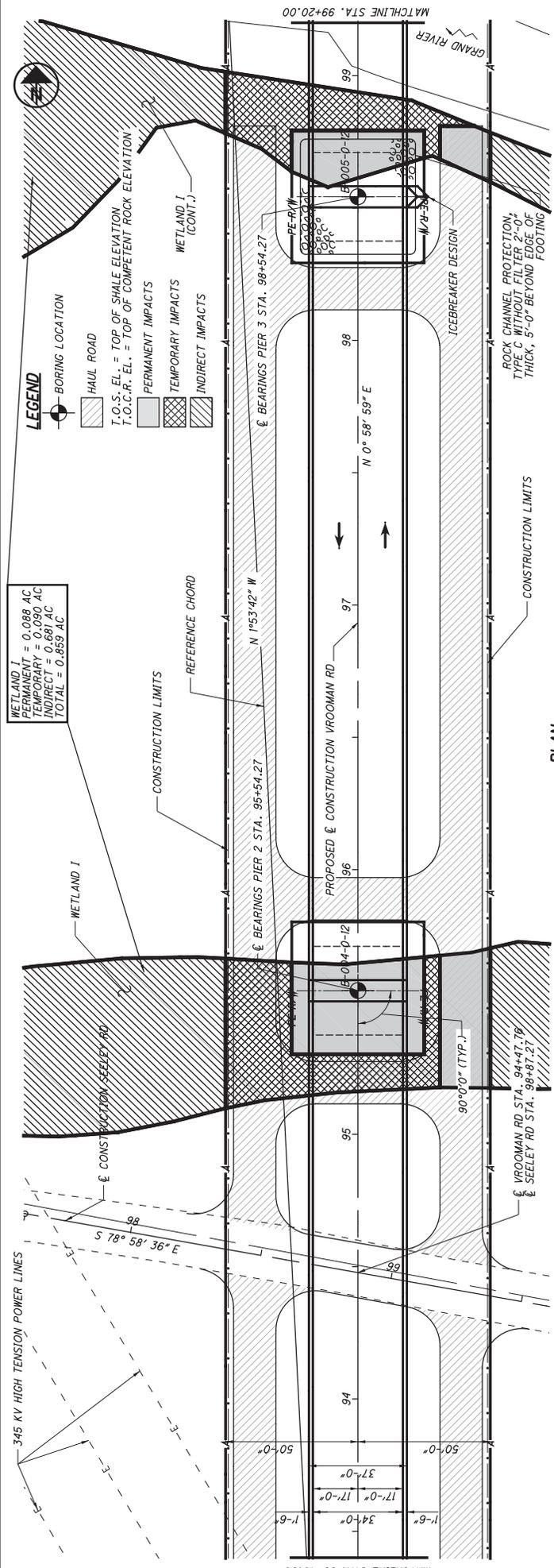
**LEGEND**

- PERMANENT IMPACTS
- TEMPORARY IMPACTS
- INDIRECT IMPACTS



**PROPOSED STRUCTURE**

TYPE: SIX CONTINUOUS SPANS, STEEL GIRDER AND COMPOSITE REINFORCED CONCRETE DECK, FOUNDED ON REINFORCED CONCRETE PIERS AND REINFORCED CONCRETE STUB ABUTMENTS  
 SPANS: 300'-0", 300'-0", 300'-0", 300'-0", 300'-0" MSD. ON  $\nabla$   
 ROADWAY: 34'-0" TOE/TOE PARAPET  
 LOADING: HL-93 AND FUTURE WEARING SURFACE  
 SKEW: NONE  
 APPROACH SLABS: 25'-0" LONG (AS-I-BI)  
 ALIGNMENT: TANGENT AND HORIZONTAL CURVE  
 CROWN: 0.016 FT/FT  
 COORDINATES: LATITUDE 41°43'33"  
 LONGITUDE 81°11'03"



**LEGEND**

- BORING LOCATION
- HAUL ROAD
- T.O.S. EL. = TOP OF SHALE ELEVATION
- T.O.C.R. EL. = TOP OF COMPETENT ROCK ELEVATION
- PERMANENT IMPACTS
- TEMPORARY IMPACTS
- INDIRECT IMPACTS

CONSTRUCTION LIMITS

GRAND RIVER

REFERENCE CHORD

ROCK CHANNEL PROTECTION, TYPE C, WITHOUT FILTER 2'-0" THICK, 5'-0" BEYOND EDGE OF FOOTING

N 0° 58' 59" E

PROPOSED CONSTRUCTION VROOMAN RD

ICEBREAKER DESIGN

WETLAND K

CONSTRUCTION LIMITS

PC STA. 102+27.13

PE-R/W

BEARINGS PIER 4 STA. 101+54.27

BEARINGS PIER 5 STA. 104+54.27

BEARINGS PIER 6 STA. 107+54.27

BEARINGS PIER 7 STA. 110+54.27

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BEARINGS PIER 194 STA. 671+54.27

BEARINGS PIER 195 STA. 674+54.27

BEARINGS PIER 196 STA. 677+54.27

BEARINGS PIER 197 STA. 680+54.27

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BEARINGS PIER 219 STA. 746+54.27

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BEARINGS PIER 231 STA. 782+54.27

BEARINGS PIER 232 STA. 785+54.27

BEARINGS PIER 233 STA. 788+54.27

BEARINGS PIER 234 STA. 791+54.27

BEARINGS PIER 235 STA. 794+54.27

BEARINGS PIER 236 STA. 797+54.27

BEARINGS PIER 237 STA. 800+54.27

BEARINGS PIER 238 STA. 803+54.27

BEARINGS PIER 239 STA. 806+54.27

BEARINGS PIER 240 STA. 809+54.27

BEARINGS PIER 241 STA. 812+54.27

BEARINGS PIER 242 STA. 815+54.27

BEARINGS PIER 243 STA. 818+54.27

BEARINGS PIER 244 STA. 821+54.27

BEARINGS PIER 245 STA. 824+54.27

BEARINGS PIER 246 STA. 827+54.27

BEARINGS PIER 247 STA. 830+54.27

BEARINGS PIER 248 STA. 833+54.27

BEARINGS PIER 249 STA. 836+54.27

BEARINGS PIER 250 STA. 839+54.27

BEARINGS PIER 251 STA. 842+54.27

BEARINGS PIER 252 STA. 845+54.27

BEARINGS PIER 253 STA. 848+54.27

BEARINGS PIER 254 STA. 851+54.27

BEARINGS PIER 255 STA. 854+54.27

BEARINGS PIER 256 STA. 857+54.27

BEARINGS PIER 257 STA. 860+54.27

BEARINGS PIER 258 STA. 863+54.27

BEARINGS PIER 259 STA. 866+54.27

BEARINGS PIER 260 STA. 869+54.27

BEARINGS PIER 261 STA. 872+54.27

BEARINGS PIER 262 STA. 875+54.27

BEARINGS PIER 263 STA. 878+54.27

BEARINGS PIER 264 STA. 881+54.27

BEARINGS PIER 265 STA. 884+54.27

BEARINGS PIER 266 STA. 887+54.27

BEARINGS PIER 267 STA. 890+54.27

BEARINGS PIER 268 STA. 893+54.27

BEARINGS PIER 269 STA. 896+54.27

BEARINGS PIER 270 STA. 899+54.27

BEARINGS PIER 271 STA. 902+54.27

BEARINGS PIER 272 STA. 905+54.27

BEARINGS PIER 273 STA. 908+54.27

BEARINGS PIER 274 STA. 911+54.27

BEARINGS PIER 275 STA. 914+54.27

BEARINGS PIER 276 STA. 917+54.27

BEARINGS PIER 277 STA. 920+54.27

BEARINGS PIER 278 STA. 923+54.27

BEARINGS PIER 279 STA. 926+54.27

BEARINGS PIER 280 STA. 929+54.27

BEARINGS PIER 281 STA. 932+54.27

BEARINGS PIER 282 STA. 935+54.27

BEARINGS PIER 283 STA. 938+54.27

BEARINGS PIER 284 STA. 941+54.27

BEARINGS PIER 285 STA. 944+54.27

BEARINGS PIER 286 STA. 947+54.27

BEARINGS PIER 287 STA. 950+54.27

BEARINGS PIER 288 STA. 953+54.27

BEARINGS PIER 289 STA. 956+54.27

BEARINGS PIER 290 STA. 959+54.27

BEARINGS PIER 291 STA. 962+54.27

BEARINGS PIER 292 STA. 965+54.27

BEARINGS PIER 293 STA. 968+54.27

BEARINGS PIER 294 STA. 971+54.27

BEARINGS PIER 295 STA. 974+54.27

BEARINGS PIER 296 STA. 977+54.27

BEARINGS PIER 297 STA. 980+54.27

BEARINGS PIER 298 STA. 983+54.27

BEARINGS PIER 299 STA. 986+54.27

BEARINGS PIER 300 STA. 989+54.27

WETLAND K  
 PERMANENT = 0.0 AC  
 TEMPORARY = 0.017 AC  
 INDIRECT = 0.463 AC  
 TOTAL = 0.480 AC

VROOMAN CURVE 2  
 PI STA. 104+55.76  
 $\Delta = 17^\circ 19' 58''$  (L 17)  
 $D_c = 3^\circ 49' 11''$   
 $R = 1500.00'$   
 $T = 228.63'$   
 $L = 453.77'$   
 $E = 17.32'$

ICEBREAKER DESIGN  
 90° 0' 0" (TYP.)

1808'-6" BRIDGE LIMITS MEASURED ALONG ROADWAY

±1.83%

STEEL GIRDER WITH REINFORCED CONCRETE DECK SUPERSTRUCTURE

ICEBREAKER DESIGN

ROCK CHANNEL PROTECTION, TYPE C WITHOUT FILTER 2'-0" THICK, 5'-0" BEYOND EDGE OF FOOTING

WETLAND K

B-006-0-12  
 T.O.S. EL. = 621.8  
 T.O.C.R. EL. = 618.3  
 WATER OBSERVED AT EL. 624.3

HW25  
 ELEV. 641.25

HW00  
 ELEV. 641.97

OHMM  
 ELEV. 630.25

NORMAL SURFACE  
 ELEV. 627.72

EL. 623.5

TIP EL. 577.8

EL. 628.0

TIP EL. 571.5

EL. 624.5

T.O.C.R. EL. = 623.0

WATER NOT OBSERVED

EL. 628.0

DESIGN AGENCY: Baker

DATE: 5-13-13

REVIEWED: JWB

DESIGNED: MKB

CHECKED: LFC

LAKE COUNTY STA. 107+58.52

LAKE COUNTY STA. 107+58.52

LAKE COUNTY STA. 104+00.00

NORTHERN HAUL RD STA. 12+55.94

HAUL ROAD OVER BORDEN'S DITCH TEMPORARY STREAM IMPACT 22 LF

BORDEN'S DITCH CONSTRUCTION LIMITS

NORTHERN HAUL ROAD

92° 26' 59" W

PC STA. 102+27.13

PE-R/W

BEARINGS PIER 5 STA. 104+54.27

BEARINGS PIER 6 STA. 107+54.27

BEARINGS PIER 7 STA. 110+54.27

BEARINGS PIER 8 STA. 113+54.27

BEARINGS PIER 9 STA. 116+54.27

BEARINGS PIER 10 STA. 119+54.27

BEARINGS PIER 11 STA. 122+54.27

BEARINGS PIER 12 STA. 125+54.27

BEARINGS PIER 13 STA. 128+54.27

BEARINGS PIER 14 STA. 131+54.27

BEARINGS PIER 15 STA. 134+54.27

BEARINGS PIER 16 STA. 137+54.27

BEARINGS PIER 17 STA. 140+54.27

BEARINGS PIER 18 STA. 143+54.27

BEARINGS PIER 19 STA. 146+54.27

BEARINGS PIER 20 STA. 149+54.27

BEARINGS PIER 21 STA. 152+54.27

BEARINGS PIER 22 STA. 155+54.27

BEARINGS PIER 23 STA. 158+54.27

BEARINGS PIER 24 STA. 161+54.27

BEARINGS PIER 25 STA. 164+54.27

BEARINGS PIER 26 STA. 167+54.27

BEARINGS PIER 27 STA. 170+54.27

BEARINGS PIER 28 STA. 173+54.27

BEARINGS PIER 29 STA. 176+54.27

BEARINGS PIER 30 STA. 179+54.27

BEARINGS PIER 31 STA. 182+54.27

BEARINGS PIER 32 STA. 185+54.27

BEARINGS PIER 33 STA. 188+54.27

BEARINGS PIER 34 STA. 191+54.27

BEARINGS PIER 35 STA. 194+54.27

BEARINGS PIER 36 STA. 197+54.27

BEARINGS PIER 37 STA. 200+54.27

BEARINGS PIER 38 STA. 203+54.27

BEARINGS PIER 39 STA. 206+54.27

BEARINGS PIER 40 STA. 209+54.27

BEARINGS PIER 41 STA. 212+54.27

BEARINGS PIER 42 STA. 215+54.27

BEARINGS PIER 43 STA. 218+54.27

BEARINGS PIER 44 STA. 221+54.27

BEARINGS PIER 45 STA. 224+54.27

BEARINGS PIER 46 STA. 227+54.27

BEARINGS PIER 47 STA. 230+54.27

BEARINGS PIER 48 STA. 233+54.27

BEARINGS PIER 49 STA. 236+54.27

BEARINGS PIER 50 STA. 239+54.27

BEARINGS PIER 51 STA. 242+54.27

BEARINGS PIER 52 STA. 245+54.27

BEARINGS PIER 53 STA. 248+54.27

BEARINGS PIER 54 STA. 251+54.27

BEARINGS PIER 55 STA. 254+54.27

BEARINGS PIER 56 STA. 257+54.27

BEARINGS PIER 57 STA. 260+54.27

BEARINGS PIER 58 STA. 263+54.27

BEARINGS PIER 59 STA. 266+54.27

BEARINGS PIER 60 STA. 269+54.27

BEARINGS PIER 61 STA. 272+54.27

BEARINGS PIER 62 STA. 275+54.27

BEARINGS PIER 63 STA. 278+54.27

BEARINGS PIER 64 STA. 281+54.27

BEARINGS PIER 65 STA. 284+54.27

BEARINGS PIER 66 STA. 287+54.27

BEARINGS PIER 67 STA. 290+54.27

BEARINGS PIER 68 STA. 293+54.27

BEARINGS PIER 69 STA. 296+54.27

BEARINGS PIER 70 STA. 299+54.27

BEARINGS PIER 71 STA. 302+54.27

BEARINGS PIER 72 STA. 305+54.27

BEARINGS PIER 73 STA. 308+54.27

BEARINGS PIER 74 STA. 311+54.27

BEARINGS PIER 75 STA. 314+54.27

BEARINGS PIER 76 STA. 317+54.27

BEARINGS PIER 77 STA. 320+54.27

BEARINGS PIER 78 STA. 323+54.27

BEARINGS PIER 79 STA. 326+54.27

BEARINGS PIER 80 STA. 329+54.27

BEARINGS PIER 81 STA. 332+54.27

BEARINGS PIER 82 STA. 335+54.27

BEARINGS PIER 83 STA. 338+54.27

BEARINGS PIER 84 STA. 341+54.27

BEARINGS PIER 85 STA. 344+54.27

BEARINGS PIER 86 STA. 347+54.27

BEARINGS PIER 87 STA. 350+54.27

BEARINGS PIER 88 STA. 353+54.27

BEARINGS PIER 89 STA. 356+54.27

BEARINGS PIER 90 STA. 359+54.27

BEARINGS PIER 91 STA. 362+54.27

BEARINGS PIER 92 STA. 365+54.27

BEARINGS PIER 93 STA. 368+54.27

BEARINGS PIER 94 STA. 371+54.27

BEARINGS PIER 95 STA. 374+54.27

BEARINGS PIER 96 STA. 377+54.27

BEARINGS PIER 97 STA. 380+54.27

BEARINGS PIER 98 STA. 383+54.27

BEARINGS PIER 99 STA. 386+54.27

BEARINGS PIER 100 STA. 389+54.27

WETLAND K

PERMANENT = 0.0 AC

TEMPORARY = 0.017 AC

INDIRECT = 0.463 AC

TOTAL = 0.480 AC

VROOMAN CURVE 2

PI STA. 104+55.76

$\Delta = 17^\circ 19' 58''$  (L 17)

$D_c = 3^\circ 49' 11''$

$R = 1500.00'$

$T = 228.63'$

$L = 453.77'$

$E = 17.32'$

ICEBREAKER DESIGN

90° 0' 0" (TYP.)

1808'-6" BRIDGE LIMITS MEASURED ALONG ROADWAY

±1.83%

STEEL GIRDER WITH REINFORCED CONCRETE DECK SUPERSTRUCTURE</

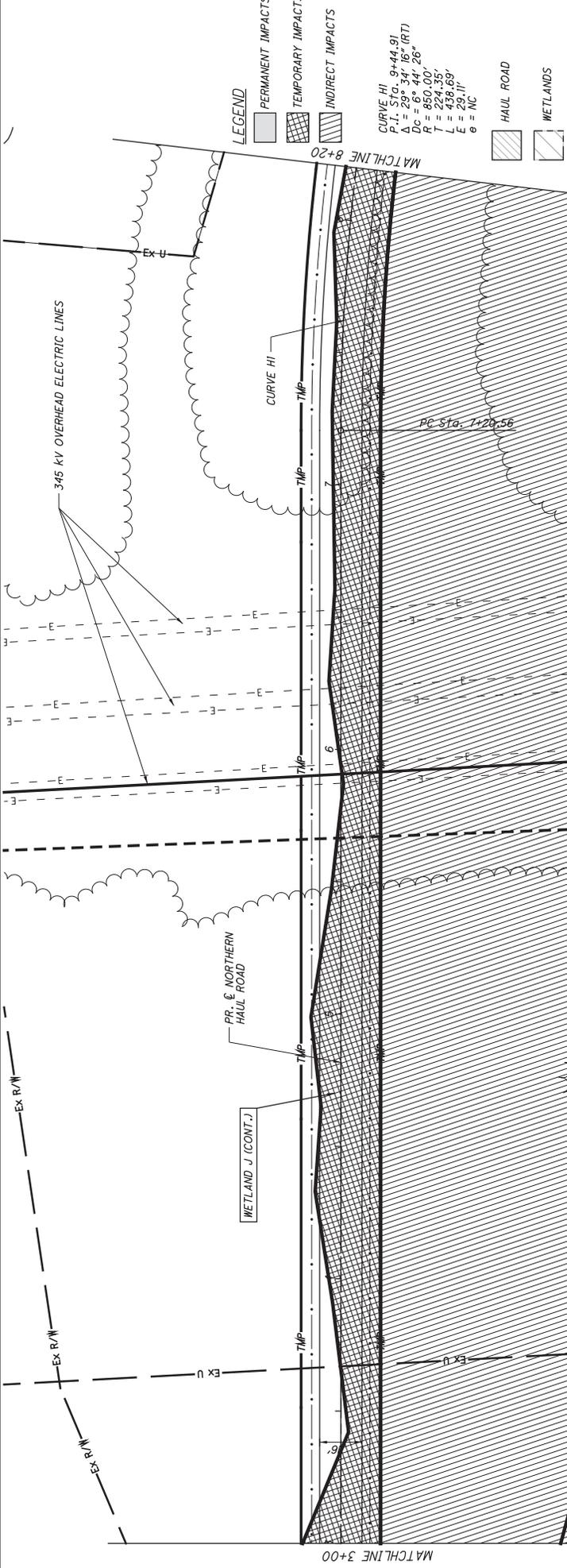




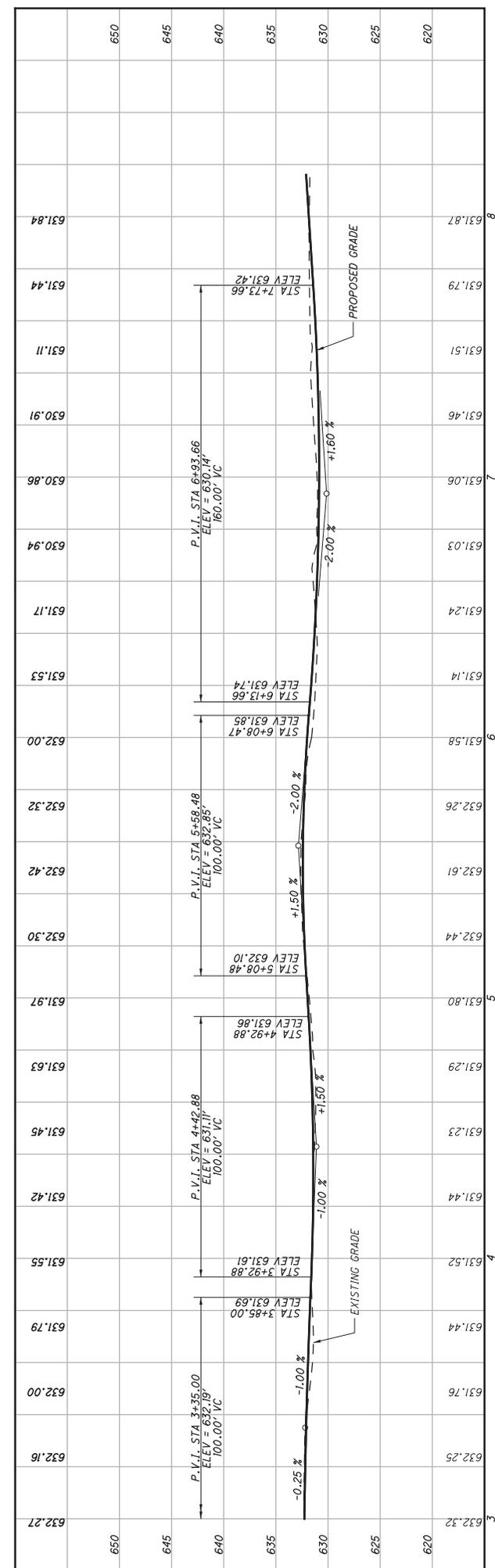


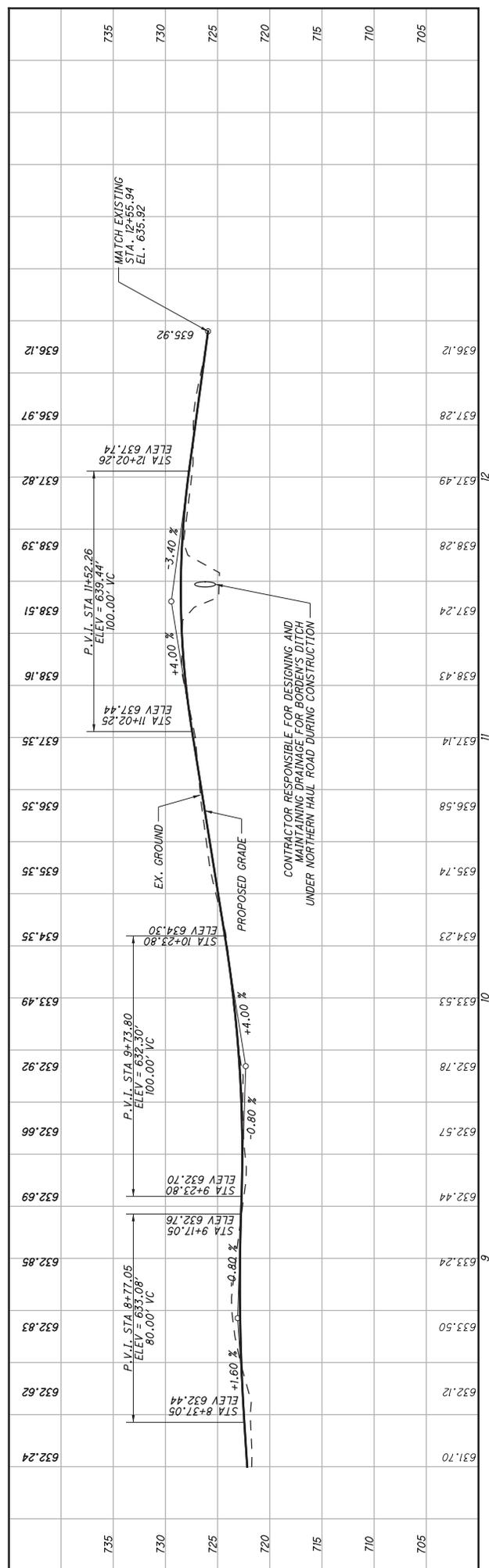
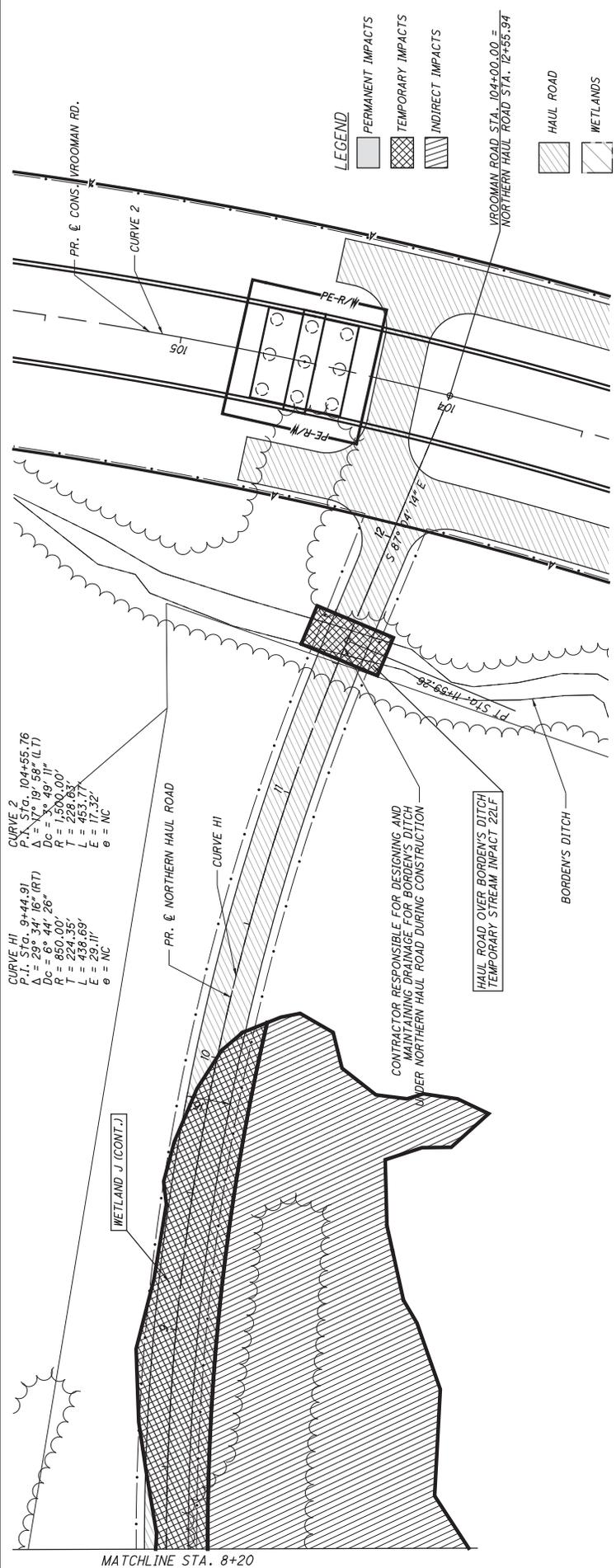
SM  
 CHECKED  
 SJP  
 CALCULATED

HORIZONTAL  
 SCALE IN FEET  
 0 10 20 40



SEE SHEMP-6080R TYPICAL SECTION.





**BENCHMARK DATA**

BM #1 IRON PIN SET STA. 101+05.34, 35.22' RT., EL. 637.24  
 BM #2 IRON PIN SET STA. 103+19.29, 14.66' RT., EL. 636.67

FOR ADDITIONAL BENCHMARK INFORMATION, SEE ROADWAY PLAN SHEET

**NOTES**

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.  
 LIMITS SHOWN FOR TEMPORARY CAUSEWAY ARE APPROXIMATE. ACTUAL LIMITS TO BE DETERMINED BY CONTRACTOR.  
 TEMPORARY CAUSEWAY CONSTRUCTION SHALL COMPLY WITH THE ENVIRONMENTAL COMMITMENT LISTED IN THE GENERAL NOTES.

**LEGEND**

☒ - PAVEMENT REMOVAL

**HYDRAULIC DATA**

DRAINAGE AREA = 626 SQ. MILES  
 Q (15) = 8,331 CFS V (15) = 3.16 FT/S  
 Q (100) = 12,986 CFS V (100) = 3.98 FT/S  
 DESIGN YEAR FLOOD OVERTOPS BRIDGE.  
 APPROACHES TO BRIDGE FLOOD 2 TO 3 TIMES ANNUALLY

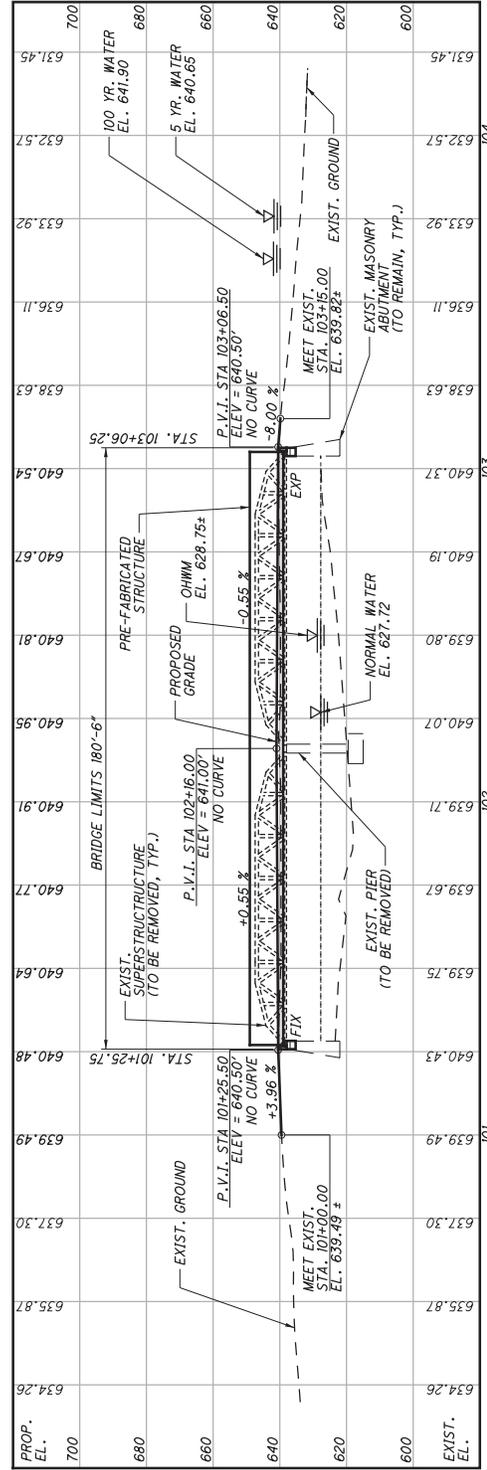
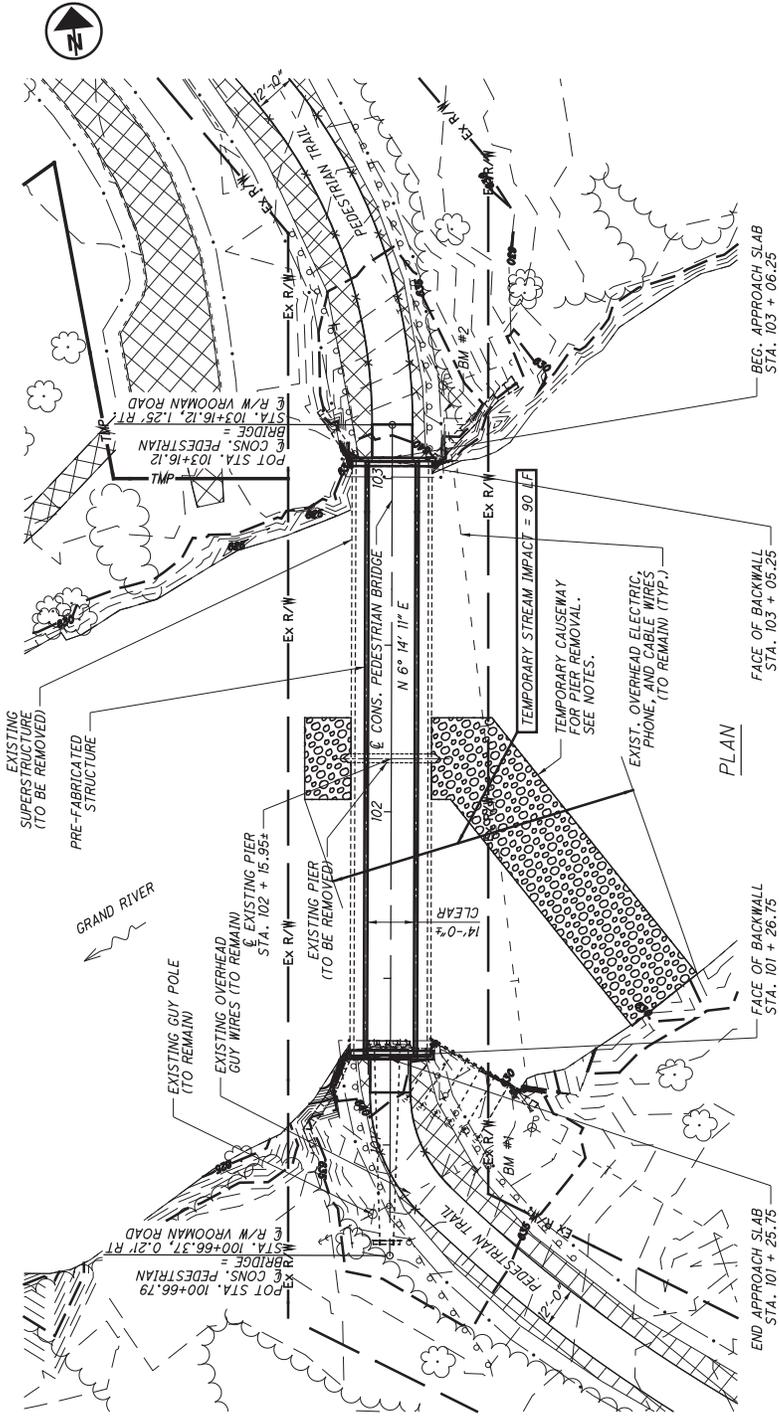
**EXISTING STRUCTURE**

TYPE: TWO SPAN STEEL WARREN TRUSS WITH TIMBER DECK ON STONE MASONRY ABUTMENTS AND REINFORCED CONCRETE PIER  
 SPANS: 88'-4" / 88'-4" C/C BEARINGS  
 ROADWAY: 21'-0" F/F GUARDRAIL  
 LOADING: HS-20  
 SKEW: 0°  
 APPROACH SLABS: NONE  
 WEARING SURFACE: ASPHALT CONCRETE  
 ALIGNMENT: TANGENT  
 CROWN: 0.016 FT/FT  
 STRUCTURE FILE NUMBER: 4337107  
 DATE BUILT: 1957, MAJOR REHABILITATION 1987  
 DISPOSITION: REMOVE PORTIONS OF STRUCTURE AS SHOWN

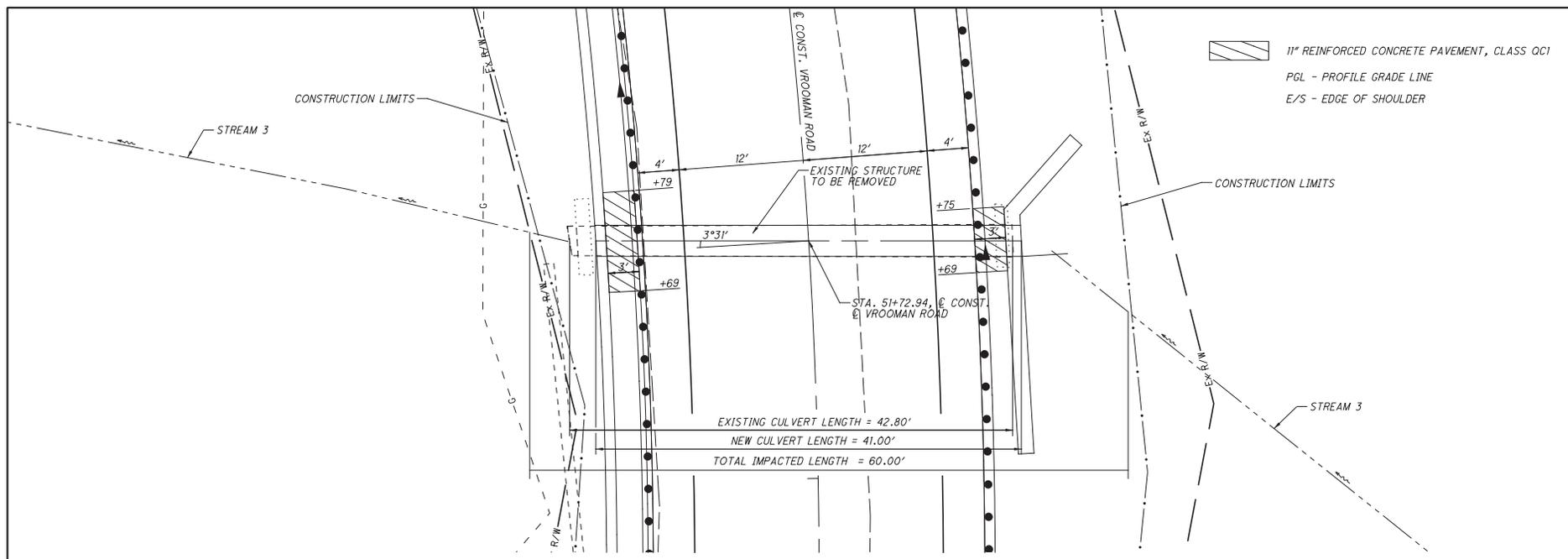
**PROPOSED STRUCTURE**

TYPE: PRE-FABRICATED, SIMPLE SPAN, WEATHERING STEEL TRUSS ON MODIFIED EXISTING ABUTMENTS  
 SPANS: 178'-0" NOMINAL OUT-TO-TO TRUSS MEMBERS (ACTUAL SPAN LENGTH DEPENDS ON FINAL FABRICATOR DETAILS)  
 ROADWAY: 14'-0" NOMINAL CLEAR  
 LOADING: 90 PSF OR H10  
 SKEW: NONE  
 WEARING SURFACE: TROPICAL HARDWOOD  
 APPROACH SLABS: 10' REINFORCED CONCRETE  
 ALIGNMENT: TANGENT  
 CROWN: NONE

COORDINATES: LATITUDE 41° 43' 34" N  
 LONGITUDE 81° 11' 03" W



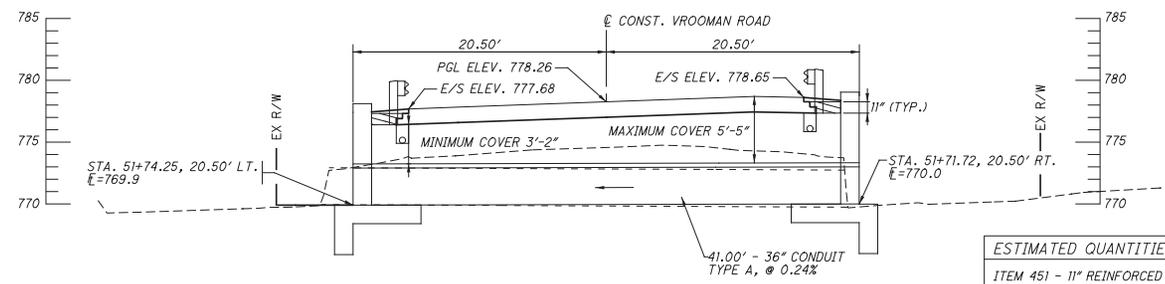
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 11" REINFORCED CONCRETE PAVEMENT, CLASS OC1  
 PGL - PROFILE GRADE LINE  
 E/S - EDGE OF SHOULDER

HYDRAULIC DESIGN DATA	
DRAINAGE AREA	= 10.20 ac
Q(25)	= 11.02 cfs
Q(100)	= 13.34 cfs
HW(25)	= 771.4'
HW(100)	= 771.6'
V(25)	= 4.98 fps
V(100)	= 5.28 fps

EXISTING STRUCTURE	
TYPE	= RCP
SIZE	= 2' X 3'
SKEW	= 3°31'±
DATE BUILT	= UNKNOWN
CONDITION	= FAIR



ESTIMATED QUANTITIES (CARRIED TO GENERAL SUMMARY)	
ITEM 451	- 11" REINFORCED CONCRETE PAVEMENT, CLASS OC1
ITEM 509	- EPOXY COATED REINFORCING
ITEM 511	- CLASS OC1 CONCRETE, HEADWALL
ITEM 611	- 29"X45" CONDUIT, TYPE A



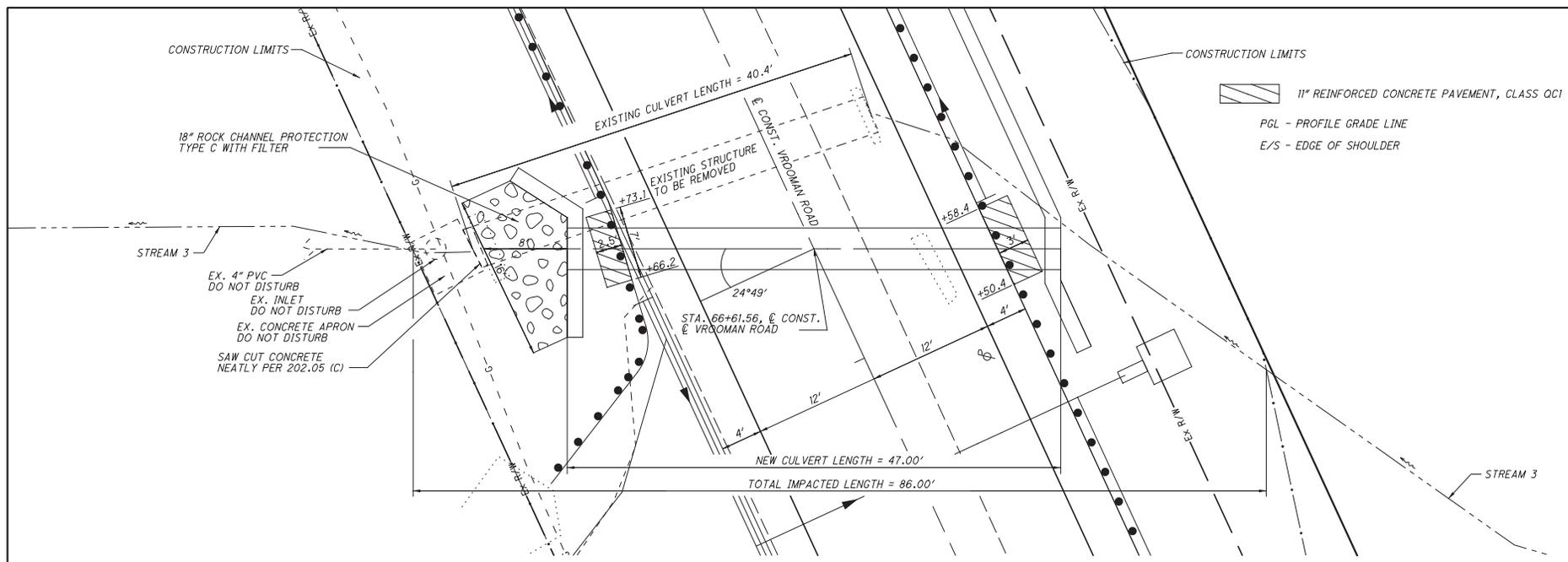
CALCULATED  
 MAJ  
 CHECKED  
 SJS

FIGURE 4 - CULVERT DETAILS FOR STREAM 3  
VROOMAN RD. STA. 51-72.94

LAK - VROOMAN RD.



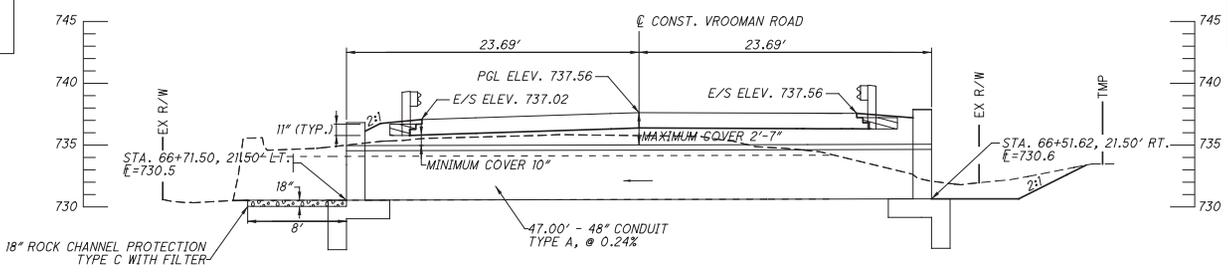
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 11" REINFORCED CONCRETE PAVEMENT, CLASS QC1  
 PGL - PROFILE GRADE LINE  
 E/S - EDGE OF SHOULDER

HYDRAULIC DESIGN DATA	
DRAINAGE AREA	= 39.40 ac
Q(25)	= 56.30 cfs
Q(100)	= 79.20 cfs
HW(25)	= 734.0'
HW(100)	= 734.8'
V(25)	= 7.70 Tps
V(100)	= 8.80 Tps

EXISTING STRUCTURE	
TYPE	= RCP
SIZE	= 3' X 3.50'
SKEW	= 5°58'
DATE BUILT	= UNKNOWN
CONDITION	= FAIR



ESTIMATED QUANTITIES (CARRIED TO GENERAL SUMMARY)	
ITEM 451	- 11" REINFORCED CONCRETE PAVEMENT, CLASS QC1
ITEM 509	- EPOXY COATED REINFORCING
ITEM 511	- CLASS QC1 CONCRETE, HEADWALL
ITEM 601	- ROCK CHANNEL PROTECTION, TYPE C, WITH FILTER
ITEM 611	- 29"X45" CONDUIT, TYPE A



FIGURE 4 - CULVERT DETAILS FOR STREAM 3  
VROOMAN RD. STA. 66+61.56

LAK - VROOMAN RD.

**BENCHMARK DATA**

BM #1 STA. 80+83.88, ELEV. 713.06, OFFSET 31.88 LT  
 BM #2 STA. 81+81.59, ELEV. 714.89, OFFSET 7.08 RT  
 BM #3 STA. 64+00.32, ELEV. 746.68, OFFSET 19.69 RT  
 BM #4 STA. 79+56.83, ELEV. 743.08, OFFSET 19.63 RT

FOR ADDITIONAL BENCHMARK INFORMATION. SEE ROADWAY PLAN SHEET 3/101

**NOTES**

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS. SEE ABUTMENT GRADING PLANS SHEETS 24/100 AND 30/100.

DESIGN TRAFFIC:  
 2015 ADT = 6110      2015 ADTT = 367  
 2035 ADT = 6850      2035 ADTT = 411  
 DIRECTIONAL DISTRIBUTION = 58%

SEE SHEET 9/100 FOR INDEX OF SHEETS

**LEGEND**

- BORING LOCATION
- HAUL ROAD
- T.O.S. EL. = TOP OF SHALE ELEVATION
- T.O.C.R. EL. = TOP OF COMPETENT ROCK ELEVATION

**HYDRAULIC DATA**

DRAINAGE AREA = 626 SQ. MILES  
 Q (25) = 11,188 CFS      V (25) = 0.90 FT/S  
 Q (100) = 13,489 CFS      V (100) = 1.01 FT/S  
 STRUCTURE CLEARS THE 100 YEAR DESIGN HW BY 56' FEET.

**LEGEND**

- PERMANENT IMPACTS
- TEMPORARY IMPACTS
- INDIRECT IMPACTS

**PROPOSED STRUCTURE**

TYPE: SIX CONTINUOUS SPANS, STEEL GIRDER AND COMPOSITE REINFORCED CONCRETE DECK, FOUNDED ON REINFORCED CONCRETE PIERS AND REINFORCED CONCRETE STUB ABUTMENTS

SPANS: 300'-0", 300'-0", 300'-0", 300'-0", 300'-0" MSD. ON  $\bar{C}$

ROADWAY: 34'-0" TOE/TOE PARAPET

LOADING: HL-93 AND FUTURE WEARING SURFACE

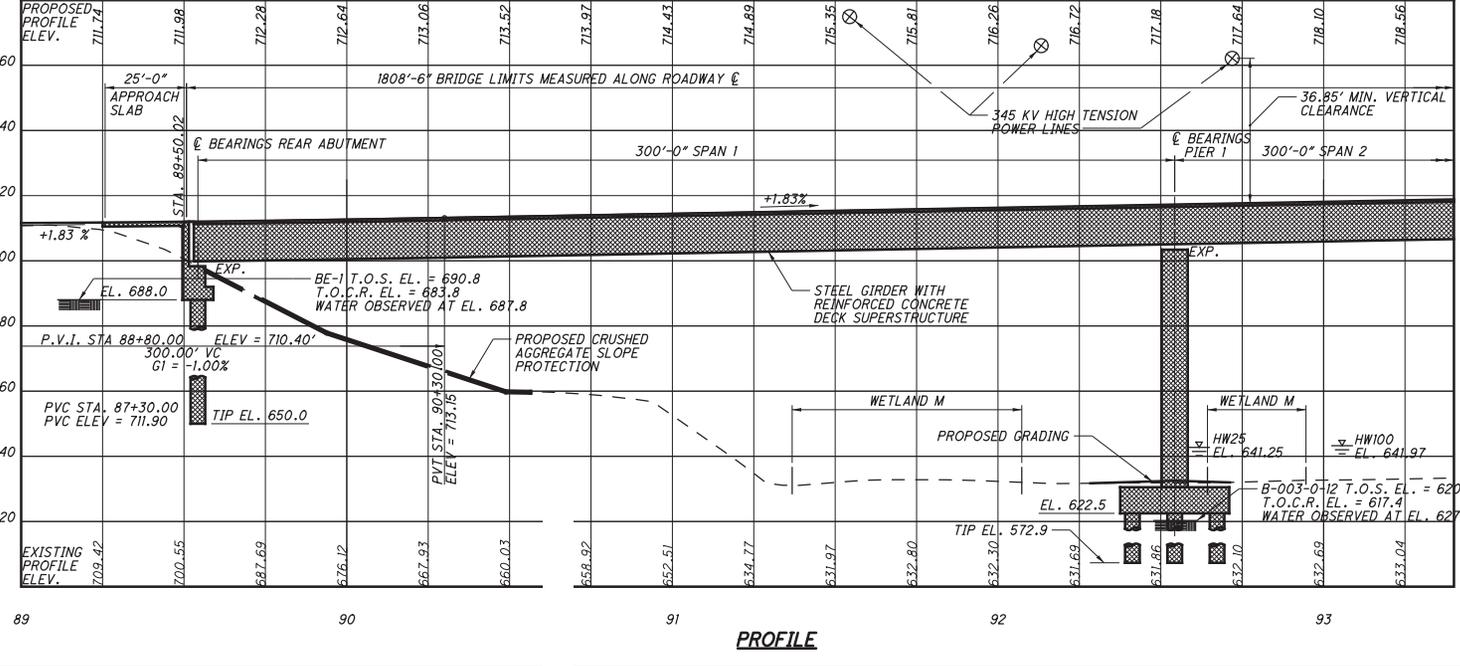
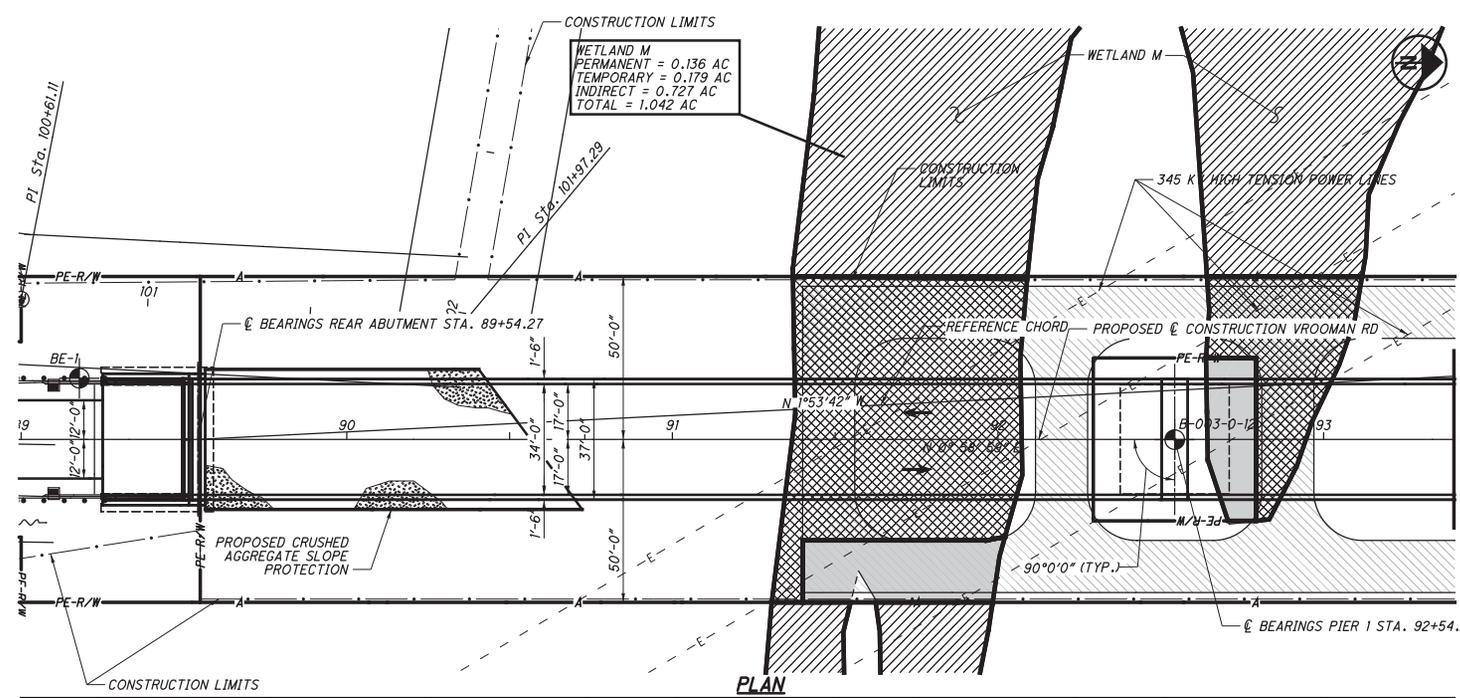
SKEW: NONE

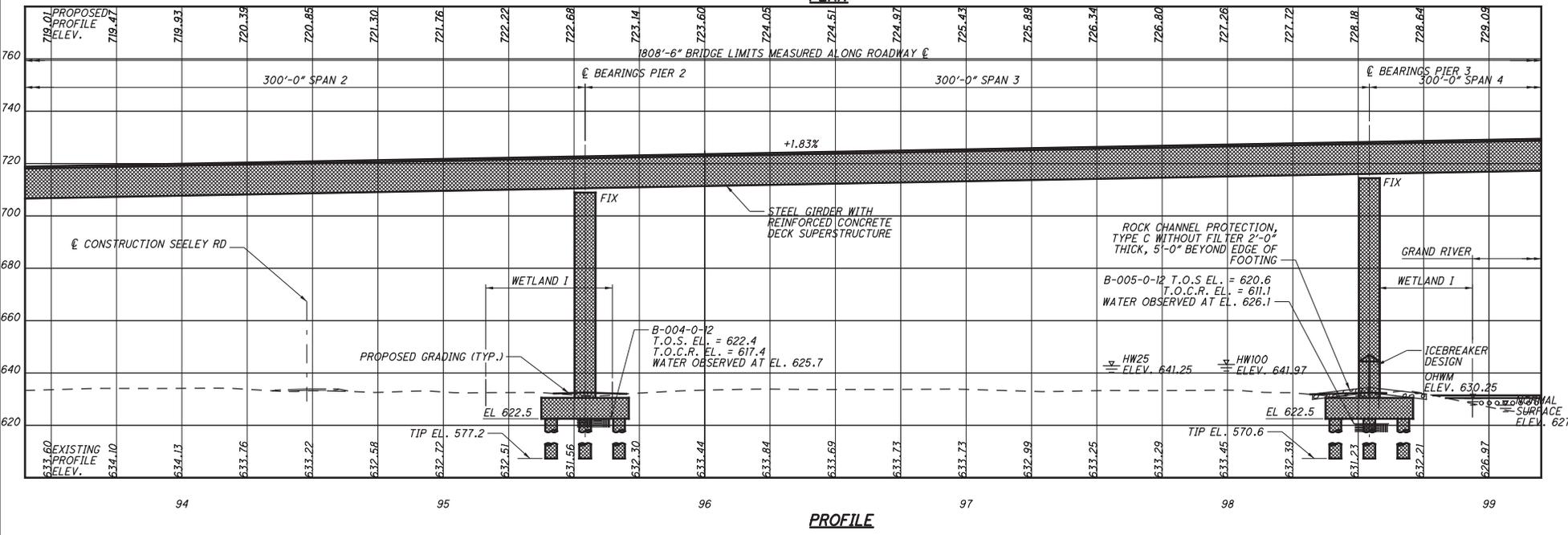
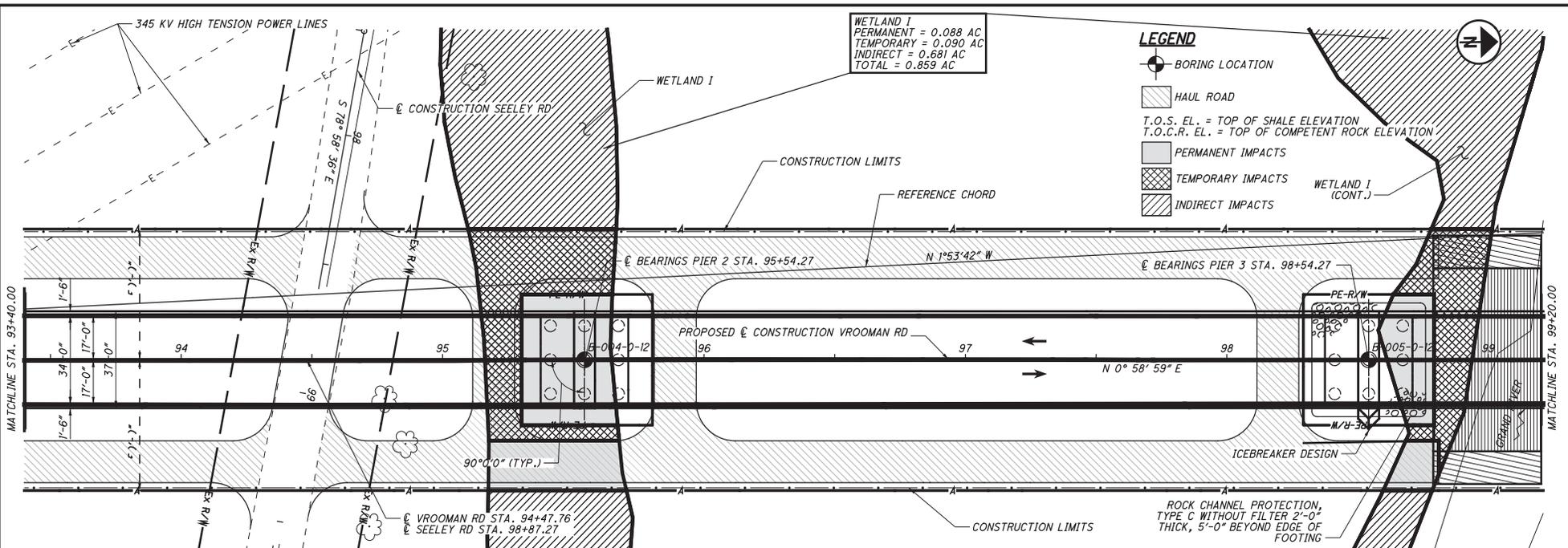
APPROACH SLABS: 25'-0" LONG (AS-1-81)

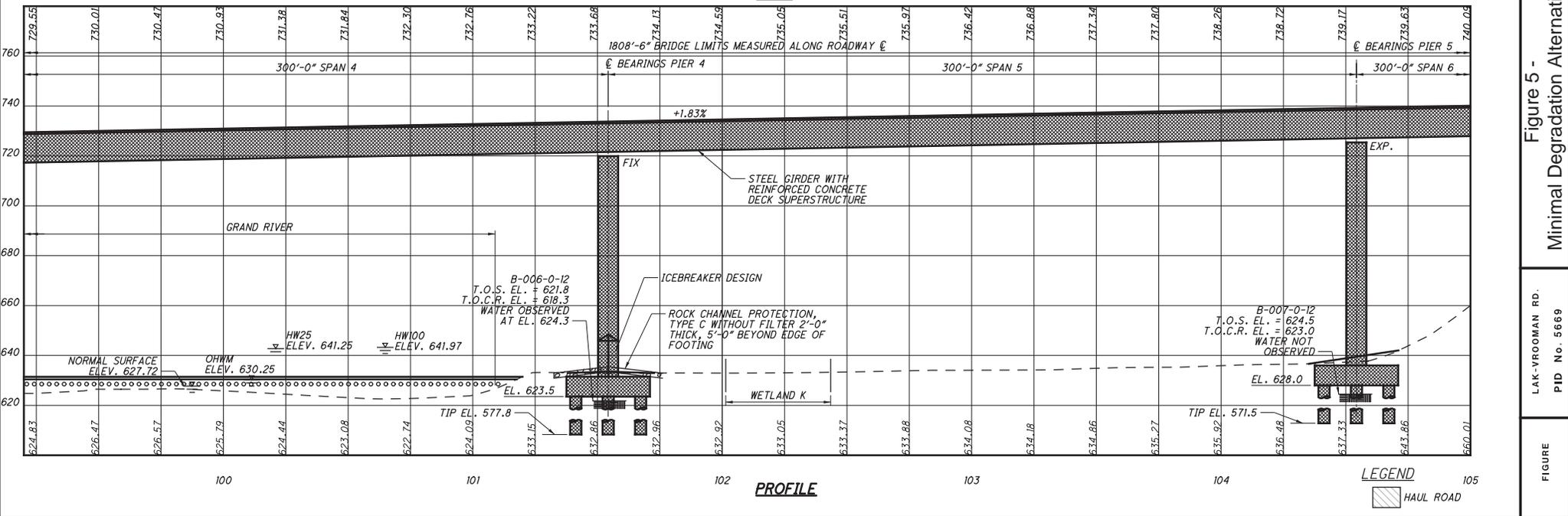
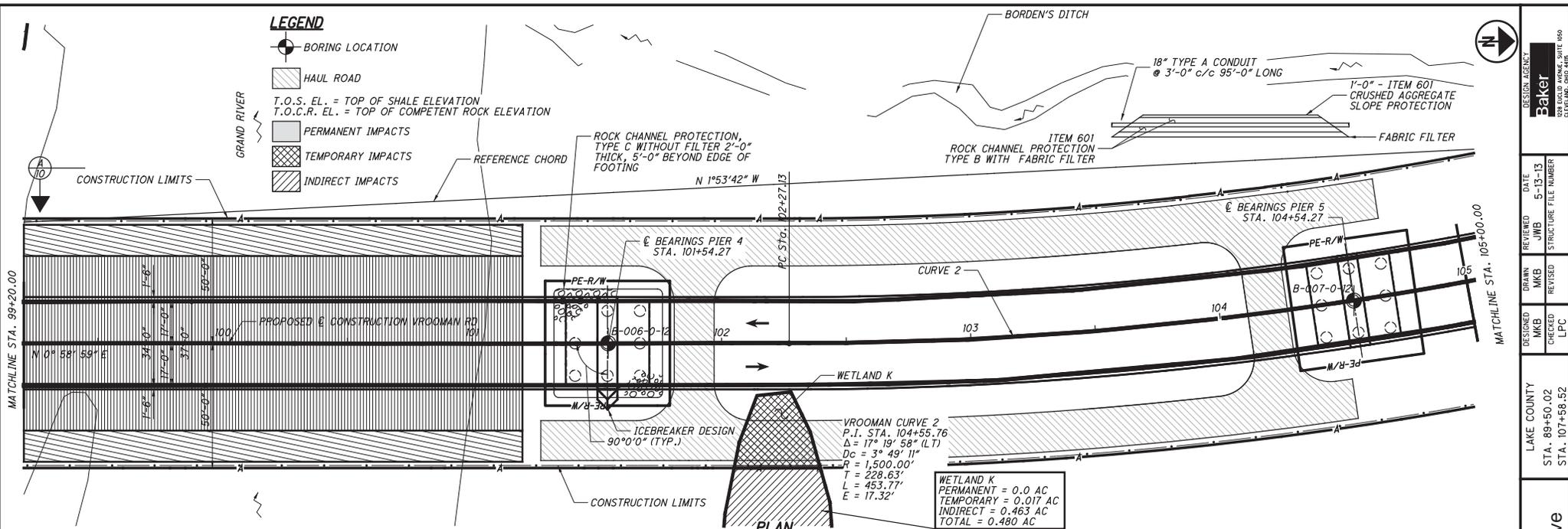
ALIGNMENT: TANGENT AND HORIZONTAL CURVE

CROWN: 0.016 FT/FT

COORDINATES: LATITUDE 41°43'33"  
 LONGITUDE 81°11'03"





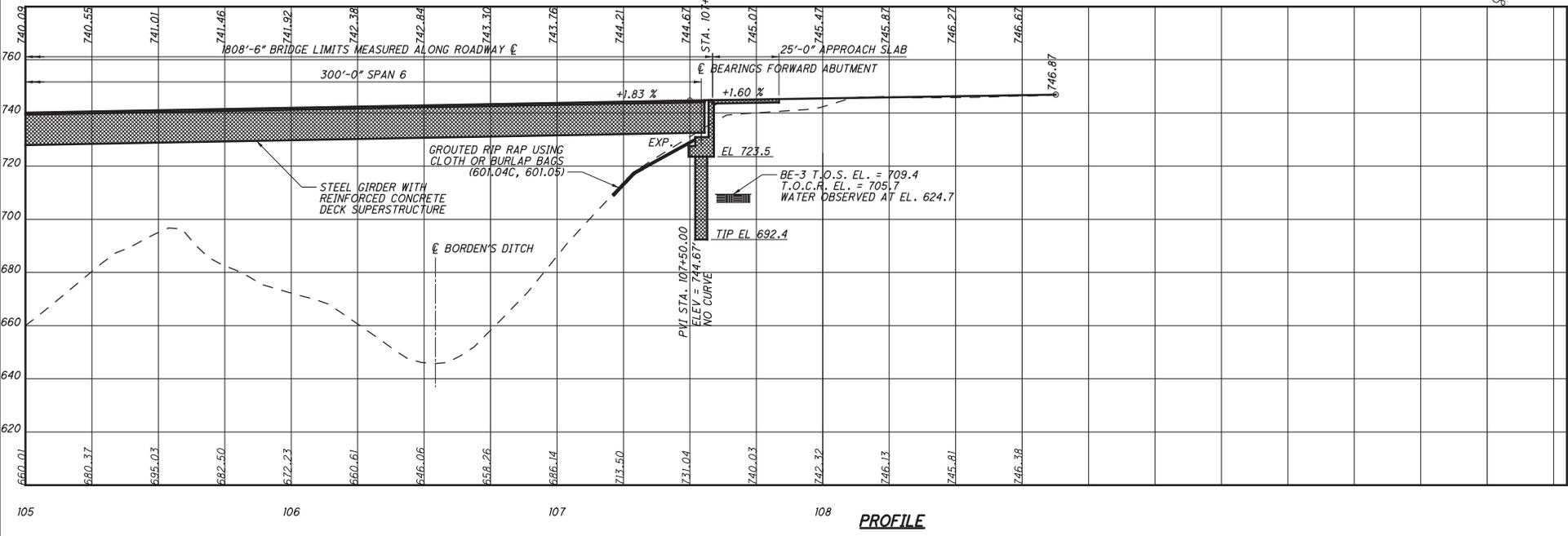
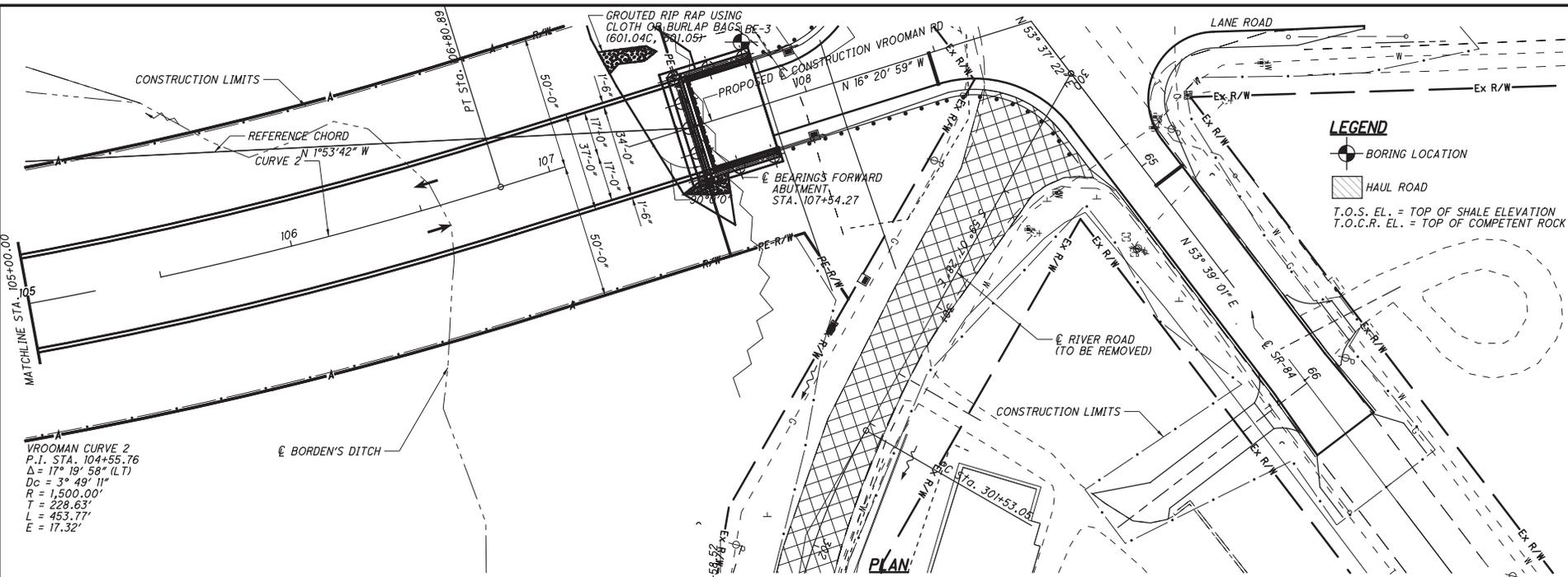


DESIGN AGENCY	Baker
	000 BUILDING, SUITE 1000 1400 UNIVERSITY AVENUE
DESIGNED	JMB
DATE	5-13-13
REVIEWED	JMB
STRUCTURE FILE NUMBER	
DRAWN	MKB
CHECKED	LPC
LAKE COUNTY	STA. 89+50.02
ALTERNATIVE	STA. 107+58.52
FIGURE	Figure 5 - Minimal Degradation Alternative
PID No.	5669



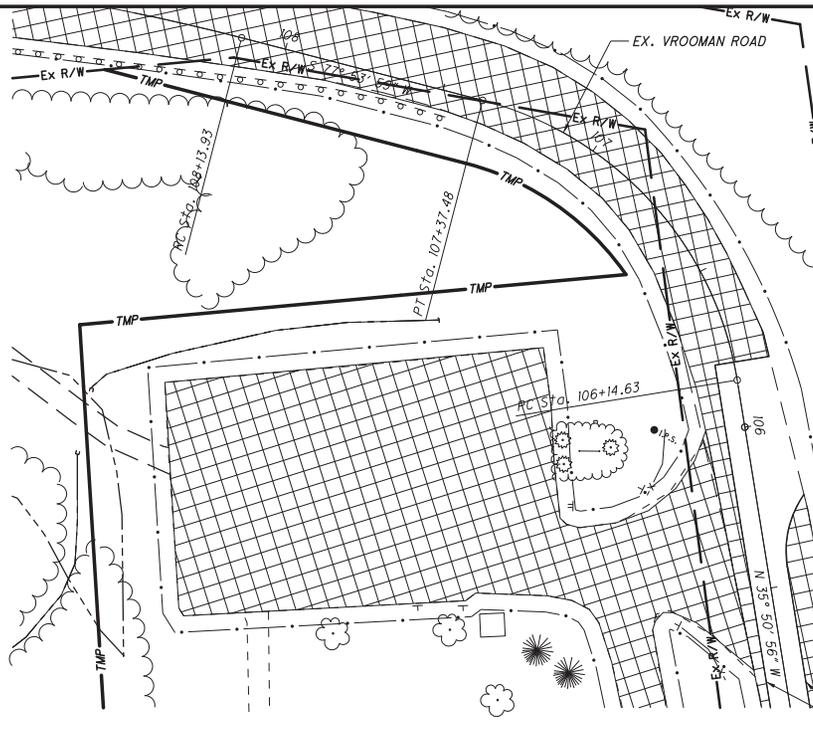
**LEGEND**

- BORING LOCATION
- HAUL ROAD
- T.O.S. EL. = TOP OF SHALE ELEVATION
- T.O.C.R. EL. = TOP OF COMPETENT ROCK ELEVATION

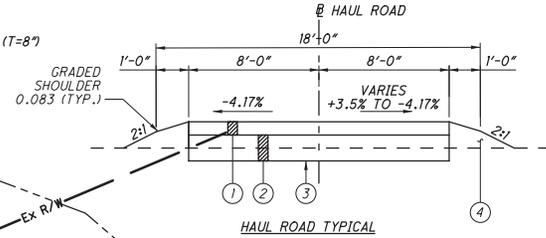


**PROFILE**



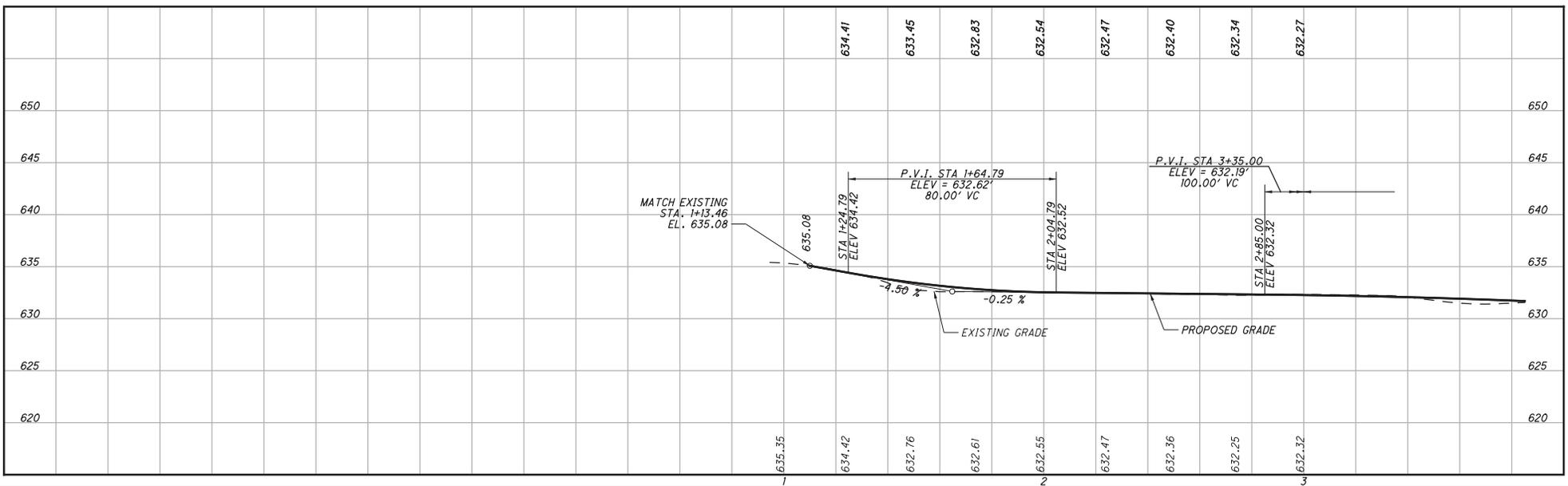


- ① ITEM 304 - AGGREGATE BASE, 4"
- ② ITEM 203 - ROADWAY MISC.: ROCK FILL (T=8')
- ③ ITEM 690 - SPECIAL - GEOGRID
- ④ ITEM 203 - EMBANKMENT



PAVEMENT REMOVED

NOTE: OMTCD FIG. 6H-6 TO BE USED

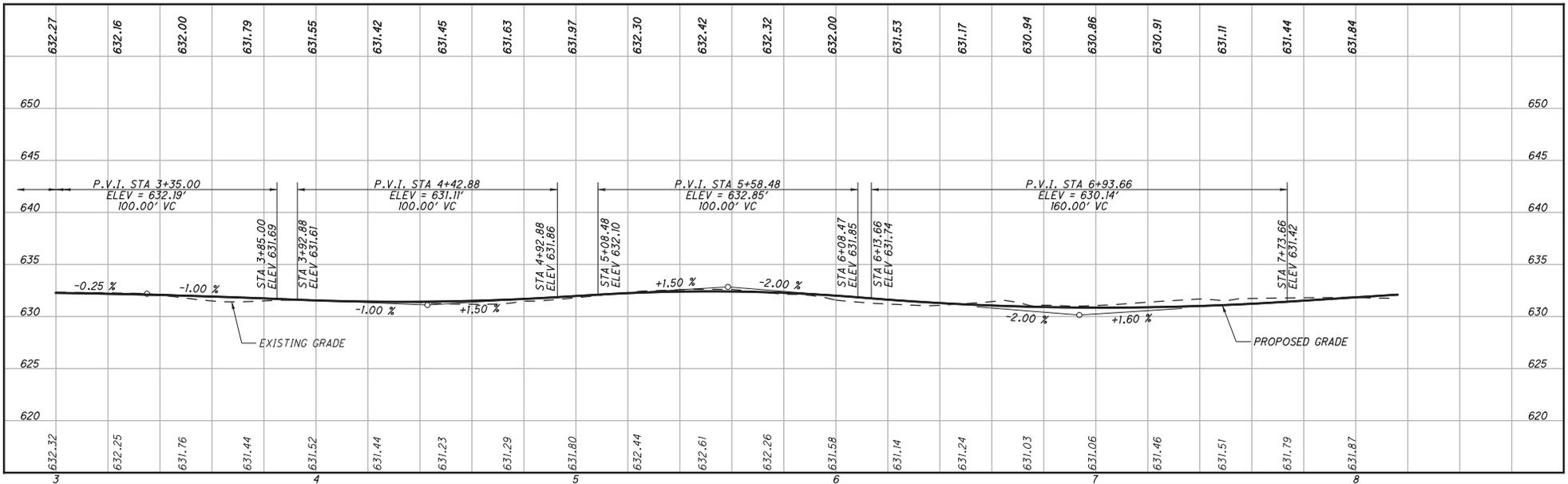


0 20 40  
 HORIZONTAL SCALE IN FEET  
 CALCULATED S.J.P.  
 CHECKED S.M.

Figure 5 - Minimal Degradation Alternative



SEE SHEET PREVIOUS FOR TYPICAL SECTION.



CALCULATED  
S.J.P.  
CHECKED  
S.M.

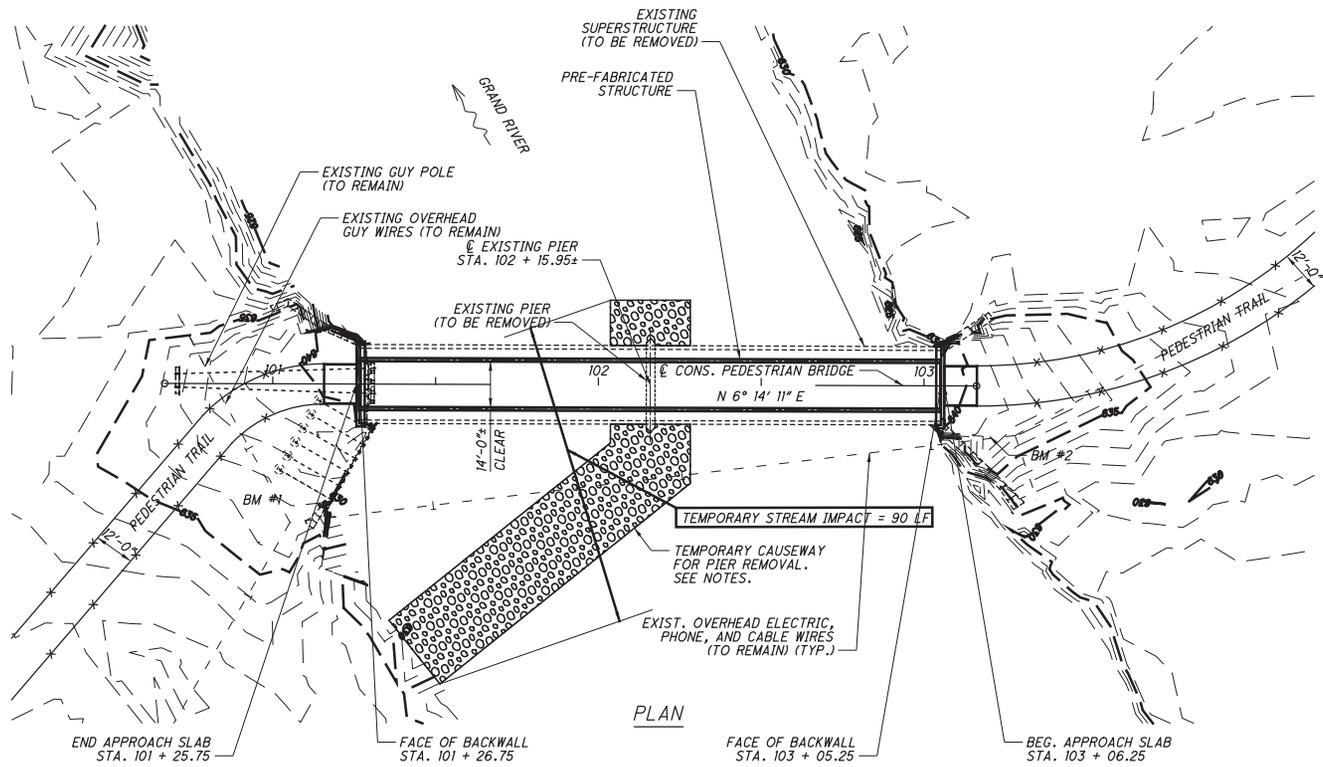
0 20 40  
HORIZONTAL  
SCALE IN FEET

Figure 5 - Minimal Degradation Alternative

LAK - VROOMAN RD.

FIGURE





BENCHMARK DATA	
BM #1 IRON PIN SET STA. 101+05.34, 35.22' RT., EL. 637.24	
BM #2 IRON PIN SET STA. 103+19.29, 14.66' RT., EL. 638.67	

FOR ADDITIONAL BENCHMARK INFORMATION. SEE ROADWAY PLAN SHEET

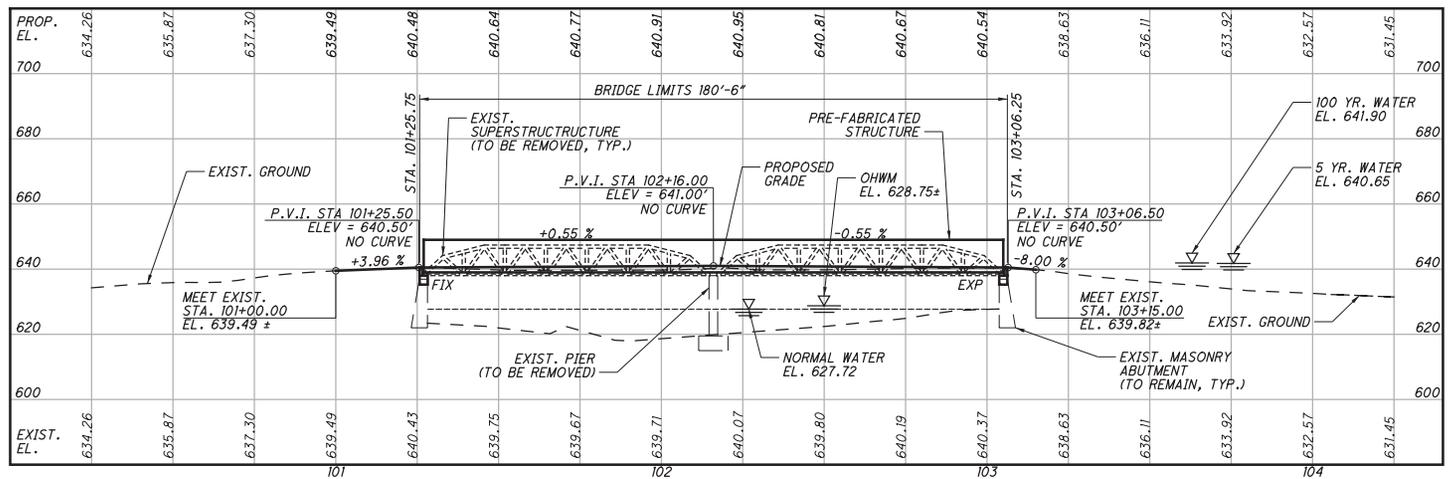
**NOTES**  
 EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.  
 LIMITS SHOWN FOR TEMPORARY CAUSEWAY ARE APPROXIMATE. ACTUAL LIMITS TO BE DETERMINED BY CONTRACTOR. TEMPORARY CAUSEWAY CONSTRUCTION SHALL COMPLY WITH THE ENVIRONMENTAL COMMITMENTS LISTED IN THE GENERAL NOTES.

**LEGEND**  
 XXX - PAVEMENT REMOVAL

**HYDRAULIC DATA**  
 DRAINAGE AREA = 626 SQ. MILES  
 Q (15) = 8,331 CFS V (5) = 3.15 FT/S  
 Q (100) = 12,986 CFS V (100) = 3.98 FT/S  
 DESIGN YEAR FLOOD OVERTOPS BRIDGE.  
 APPROACHES TO BRIDGE FLOOD 2 TO 3 TIMES ANNUALLY

**EXISTING STRUCTURE**  
 TYPE: TWO SPAN STEEL WARREN TRUSS WITH TIMBER DECK ON STONE MASONRY ABUTMENTS AND REINFORCED CONCRETE PIER  
 SPANS: 88'-4\"/>

**PROPOSED STRUCTURE**  
 TYPE: PRE-FABRICATED, SIMPLE SPAN, WEATHERING STEEL TRUSS ON MODIFIED EXISTING ABUTMENTS  
 SPANS: 178'-0\"/>



ELEVATION

**APPENDIX C**  
**PHOTOS OF PROJECT AREA**



1. Stream 1 - Looking east (upstream) at a portion of the Grand River.



2. Stream 1 - Looking east (upstream) at a portion of the Grand River.



3. Stream 1 - Looking east (upstream) at a portion of the Grand River.



4. Stream 2 - Looking south (downstream) at an unnamed tributary to the Grand River.



5. Stream 2 -Looking southwest (downstream) at an unnamed tributary to the Grand River.



6. Stream2 - Looking Northeast (upstream) at an unnamed tributary to the Grand River.



7. Wetland A-Looking east at PFO habitat of this adjacent wetland.



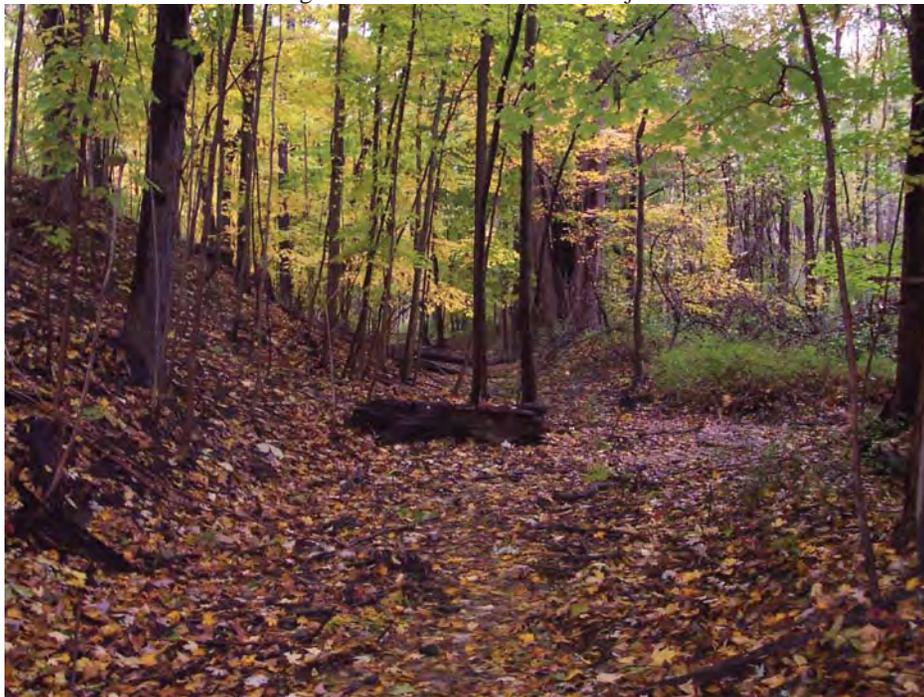
8. Wetland B-Looking north at PFO habitat of this adjacent wetland.



9. Wetland C-Looking east at PFO habitat of this adjacent wetland.



10. Wetland D-Looking northeast at PFO habitat of this adjacent wetland.



11. Wetland E-Looking southwest at PFO habitat of this adjacent wetland.



12. Wetland F-Looking north at PEM habitat of this adjacent wetland.



13. Wetland G-Looking northwest at PEM habitat of this adjacent wetland.



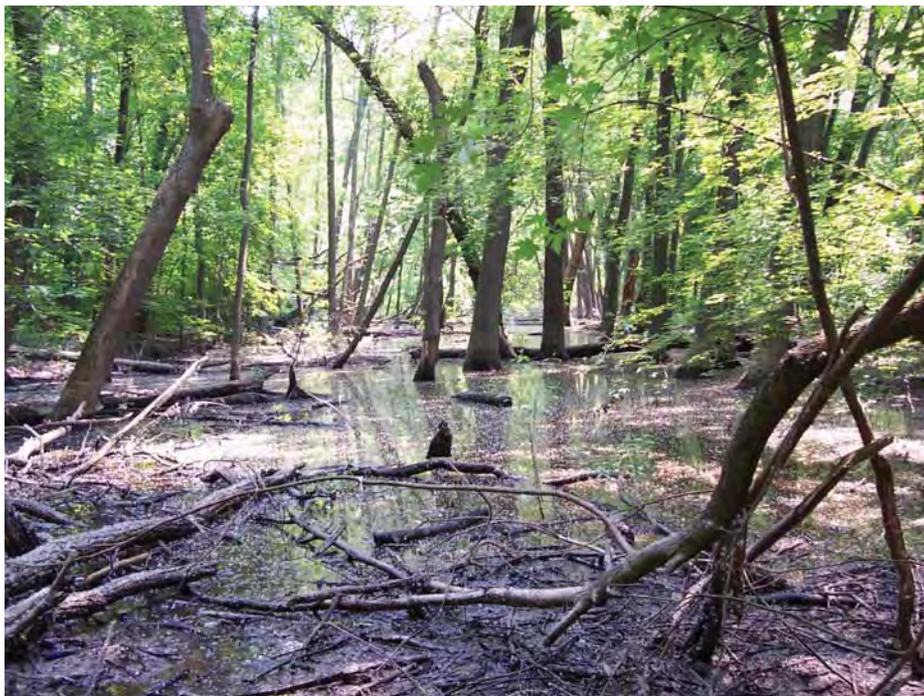
14. Wetland H-Looking southwest at PFO habitat of this adjacent wetland.



15. Wetland I-Looking north at PFO habitat of this adjacent wetland.



16. Wetland J-Looking north at PFO habitat of this adjacent wetland.



17. Wetland K-Looking east at PFO habitat of this adjacent wetland.



18. Wetland L-Looking northeast at PSS habitat of this adjacent wetland.



19. Wetland M-Looking west at PFO habitat of this adjacent wetland.



20. Wetland N-Looking northwest at PEM habitat of this adjacent wetland.



21. Non-jurisdictional southwest ditch recently dredged through upland soils.



22. View looking north at DP 2 upland forest.



23. View looking north at agriculture field with residential in background.



24. View looking north at landscape nursery field.



25. Wetland 1 – Looking west – October 2008.



26. Wetland 2 – Looking west – October 2008.



27. Wetland 3 – North facing view – October 2008.



28. Wetland 4 – South facing view – October 2008.



29. Wetland 5 – North facing view – October 2008.



30. West facing view of mussel survey area (east side of bridge).



31. Stream 3 – East facing view – October 2008.



32. Stream 3 – Sampling location – October 2008.

**APPENDIX D**  
**QHEI/HHEI FORMS**

# STREAM 1, SEGMENT A



Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 76

River Code: \_\_\_\_\_ RM: \_\_\_\_\_ Stream: GRAND RIVER  
 Date: 11-10-24 Location: Downstream of VROOMAN RD.  
 Scorers Full Name: B. SACKINBURG Affiliation: TRANSYSTEMS CORP

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL RIFFLE	POOL RIFFLE	SUBSTRATE ORIGIN	SUBSTRATE QUALITY
<input type="checkbox"/> BLDR/SLBS [10]	<input type="checkbox"/> GRAVEL [7] <u>✓ 50</u>	Check ONE (OR 2 & AVERAGE)		Check ONE (OR 2 & AVERAGE)
<input type="checkbox"/> BOULDER [9] <u>✓ 5</u>	<input type="checkbox"/> SAND [6]	<input type="checkbox"/> LIMESTONE [1]		SILT:
<input checked="" type="checkbox"/> COBBLE [8] <u>✓ 40</u>	<input type="checkbox"/> BEDROCK [5]	<input checked="" type="checkbox"/> TILLS [1]		<input type="checkbox"/> SILT HEAVY [-2]
<input type="checkbox"/> HARDPAN [4]	<input type="checkbox"/> DETRITUS [3]	<input type="checkbox"/> WETLANDS [0]		<input type="checkbox"/> SILT MODERATE [-1]
<input type="checkbox"/> MUCK [2]	<input type="checkbox"/> ARTIFICIAL [0]	<input type="checkbox"/> HARDPAN [0]		<input checked="" type="checkbox"/> SILT NORMAL [0]
<input checked="" type="checkbox"/> SILT [2] <u>✓ 5</u>	NOTE: Ignore Sludge Originating From Point Sources		<input type="checkbox"/> SANDSTONE [0]	<input type="checkbox"/> SILT FREE [1]
		<input type="checkbox"/> RIP/RAP [0]		<input type="checkbox"/> EXTENSIVE [-2]
		EMBEDDED		<input type="checkbox"/> MODERATE [-1]
		NESS:		<input type="checkbox"/> NORMAL [0]
		<input type="checkbox"/> LACUSTRINE [0]		<input checked="" type="checkbox"/> NONE [-1]
		<input type="checkbox"/> SHALE [-1]		
		<input type="checkbox"/> COAL FINES [-2]		

NUMBER OF SUBSTRATE TYPES:  4 or More [2]     3 or Less [0]  
 (High Quality Only, Score 5 or >)

COMMENTS: 8 + 7 + 2 + 1 + 0 + 1

Substrate  
19  
Max 20

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)  
 (Structure) TYPE: Score All That Occur

TYPE	SCORE	AMOUNT	Cover
<input checked="" type="checkbox"/> UNDERCUT BANKS [1]	<input checked="" type="checkbox"/> POOLS > 70 cm [2]	<input checked="" type="checkbox"/> EXTENSIVE > 75% [11]	<span style="border: 1px solid black; padding: 5px; font-size: 24px;">9</span> Max 20
<input type="checkbox"/> OVERHANGING VEGETATION [1]	<input type="checkbox"/> ROOTWADS [1]	<input type="checkbox"/> MODERATE 25-75% [7]	
<input checked="" type="checkbox"/> SHALLOWS (IN SLOW WATER) [1]	<input checked="" type="checkbox"/> BOULDERS [1]	<input type="checkbox"/> SPARSE 5-25% [3]	
<input checked="" type="checkbox"/> ROOTMATS [1]	COMMENTS:	<input checked="" type="checkbox"/> NEARLY ABSENT < 5% [1]	

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	Channel
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input checked="" type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]	<input type="checkbox"/> SNAGGING	<span style="border: 1px solid black; padding: 5px; font-size: 24px;">5</span> Max 20
<input type="checkbox"/> MODERATE [3]	<input checked="" type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]	<input type="checkbox"/> RELOCATION	
<input checked="" type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]	<input type="checkbox"/> CANOPY REMOVAL	
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]		<input type="checkbox"/> DREDGING	

COMMENTS: \_\_\_\_\_

4] RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH	FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN)		BANK EROSION
L R (Per Bank)	L R (Most Predominant Per Bank)	L R	L R (Per Bank)
<input checked="" type="checkbox"/> WIDE > 50m [4]	<input checked="" type="checkbox"/> FOREST SWAMP [3]	<input type="checkbox"/> CONSERVATION TILLAGE [1]	<input type="checkbox"/> NONE/LITTLE [3]
<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input type="checkbox"/> URBAN OR INDUSTRIAL [0]	<input type="checkbox"/> MODERATE [2]
<input type="checkbox"/> NARROW 5-10 m [2]	<input type="checkbox"/> RESIDENTIAL PARK/NEW FIELD [1]	<input type="checkbox"/> OPEN PASTURE ROWCROP [0]	<input type="checkbox"/> HEAVY/SEVERE [1]
<input type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> FENCED PASTURE [1]	<input type="checkbox"/> MINING/CONSTRUCTION [0]	
<input type="checkbox"/> NONE [0]			

COMMENTS: 4 + 2 + 2.5

5.] POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH	MORPHOLOGY	CURRENT VELOCITY [ POOLS & RIFFLES! ]
(Check 1 ONLY!)	(Check 1 or 2 & AVERAGE)	(Check All That Apply)
<input type="checkbox"/> > 1m [6]	<input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input checked="" type="checkbox"/> EDDIES [1]
<input checked="" type="checkbox"/> 0.7-1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> TORRENTIAL [-1]
<input type="checkbox"/> 0.4-0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE W. [0]	<input type="checkbox"/> FAST [1]
<input type="checkbox"/> 0.2-0.4m [1]		<input checked="" type="checkbox"/> MODERATE [1]
<input type="checkbox"/> < 0.2m [POOL=0]	COMMENTS:	<input type="checkbox"/> INTERSTITIAL [-1]
		<input type="checkbox"/> INTERMITTENT [-2]
		<input type="checkbox"/> SLOW [1]
		<input type="checkbox"/> VERY FAST [1]

Pool/Current  
8  
Max 12

RIFFILE DEPTH	RUN DEPTH	RIFFILE/RUN SUBSTRATE	RIFFILE/RUN EMBEDDEDNESS
<input checked="" type="checkbox"/> Best Areas > 10 cm [2]	<input type="checkbox"/> MAX > 50 [2]	<input checked="" type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input checked="" type="checkbox"/> NONE [2]
<input type="checkbox"/> Best Areas 5-10 cm [1]	<input checked="" type="checkbox"/> MAX < 50 [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> Best Areas < 5 cm		<input type="checkbox"/> UNSTABLE (Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]
[RIFFILE=0]			<input type="checkbox"/> EXTENSIVE [-1]
COMMENTS: <u>22 cm</u>		<input type="checkbox"/> NO RIFFILE [Metric=0]	

Riffle/Run  
6.5  
Max 8  
Gradient  
10  
Max 10

6] GRADIENT (ft/mi): 7.17 DRAINAGE AREA (sq.mi.): > 552    %POOL: 5    %GLIDE: 85  
 %RIFFILE: 5    %RUN: 5

# STREAM 1, SEGMENT A

Is Sampling Reach Representative of the Stream (Y/N)      If Not, Explain:     

Temp 5.81 °C

Conductivity 0.312 ms/cm

Sp. Cond. 0.15

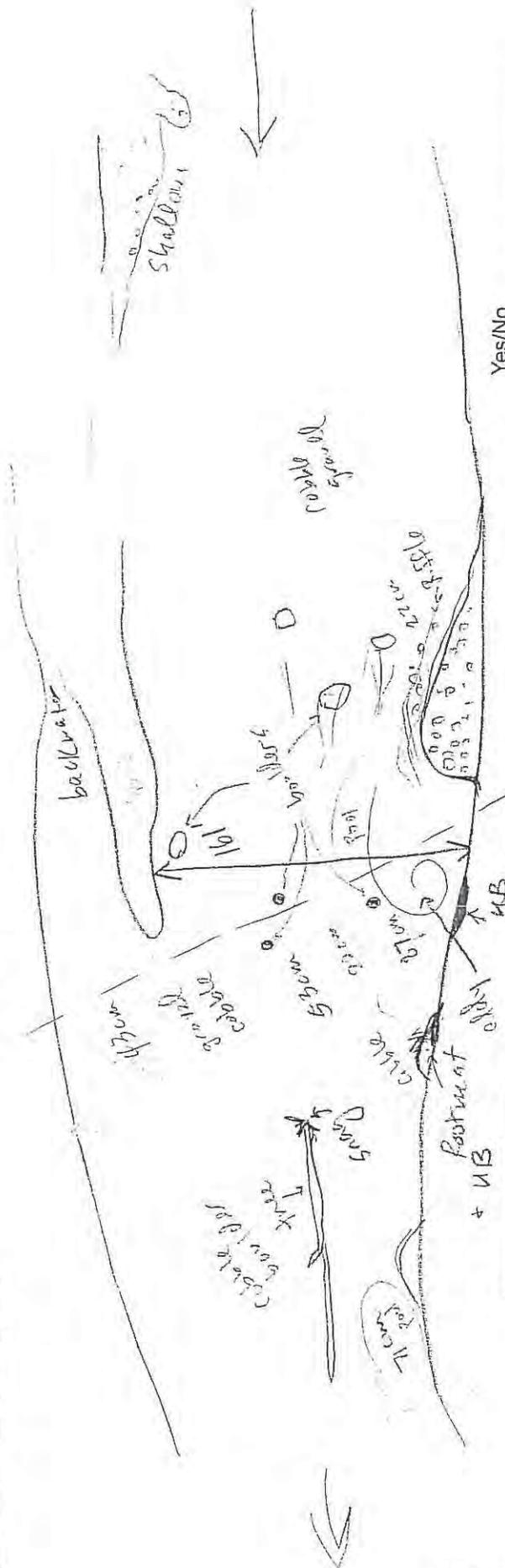
DO 27.0% 7H 7.61

Subjective Rating (1-10)	Aesthetic Rating (1-10)	First Sampling Pass	Gear:	Distance:	Water Clarity:	Water Stage:	Canopy -% Open
		10	10		Expanded ↑ 1'		100
Stream Measurements:		Average Depth	Maximum Depth	Average Width	Bankfull Width	Bankfull Depth	Floodprone Area
Gradient: <input type="checkbox"/> - Low, <input type="checkbox"/> - Moderate, <input type="checkbox"/> - High		45 cm	87 cm	173'	173'	95 cm	7300 sq ft
		Ratio	Ratio	Ratio	Ratio	Ratio	Ratio
		85:1	85:1	85:1	85:1	85:1	8:1

- Major Suspected Sources of Impacts (Check All That Apply):
- None
  - Industrial
  - WWTP
  - Ag
  - Livestock
  - Silviculture
  - Construction
  - Urban Runoff
  - CSOs
  - Suburban Impacts
  - Mining
  - Channelization
  - Riparian Removal
  - Landfills
  - Natural
  - Dams
  - Other Flow Alteration
  - Other:

## Stream Drawing:

14 ALT-A



Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

- Yes/No
- Is Stream Ephemeral (no pools, totally dry or only damp spots)?
  - Is there water upstream? How Far:
  - Is There Water Close Downstream? How Far:
  - Is Dry Channel Mostly Natural?

# STREAM 1, SEG. A



# Primary Headwater Habitat Evaluation Form

## STREAM 2, SEGMENT B

HHEI Score (sum of metrics 1, 2, 3) :

63

SITE NAME/LOCATION VERMILION RD  
 SITE NUMBER STREAM 2 RIVER BASIN 201 D R DRAINAGE AREA (mi<sup>2</sup>) <0.5  
 LENGTH OF STREAM REACH (ft) 200 LAT. \_\_\_\_\_ LONG. \_\_\_\_\_ RIVER CODE \_\_\_\_\_ RIVER MILE \_\_\_\_\_  
 DATE 11/3/04 SCORER FWF COMMENTS 1055 channel with some rocks in stream - 2.4.

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL  NONE / NATURAL CHANNEL  RECOVERED  RECOVERING  RECENT OR NO RECOVERY  
 MODIFICATIONS: 1055 channel with some rocks in stream - 2.4.

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.)

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input type="checkbox"/> SILT [3 pt]	<u>15</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<u>10</u>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>5</u>
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<u>10</u>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>30</u>	<input type="checkbox"/> MUCK [0 pts]	<u>2</u>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<u>25</u>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<u>9</u>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 20% (A) 15 (B) 8

HHEI Metric Points

Substrate Max = 40

23

A + B

2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input checked="" type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS 29, 48, 20 MAXIMUM POOL DEPTH (centimeters): 48

Pool Depth Max = 30

20

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS 2.8m, 3.7, 2.8, 2.6 AVERAGE BANKFULL WIDTH (meters) 2.3

Bankfull Width Max=30

20

This information must also be completed

### RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY	
L	R	L	R
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wide >10m		Mature Forest, Wetland	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Moderate 5-10m		Immature Forest, Shrub or Old Field	Urban or Industrial
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Narrow <5m		Residential, Park, New Field	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None		Fenced Pasture	Mining or Construction

COMMENTS \_\_\_\_\_

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS 1.5 - road 1000 ft - 2.4

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input checked="" type="checkbox"/> >3

STREAM GRADIENT ESTIMATE  Flat (0.5 ft/100 ft)  Flat to Moderate  Moderate (2 ft/100 ft)  Moderate to Severe  Severe (10 ft/100 ft)

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**

STREAM 2 SEG A

QHEI PERFORMED? -  Yes  No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI Form)

**DOWNSTREAM DESIGNATED USE(S)**

WWH Name: Gettysburg R. Distance from Evaluated Stream \_\_\_\_\_  
 CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
 EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: PAINESVILLE NRCS Soil Map Page: 11 NRCS Soil Map Stream Order 2<sup>nd</sup>

County: \_\_\_\_\_ Township / City: \_\_\_\_\_

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): N ↑ Date of last precipitation: 11/2/04 Quantity: 7 in

Photograph Information: Yes

Elevated Turbidity? (Y/N): SOVERFLOW Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): \_\_\_\_\_ (Note lab sample no. or id. and attach results) Lab Number: \_\_\_\_\_

Field Measures: Temp (°C) 12.71 Dissolved Oxygen (mg/l) 27.9% pH (S.U.) 7.57 Conductivity (µmhos/cm) 2943

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: See p. 0.47

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOTIC EVALUATION**

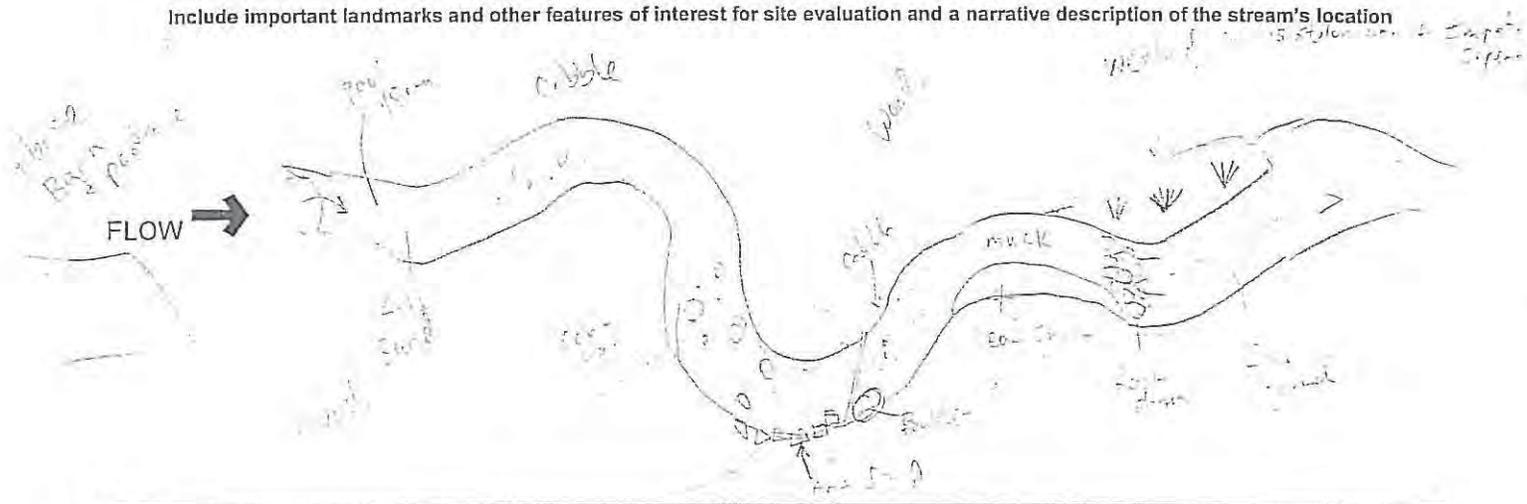
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) \_\_\_\_\_ Salamanders Observed? (Y/N) \_\_\_\_\_ Voucher? (Y/N) \_\_\_\_\_  
Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Voucher? (Y/N) \_\_\_\_\_ Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Voucher? (Y/N) \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



STREAM 254

PHWH STREAM BIOLOGICAL CHARACTERISTICS FIELD SHEET:

1. Fish: Voucher Specimens Retained? (circle) Y / N Time Spent (minutes): 30  
Sample Method Seining Stream Length Assessed (meters)           

Species	Number Caught	Notes

2. Salamanders: Voucher Specimens Retained? (circle) Y / N Time Spent (minutes):             
Sample Method Seining / dipnet Stream Length Assessed (meters) 200' or 63m

Species (Genus)	# Larvae	# Juveniles/Adults	Total Number
Mountain Dusky ( <i>Desmognathus ochrophaeus</i> )			
Northern Dusky ( <i>Desmognathus fuscus</i> )			
Two-lined ( <i>Eurycea bislineata</i> )			
Long-tailed ( <i>Eurycea longicauda</i> )			
Cave ( <i>Eurycea lucifuga</i> )			
Red ( <i>Pseudotriton ruber</i> )			
Mud ( <i>Pseudotriton montanus</i> )			
Spring ( <i>Gyrinophilus porphyriticus</i> )			
Mole spp. ( <i>Ambystoma spp.</i> )			
Four-toed ( <i>Hemidactylum scuiatum</i> )			
Other (name)			
Total	<u>0</u>	<u>0</u>	

Notes on Vertebrates: None observed

3. Macroinvertebrate Scoring Sheet:

THE HEADWATER MACROINVERTEBRATE FIELD EVALUATION INDEX (HMFEEI) SCORING SHEET

Indicate Abundance of Each Taxa Above each White Box.

Record HMFEEI Scoring Value Points Within each Box.

For EPT taxa, also indicate the different taxa present.

Key: V = Very Abundant (> 50); A = Abundant (10 -50); C = Common (3 -9); R = Rare (< 3)

Sessile Animals (Porifera, Cnidaria, Bryozoa) (HMFEEI pts = 1)	<input type="checkbox"/>	Crayfish (Decapoda) (HMFEEI pts = 2)	<input type="checkbox"/>	Fishfly Larvae (Corydalidae) (HMFEEI pts = 3)	<input type="checkbox"/>
Aquatic Worms (Turbellaria, Oligochaeta, Hirudinea) (HMFEEI pts = 1)	C 1 <input type="checkbox"/>	Dragonfly Nymphs (Anisoptera) (HMFEEI pts = 2)	<input type="checkbox"/>	Water Penny Beetles (Psephenidae) (HMFEEI pts = 3)	<input type="checkbox"/>
Sow Bugs (Isopoda) (HMFEEI pts = 1)	<input type="checkbox"/>	Riffle Beetles (Dryopidae, Elmidae, Ptilodactylidae) (HMFEEI pts = 2)	<input type="checkbox"/>	Cranefly Larvae (Tipulidae) (HMFEEI pts = 3)	<input type="checkbox"/>
Scuds (Amphipoda) (HMFEEI pts = 1)	<input type="checkbox"/>	Larvae of other Flies (Diptera) Name: <i>deer fly</i> (HMFEEI pts = 1)	C 1 <input type="checkbox"/>	EPT TAXA* Total No. EPT Taxa = _____	
Water Mites (Hydracarina) (HMFEEI pts = 1)	<input type="checkbox"/>	Midges (Chironomidae) (HMFEEI pts = 1)	C 1 <input type="checkbox"/>	Mayfly Nymphs (Ephemeroptera) Taxa Present: HMFEEI pts = _____ No. Taxa (x) 3] <input type="checkbox"/>	
Damselfly Nymphs (Zygoptera) (HMFEEI pts = 1)	<input type="checkbox"/>	Snails (Gastropoda) (HMFEEI pts = 1)	<input type="checkbox"/>	Stonefly Nymphs (Plecoptera) Taxa Present: HMFEEI pts = _____ No. Taxa (x) 3] <input type="checkbox"/>	
Alderfly Larvae (Sialidae) (HMFEEI pts = 1)	<input type="checkbox"/>	Clams (Bivalvia) (HMFEEI pts = 1)	R 1 <input type="checkbox"/>		
Other Beetles (Coleoptera) (HMFEEI pts = 1)	<input type="checkbox"/>	Other Taxa:			
Other Taxa: <i>Planorbis</i>		Other Taxa:		Caddisfly Larvae (Trichoptera) Taxa Present: HMFEEI pts = _____ No. Taxa (x) 3] <input type="checkbox"/>	
Other Taxa:		Other Taxa:			

\*Note: EPT identification based upon Family or Genus level of taxonomy

Voucher Sample ID \_\_\_\_\_

Time Spent (minutes): *40 min < 3 people*

Notes on Macroinvertebrates: (Predominant Organisms; Other Common Organisms; Diversity Estimate)

*low number was expected due to low flow. However, this summer (June) - led some insects back for > 30 min & were amazed by the low # of macroinvertebrates. Found a lack in salmonids.*

Final HMFEEI Calculated Score (Sum of All White Box Scores) =

**4**

IF Final HMFEEI Score is > 19, Then CLASS III PHWH STREAM  
 IF Final HMFEEI Score is 7 to 19, Then CLASS II PHWH STREAM  
 IF Final HMFEEI Score is < 7, Then CLASS I PHWH STREAM



# Primary Headwater Habitat Evaluation Form

27

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **Unnamed Tributary to the Grand River - Vrooman Road**

SITE NUMBER **Stream 3** RIVER BASIN \_\_\_\_\_ DRAINAGE AREA (mi<sup>2</sup>) **0.07**

LENGTH OF STREAM REACH (ft) **2,492** LAT. \_\_\_\_\_ LONG. \_\_\_\_\_ RIVER CODE \_\_\_\_\_ RIVER MILE \_\_\_\_\_

DATE **10/23/08** SCORER **KSS/DEW** COMMENTS \_\_\_\_\_

**NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions**

**STREAM CHANNEL MODIFICATIONS:**  NONE / NATURAL CHANNEL  RECOVERED  RECOVERING  RECENT OR NO RECOVERY

**1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.**

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	25%
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	15%
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	10%
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	15%	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	35%	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A)

Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9**

TOTAL NUMBER OF SUBSTRATE TYPES: **8**

**HHEI Metric Points**

Substrate Max = 40

**17**

A + B

**2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):**

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters): \_\_\_\_\_

Pool Depth Max = 30

**5**

**3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):**

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS \_\_\_\_\_ AVERAGE BANKFULL WIDTH (meters): **0.25**

Bankfull Width Max=30

**5**

**This information must also be completed**

**RIPARIAN ZONE AND FLOODPLAIN QUALITY** ☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY				
L	R	L	R			
<input checked="" type="checkbox"/>	<input type="checkbox"/> (Per Bank)	<input type="checkbox"/>	<input type="checkbox"/> (Most Predominant per Bank)	<input type="checkbox"/>	<input type="checkbox"/> (L R)	
	Wide >10m		Mature Forest, Wetland			Conservation Tillage
	Moderate 5-10m	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field			Urban or Industrial
	Narrow <5m		Residential, Park, New Field			Open Pasture, Row Crop
	None		Fenced Pasture			Mining or Construction

COMMENTS \_\_\_\_\_

**FLOW REGIME (At Time of Evaluation) (Check ONLY one box):**

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS \_\_\_\_\_

**SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):**

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

**STREAM GRADIENT ESTIMATE**

Flat (0.5 ft/100 ft)  Flat to Moderate  Moderate (2 ft/100 ft)  Moderate to Severe  Severe (10 ft/100 ft)

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**

QHEI PERFORMED? -  Yes  No QHEI Score  (If Yes, Attach Completed QHEI Form)

**DOWNSTREAM DESIGNATED USE(S)**

<input type="checkbox"/> WWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input checked="" type="checkbox"/> EWH Name:	Grand River	Distance from Evaluated Stream	3,600.00

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name:  NRCS Soil Map Page:  NRCS Soil Map Stream Order

County:  Township / City:

**MISCELLANEOUS**

Base Flow Conditions? (Y/N):  Date of last precipitation:  Quantity:

Photograph Information:

Elevated Turbidity? (Y/N):  Canopy (% open):

Were samples collected for water chemistry? (Y/N):  (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C)  Dissolved Oxygen (mg/l)  pH (S.U.)  Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N)  If not, please explain:

Additional comments/description of pollution impacts:

**BIOTIC EVALUATION**

Performed? (Y/N):  (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)  Voucher? (Y/N)  Salamanders Observed? (Y/N)  Voucher? (Y/N)

Frogs or Tadpoles Observed? (Y/N)  Voucher? (Y/N)  Aquatic Macroinvertebrates Observed? (Y/N)  Voucher? (Y/N)

Comments Regarding Biology:

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW 

## **APPENDIX E**

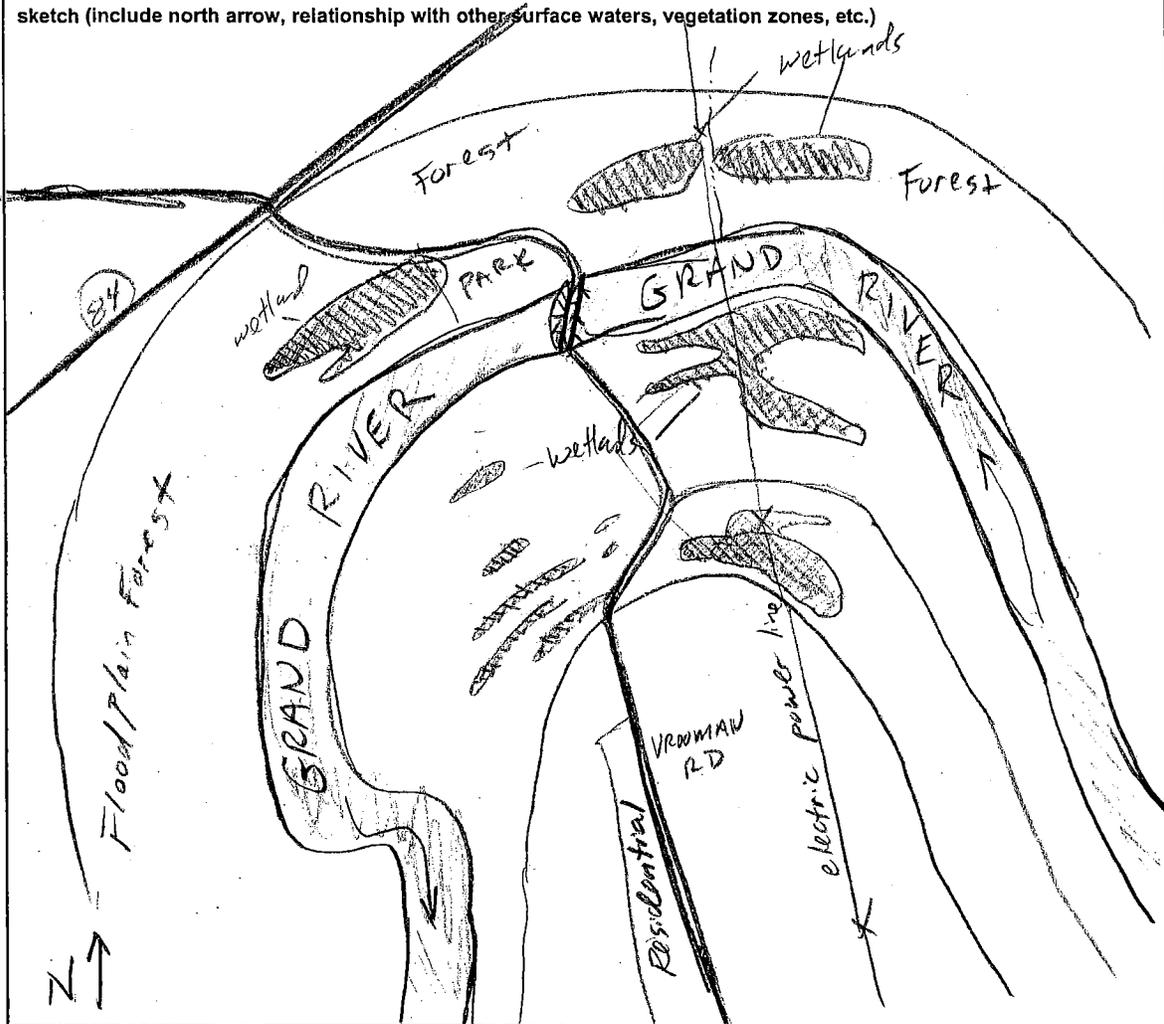
### **Ohio Rapid Assessment Method (ORAM) V. 5.0 Forms**

## Background Information

Name:	BRAD M. FALKINBURG		
Date:	10/19/2004, 11/03/2004, 11/10/2004, 6/17/2004		
Affiliation:	TRANSYSTEMS CORPORATION		
Address:	55 PUBLIC SQUARE, SUITE 1650, CLEVELAND, OH.		
Phone Number:	(216) 861-1780	44113	
e-mail address:	bmfalkinburg@transystems.com		
Name of Wetland:	A, B, C, D, E, F, G, H, I, J, K, L, M, N,		
Vegetation Community(ies):	PEM, PSS, PFO		
HGM Class(es):	DEPRESSIONAL - both surface inlet/outlet - Temp. Flood Storage RIVERINE - Low Gradient Alluvial - Floodplain of Bottomland		
Location of Wetland include map, address, north arrow, landmarks, distances, roads, etc.			
MASONS LANDING / Indian Point LAKE METRO PARKS - surrounding Vrooman Rd. Bridge over Grand River.			
Lat/Long or UTM Coordinate	041° 43' 32.74" N 081° 11' 4.12" W		
USGS Quad Name	PAINESVILLE		
County	LAKE		
Township	LEROY		
Section and Subsection	46 <sup>19.25</sup> 48 <sup>7.5</sup>		
Hydrologic Unit Code	04110004		
Site Visit	Yes		
National Wetland Inventory Map	Yes		
Ohio Wetland Inventory Map	No		
Soil Survey	Yes		
Delineation report/map	Yes		
Wetland Size (acres, hectares)	Range (ac) 20.01 - 71.5		

Name: BRAD M. FALKINBURG

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)



Comments, Narrative Discussion, Justification of Category Changes

- A - 45 - CAT 2
- B - 50.5 - CAT 2
- C - 38 - MOD. CAT 2 = CAT 2
- D - 38.5 - MODIFIED CAT 2 = CAT 2
- E - 40 = MODIFIED CAT 2 = CAT 2
- F - 37 = MODIFIED CAT 2 = CAT 2
- G - 27 - CAT 1
- H - 29 - CAT 1
- I - 62 - Gray Zone CAT 2 or 3 = CAT 3
- J - 63 - Gray Zone CAT 2/3 = CAT 3
- K - 79 - CAT 3
- L - 32 - Gray Zone CAT 1 or 2 = CAT 2
- M - 62 Gray Zone CAT 2 or 3 = CAT 3
- N - 22 - CAT 1

Final score: RANGE: 22 → 79

Category 1, 2, 3

WETLAND: A

Site: WRODMAN RD - LAK-4H Rater(s): BMF/JRA Date: 10-19-01

2 2

**Metric 1. Wetland Area (size).**

*Allegat*

- 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)

11 13

**Metric 2. Upland buffers and surrounding land use.**

- 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)
  - 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) *PARK?*
  - LOW. Old field (>10 years), shrubland, young second growth forest. (5)
  - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
  - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

15 28

**Metric 3. Hydrology.**

- max 30 pts. subtotal
- 3a. Sources of Water. Score all that apply.
- High pH groundwater (5)
  - Other groundwater (3)
  - Precipitation (1)
  - Seasonal/intermittent surface water (3)
  - Perennial surface water (lake or stream) (5)
- 3b. Connectivity. Score all that apply.
- 100 year floodplain (1)
  - Between stream/lake and other human use (1)
  - Part of wetland/upland (e.g. forest), complex (1)
  - Part of riparian or upland corridor (1)
- 3c. Maximum water depth. Select only one and assign score.
- >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.
- 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)
  - Recovered (7)
  - Recovering (3)
  - Recent or no recovery (1)
- Check all disturbances observed

<input checked="" type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input checked="" type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other

13 41

**Metric 4. Habitat Alteration and Development.**

- max 20 pts. subtotal
- 4a. Substrate disturbance. Score one or double check and average.
- 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)
  - Good (5)
  - 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)
  - Recovered (6)
  - Recovering (3)
  - Recent or no recovery (1)
- Check all disturbances observed

<input checked="" type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input checked="" type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

41

subtotal this page

WETLAND: A

Site: VROOMAN RD - LAKE-4 Rater(s): BMF/JAA Date: 10-19-04

11

subtotal first page

0 41

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)

4 45

max 20 pts. subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

**6a. Wetland Vegetation Communities.**

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other

2

**6b. horizontal (plan view) Interspersion.**

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- None (0)

1

**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)
- Sparse 5-25% cover (-1)
- Nearly absent <5% cover (0)
- Absent (1)

*Phalaris = 5%*

-1

**6d. Microtopography.**

Score all present using 0 to 3 scale.

- Vegetated hummocks/tussocks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- Amphibian breeding pools

2

**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

45 GRAND TOTAL (max 100 pts)

WETLAND: B

Site: VROOMAN RD Rater(s): BMF Date: 10/19/04

0 0

**Metric 1. Wetland Area (size).**

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)

0

14 14

**Metric 2. Upland buffers and surrounding land use.**

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)
- 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) park
- LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

22 36

**Metric 3. Hydrology.**

max 30 pts. subtotal

3a. Sources of Water. Score all that apply.

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/Intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- 100 year floodplain (1)
- Between stream/lake and other human use (1)
- Part of wetland/upland (e.g. forest), complex (1)
- Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- >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.

- 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)
- Recovered (7)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other _____

12.5 48.5

**Metric 4. Habitat Alteration and Development.**

max 20 pts. subtotal

4a. Substrate disturbance. Score one or double check and average.

- 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)
- Good (5)
- 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)
- Recovered (6)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

48.5

subtotal this page

WETLAND: B

Site: VROOMAN RD Rater(s): BMF Date: 10/19/04

48.5

subtotal first page

0 48.5

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)

Adjacent

2 50.5

max 20 pts. subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other \_\_\_\_\_

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- 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)
- 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.

- Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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
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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

50.5 GRAND TOTAL (max 100 pts)

WETLAND: C

Site: VROOMAN RD. Rater(s): BMF Date: 10/19/04

1 1  
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)

Adjacent

14 15  
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)
  - 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), shrubland, young second growth forest. (5)
  - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
  - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

13 28  
max 30 pts. subtotal

**Metric 3. Hydrology.**

- 3a. Sources of Water. Score all that apply.
- High pH groundwater (5)
  - Other groundwater (3)
  - Precipitation (1)
  - Seasonal/Intermittent surface water (3)
  - Perennial surface water (lake or stream) (5)
- 3b. Connectivity. Score all that apply.
- 100 year floodplain (1)
  - Between stream/lake and other human use (1)
  - Part of wetland/upland (e.g. forest), complex (1)
  - Part of riparian or upland corridor (1)
- 3c. Maximum water depth. Select only one and assign score.
- >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.
- 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.
- |   |   |   |
|---|---|---|
| <input type="checkbox"/> None or none apparent (12) | <input checked="" type="checkbox"/> ditch | <input type="checkbox"/> point source (nonstormwater) |
| <input type="checkbox"/> Recovered (7)              | <input type="checkbox"/> tile             | <input type="checkbox"/> filling/grading              |
| <input checked="" type="checkbox"/> Recovering (3)  | <input type="checkbox"/> dike             | <input type="checkbox"/> road bed/RR track            |
| <input type="checkbox"/> Recent or no recovery (1)  | <input type="checkbox"/> weir             | <input type="checkbox"/> dredging                     |
|   | <input type="checkbox"/> stormwater input | <input type="checkbox"/> other                        |

7 35  
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)
  - Recovered (3)
  - 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)
  - Fair (3)
  - Poor to fair (2)
  - Poor (1)
- 4c. Habitat alteration. Score one or double check and average.
- |  |   |   |
|--|---|---|
| <input type="checkbox"/> None or none apparent (9) | <input type="checkbox"/> mowing               | <input type="checkbox"/> shrub/sapling removal          |
| <input type="checkbox"/> Recovered (6)             | <input type="checkbox"/> grazing              | <input type="checkbox"/> herbaceous/aquatic bed removal |
| <input checked="" type="checkbox"/> Recovering (3) | <input type="checkbox"/> clearcutting         | <input type="checkbox"/> sedimentation                  |
| <input type="checkbox"/> Recent or no recovery (1) | <input type="checkbox"/> selective cutting    | <input type="checkbox"/> dredging                       |
|  | <input type="checkbox"/> woody debris removal | <input type="checkbox"/> farming                        |
|  | <input type="checkbox"/> toxic pollutants     | <input type="checkbox"/> nutrient enrichment            |

35  
subtotal this page

WETLAND: C

Site: VROOMAN RD Rater(s): BMF Date: 10/19/04

35  
subtotal first page

0 35  
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 38  
max 20 pts. subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

6a. Wetland Vegetation Communities. Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- 1  Forest
- Mudflats
- Open water
- Other \_\_\_\_\_

6b. horizontal (plan view) Interspersion. Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- 0  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)
- Sparse 5-25% cover (-1)
- 0  Nearly absent <5% cover (0)
- Absent (1)

6d. Microtopography. Score all present using 0 to 3 scale.

- Vegetated hummocks/tussucks
- 2  Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

38 GRAND TOTAL (max 100 pts)

WETLAND: D

Site: <u>VRODMAN RD</u>	Rater(s): <u>BMF</u>	Date: <u>10/19/04</u>
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1	1
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)

*Adjacents*

14	15
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)
  - 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) *For F*
  - LOW. Old field (>10 years), shrubland, young second growth forest. (5)
  - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
  - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

13	28
max 30 pts.	subtotal

### Metric 3. Hydrology.

- 3a. Sources of Water. Score all that apply.
- High pH groundwater (5)
  - Other groundwater (3)
  - Precipitation (1)
  - Seasonal/Intermittent surface water (3) *from flooding*
  - Perennial surface water (lake or stream) (5)
- 3b. Connectivity. Score all that apply.
- 100 year floodplain (1)
  - Between stream/lake and other human use (1)
  - Part of wetland/upland (e.g. forest), complex (1)
  - Part of riparian or upland corridor (1)
- 3c. Maximum water depth. Select only one and assign score.
- >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.
- 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.
- |   |   |   |   |                               |   |                               |  |                               |                                   |   |                                      |
|---|---|---|---|-------------------------------|---|-------------------------------|--|-------------------------------|-----------------------------------|---|--------------------------------------|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> None or none apparent (12)</li> <li><input type="checkbox"/> Recovered (7)</li> <li><input checked="" type="checkbox"/> Recovering (3)</li> <li><input type="checkbox"/> Recent or no recovery (1)</li> </ul> | <p>Check all disturbances observed</p> <table style="width:100%; border-collapse: collapse;"> <tr> <td><input checked="" type="checkbox"/> ditch</td> <td><input type="checkbox"/> point source (nonstormwater)</td> </tr> <tr> <td><input type="checkbox"/> tile</td> <td><input checked="" type="checkbox"/> filling/grading</td> </tr> <tr> <td><input type="checkbox"/> dike</td> <td><input type="checkbox"/> road bed/RR track</td> </tr> <tr> <td><input type="checkbox"/> weir</td> <td><input type="checkbox"/> dredging</td> </tr> <tr> <td><input type="checkbox"/> stormwater input</td> <td><input type="checkbox"/> other _____</td> </tr> </table> | <input checked="" type="checkbox"/> ditch | <input type="checkbox"/> point source (nonstormwater) | <input type="checkbox"/> tile | <input checked="" type="checkbox"/> filling/grading | <input type="checkbox"/> dike | <input type="checkbox"/> road bed/RR track | <input type="checkbox"/> weir | <input type="checkbox"/> dredging | <input type="checkbox"/> stormwater input | <input type="checkbox"/> other _____ |
| <input checked="" type="checkbox"/> ditch   | <input type="checkbox"/> point source (nonstormwater)   |   |   |                               |   |                               |  |                               |                                   |   |                                      |
| <input type="checkbox"/> tile   | <input checked="" type="checkbox"/> filling/grading   |   |   |                               |   |                               |  |                               |                                   |   |                                      |
| <input type="checkbox"/> dike   | <input type="checkbox"/> road bed/RR track  |   |   |                               |   |                               |  |                               |                                   |   |                                      |
| <input type="checkbox"/> weir   | <input type="checkbox"/> dredging   |   |   |                               |   |                               |  |                               |                                   |   |                                      |
| <input type="checkbox"/> stormwater input   | <input type="checkbox"/> other _____  |   |   |                               |   |                               |  |                               |                                   |   |                                      |

10.5	38.5
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)
  - Recovered (3)
  - 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)
  - Fair (3)
  - Poor to fair (2)
  - Poor (1)
- 4c. Habitat alteration. Score one or double check and average.
- |   |  |                                 |  |                                  |   |                                       |  |  |                                   |   |                                  |   |  |
|---|--|---------------------------------|--|----------------------------------|---|---------------------------------------|--|--|-----------------------------------|---|----------------------------------|---|--|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> None or none apparent (9)</li> <li><input checked="" type="checkbox"/> Recovered (6)</li> <li><input checked="" type="checkbox"/> Recovering (3)</li> <li><input type="checkbox"/> Recent or no recovery (1)</li> </ul> | <p>Check all disturbances observed</p> <table style="width:100%; border-collapse: collapse;"> <tr> <td><input type="checkbox"/> mowing</td> <td><input type="checkbox"/> shrub/sapling removal</td> </tr> <tr> <td><input type="checkbox"/> grazing</td> <td><input type="checkbox"/> herbaceous/aquatic bed removal</td> </tr> <tr> <td><input type="checkbox"/> clearcutting</td> <td><input type="checkbox"/> sedimentation</td> </tr> <tr> <td><input type="checkbox"/> selective cutting</td> <td><input type="checkbox"/> dredging</td> </tr> <tr> <td><input type="checkbox"/> woody debris removal</td> <td><input type="checkbox"/> farming</td> </tr> <tr> <td><input type="checkbox"/> toxic pollutants</td> <td><input type="checkbox"/> nutrient enrichment</td> </tr> </table> | <input type="checkbox"/> mowing | <input type="checkbox"/> shrub/sapling removal | <input type="checkbox"/> grazing | <input type="checkbox"/> herbaceous/aquatic bed removal | <input type="checkbox"/> clearcutting | <input type="checkbox"/> sedimentation | <input type="checkbox"/> selective cutting | <input type="checkbox"/> dredging | <input type="checkbox"/> woody debris removal | <input type="checkbox"/> farming | <input type="checkbox"/> toxic pollutants | <input type="checkbox"/> nutrient enrichment |
| <input type="checkbox"/> mowing   | <input type="checkbox"/> shrub/sapling removal   |                                 |  |                                  |   |                                       |  |  |                                   |   |                                  |   |  |
| <input type="checkbox"/> grazing  | <input type="checkbox"/> herbaceous/aquatic bed removal  |                                 |  |                                  |   |                                       |  |  |                                   |   |                                  |   |  |
| <input type="checkbox"/> clearcutting   | <input type="checkbox"/> sedimentation   |                                 |  |                                  |   |                                       |  |  |                                   |   |                                  |   |  |
| <input type="checkbox"/> selective cutting  | <input type="checkbox"/> dredging  |                                 |  |                                  |   |                                       |  |  |                                   |   |                                  |   |  |
| <input type="checkbox"/> woody debris removal   | <input type="checkbox"/> farming   |                                 |  |                                  |   |                                       |  |  |                                   |   |                                  |   |  |
| <input type="checkbox"/> toxic pollutants   | <input type="checkbox"/> nutrient enrichment   |                                 |  |                                  |   |                                       |  |  |                                   |   |                                  |   |  |

38.5
subtotal this page

WETLAND: D

Site: VROOMAN RD Rater(s): BMF Date: 10/19/04

38.5

subtotal first page

0 38.5

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)

5 43.5

max 20 pts. subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

**6a. Wetland Vegetation Communities.**

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other \_\_\_\_\_

**6b. horizontal (plan view) Interspersion.**

Select only one.

- High (5)
- Moderately high(4)
- 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)
- 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.

- Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

43.5 GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.oh.us/gsw/401/401.html>

WETLAND: E

Site: VROOMAN RD LAK-44 Rater(s): BMF Date: 10-19-04

1 1

**Metric 1. Wetland Area (size).**

Adjacent

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)

14 15

**Metric 2. Upland buffers and surrounding land use.**

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)
- 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) PARK
- LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

14 29

**Metric 3. Hydrology.**

max 30 pts. subtotal

3a. Sources of Water. Score all that apply.

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- None or none apparent (12)
- Recovered (7)
- Recovering (3)
- Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- 100 year floodplain (1)
- Between stream/lake and other human use (1)
- Part of wetland/upland (e.g. forest), complex (1)
- Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other

8 37

**Metric 4. Habitat Alteration and Development.**

max 20 pts. subtotal

4a. Substrate disturbance. Score one or double check and average.

- 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)
- Good (5)
- 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)
- Recovered (6)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input checked="" type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input checked="" type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

37

subtotal this page

WETLAND: E

Site: W. R. ... RD LAR-44 Rater(s): BMF Date: 10-19-04

37

subtotal first page

0 37

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 40

max 20 pts. subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other \_\_\_\_\_

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- 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)
  - Moderate 25-75% cover (-3)
  - Sparse 5-25% cover (-1)
  - Nearly absent <5% cover (0)
  - Absent (1)
- Phragmites in stands (-1)*

6d. Microtopography.

Score all present using 0 to 3 scale.

- Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

40 GRAND TOTAL (max 100 pts)

WETLAND: F

Site: WILSON RD LAK-44 Rater(s): BMF Date: 10-19-04

1 1  
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)

*Adjacent*

10 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)
  - 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), shrubland, young second growth forest. (5)
  - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
  - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

4 25  
max 30 pts. subtotal

**Metric 3. Hydrology.**

- 3a. Sources of Water. Score all that apply.
- High pH groundwater (5)
  - Other groundwater (3)
  - Precipitation (1)
  - Seasonal/Intermittent surface water (3)
  - Perennial surface water (lake or stream) (5)
- 3b. Connectivity. Score all that apply.
- 100 year floodplain (1)
  - Between stream/lake and other human use (1)
  - Part of wetland/upland (e.g. forest), complex (1)
  - Part of riparian or upland corridor (1)
- 3c. Maximum water depth. Select only one and assign score.
- >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.
- 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)
  - Recovered (7)
  - Recovering (3)
  - Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input checked="" type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other

9 34  
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)
  - Recovered (3)
  - 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)
  - Fair (3)
  - Poor to fair (2)
  - Poor (1)
- 4c. Habitat alteration. Score one or double check and average.
- None or none apparent (9)
  - Recovered (6)
  - Recovering (3)
  - Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input checked="" type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

34  
subtotal this page

WETLAND: F

Site: RODMAN RD LAKE 44 Rater(s): BMF Date: 10-19-04

34  
subtotal first page

0 34  
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 37  
max 20 pts. subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

6a. Wetland Vegetation Communities. Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other

6b. horizontal (plan view) Interspersion. Select only one.

- High (5)
- Moderately high(4)
- 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)
  - Moderate 25-75% cover (-3)
  - Sparse 5-25% cover (-1)
  - Nearly absent <5% cover (0)
  - Absent (1)
- Ammannia frongola*

6d. Microtopography. Score all present using 0 to 3 scale.

- Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

37 GRAND TOTAL (max 100 pts)

WETLAND: G

Site: VROOMAN Rater(s): BMF Date: 10/19/04

1 | 1  
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)

9 | 10  
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)
  - 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), shrubland, young second growth forest. (5)
  - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
  - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

29 | 19  
max 30 pts. subtotal

**Metric 3. Hydrology.**

- 3a. Sources of Water. Score all that apply.
- High pH groundwater (5)
  - Other groundwater (3)
  - Precipitation (1)
  - Seasonal/Intermittent surface water (3)
  - Perennial surface water (lake or stream) (5)
- 3b. Connectivity. Score all that apply.
- 100 year floodplain (1)
  - Between stream/lake and other human use (1)
  - Part of wetland/upland (e.g. forest), complex (1)
  - Part of riparian or upland corridor (1)
- 3c. Maximum water depth. Select only one and assign score.
- >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.
- 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)
  - Recovered (7)
  - Recovering (3)
  - Recent or no recovery (1)
- | Check all disturbances observed                      |   |
|--|---|
| <input checked="" type="checkbox"/> ditch            | <input type="checkbox"/> point source (nonstormwater) |
| <input type="checkbox"/> tile                        | <input checked="" type="checkbox"/> filling/grading   |
| <input type="checkbox"/> dike                        | <input type="checkbox"/> road bed/RR track            |
| <input type="checkbox"/> weir                        | <input type="checkbox"/> dredging                     |
| <input checked="" type="checkbox"/> stormwater input | <input type="checkbox"/> other                        |

8 | 27  
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)
  - Recovered (3)
  - 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)
  - Fair (3)
  - Poor to fair (2)
  - Poor (1)
- 4c. Habitat alteration. Score one or double check and average.
- None or none apparent (9)
  - Recovered (6)
  - Recovering (3)
  - Recent or no recovery (1)
- | Check all disturbances observed               |   |
|---|---|
| <input type="checkbox"/> mowing               | <input type="checkbox"/> shrub/sapling removal          |
| <input type="checkbox"/> grazing              | <input type="checkbox"/> herbaceous/aquatic bed removal |
| <input type="checkbox"/> clearcutting         | <input type="checkbox"/> sedimentation                  |
| <input type="checkbox"/> selective cutting    | <input type="checkbox"/> dredging                       |
| <input type="checkbox"/> woody debris removal | <input type="checkbox"/> farming                        |
| <input type="checkbox"/> toxic pollutants     | <input type="checkbox"/> nutrient enrichment            |

27  
subtotal this page

WETLAND: G

Site: VROODMAN Rater(s): BMF Date: 10/19/04

27

subtotal first page

0 27

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)

0 27

max 20 pts. subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high (4)
- 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)
- 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.

- Vegetated hummocks/tussocks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

27 GRAND TOTAL (max 100 pts)

WETLAND: 4

Site: V KOOMAN RD Rater(s): BMF Date: 10/19/04

0 0

Metric 1. Wetland Area (size).

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)
[X] <0.1 acres (0.04ha) (0 pts)

Ad: ...

10 10

Metric 2. Upland buffers and surrounding land use.

max 14 pts. subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

4

- [ ] 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.

6

- [X] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
[X] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
[ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
[ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

8 18

Metric 3. Hydrology.

max 30 pts. subtotal

3a. Sources of Water. Score all that apply.

1

- [ ] High pH groundwater (5)
[ ] Other groundwater (3)
[X] Precipitation (1)
[ ] Seasonal/Intermittent surface water (3)
[ ] Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

1

- [ ] >0.7 (27.6in) (3)
[ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
[X] <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

3

- [ ] None or none apparent (12)
[X] Recovered (7)
[ ] Recovering (3)
[ ] Recent or no recovery (1)

3b. Connectivity. Score all that apply.

1 1

- [ ] 100 year floodplain (1)
[X] Between stream/lake and other human use (1)
[X] Part of wetland/upland (e.g. forest), complex (1)
[ ] Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

1

- [ ] Semi- to permanently inundated/saturated (4)
[ ] Regularly inundated/saturated (3)
[ ] Seasonally inundated (2)
[X] Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed: ditch, tile, dike, weir, stormwater input, point source (nonstormwater), filling/grading, road bed/RR track, dredging, other.

8 26

Metric 4. Habitat Alteration and Development.

max 20 pts. subtotal

4a. Substrate disturbance. Score one or double check and average.

2

- [ ] None or none apparent (4)
[ ] Recovered (3)
[X] Recovering (2)
[ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

3

- [ ] 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.

3

- [ ] None or none apparent (9)
[ ] Recovered (6)
[X] 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.

26 subtotal this page

WETLAND: H

Site: VROOMAN RD Rater(s): BMF Date: 10/19/04

26

subtotal first page

0 26

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 29

max 20 pts. subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 0  Emergent
- Shrub
- 1  Forest
- Mudflats
- Open water
- Other \_\_\_\_\_

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- 1  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)
- 0  Sparse 5-25% cover (-1)
- Nearly absent <5% cover (0)
- Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- Vegetated hummocks/tussucks
- 1  Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

29 GRAND TOTAL (max 100 pts)

3 3

### Metric 1. Wetland Area (size).

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)

check

WETLAND = Adjacent

11 14

### Metric 2. Upland buffers and surrounding land use.

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)
- 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)

Road

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), shrubland, young second growth forest. (5)
- MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

17 31

### Metric 3. Hydrology.

max 30 pts. subtotal

3a. Sources of Water. Score all that apply.

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

water marks on trees 30"

3b. Connectivity. Score all that apply.

- 100 year floodplain (1)
- Between stream/lake and other human use (1)
- Part of wetland/upland (e.g. forest), complex (1)
- Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- 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)
- Recovered (7)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input checked="" type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input checked="" type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other _____

17 48

### Metric 4. Habitat Alteration and Development.

max 20 pts. subtotal

4a. Substrate disturbance. Score one or double check and average.

- None or none apparent (4)
- Recovered (3)
- Recovering (2)
- Recent or no recovery (1)

tree cuts / ditching

4b. Habitat development. Select only one and assign score.

- Excellent (7)
- Very good (6)
- Good (5)
- 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)
- Recovered (6)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

48  
subtotal this page

Site: WILSON RD Rater(s): BRF Date: 11/3/04

48

WETLAND I

subtotal this page

5 53

**Metric 5. Special Wetlands.**

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 Praires (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)

9 62

**Metric 6. Plant communities, interspersions, microtopography.**

max 20 pts. subtotal 6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed.
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- 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)
- 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.

- Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

62 GRAND TOTAL(max 100 pts)

WETLAND J

Site: VROOMAN RD	Rater(s): BMF	Date: 11/3/04
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3	3
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### Metric 1. Wetland Area (size).

Adjacent

- 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)

11	14
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### Metric 2. Upland buffers and surrounding land use.

- 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)
  - 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), shrubland, young second growth forest. (5)
  - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
  - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

18	32
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### Metric 3. Hydrology.

- max 30 pts. subtotal
- 3a. Sources of Water. Score all that apply.
- High pH groundwater (5)
  - Other groundwater (3)
  - Precipitation (1)
  - Seasonal/intermittent surface water (3)
  - Perennial surface water (lake or stream) (5)
- 3b. Connectivity. Score all that apply.
- 100 year floodplain (1)
  - Between stream/lake and other human use (1)
  - Part of wetland/upland (e.g. forest), complex (1)
  - Part of riparian or upland corridor (1)
- 3c. Maximum water depth. Select only one and assign score.
- >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.
- 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.
- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> None or none apparent (12) | Check all disturbances observed           |   |
| <input checked="" type="checkbox"/> Recovered (7)              | <input checked="" type="checkbox"/> ditch | <input type="checkbox"/> point source (nonstormwater) |
| <input checked="" type="checkbox"/> Recovering (3)             | <input type="checkbox"/> tile             | <input type="checkbox"/> filling/grading              |
| <input type="checkbox"/> Recent or no recovery (1)             | <input type="checkbox"/> dike             | <input checked="" type="checkbox"/> road bed/RR track |
|  | <input type="checkbox"/> weir             | <input type="checkbox"/> dredging                     |
|  | <input type="checkbox"/> stormwater input | <input type="checkbox"/> other                        |

17	49
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### Metric 4. Habitat Alteration and Development.

- max 20 pts. subtotal
- 4a. Substrate disturbance. Score one or double check and average.
- 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)
  - Good (5)
  - Moderately good (4)
  - Fair (3)
  - Poor to fair (2)
  - Poor (1)
- 4c. Habitat alteration. Score one or double check and average.
- |   |   |   |
|---|---|---|
| <input checked="" type="checkbox"/> None or none apparent (9) | Check all disturbances observed               |   |
| <input type="checkbox"/> Recovered (6)                        | <input type="checkbox"/> mowing               | <input type="checkbox"/> shrub/sapling removal          |
| <input type="checkbox"/> Recovering (3)                       | <input type="checkbox"/> grazing              | <input type="checkbox"/> herbaceous/aquatic bed removal |
| <input type="checkbox"/> Recent or no recovery (1)            | <input type="checkbox"/> clearcutting         | <input type="checkbox"/> sedimentation                  |
|   | <input type="checkbox"/> selective cutting    | <input type="checkbox"/> dredging                       |
|   | <input type="checkbox"/> woody debris removal | <input type="checkbox"/> farming                        |
|   | <input type="checkbox"/> toxic pollutants     | <input type="checkbox"/> nutrient enrichment            |

49
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subtotal this page

WETLAND: J

Site: VROOMAN RD Rater(s): BMF Date: 11/3/04

49

subtotal first page

5 54

**Metric 5. Special Wetlands.**

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)

9 63

max 20 pts. subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

6a. Wetland Vegetation Communities. Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other \_\_\_\_\_

6b. horizontal (plan view) Interspersion. Select only one.

- High (5)
- Moderately high (4)
- 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)
- 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.

- Vegetated hummocks/tussocks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

63 GRAND TOTAL (max 100 pts)

WETLAND: K

Site: Vroegman Rater(s): BMF / JRA Date: 11-3-04

3 3

**Metric 1. Wetland Area (size).**

- 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)

14 17

**Metric 2. Upland buffers and surrounding land use.**

- 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)
  - 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), shrubland, young second growth forest. (5)
  - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
  - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

25 42

**Metric 3. Hydrology.**

- max 30 pts. subtotal
- 3a. Sources of Water. Score all that apply.
- High pH groundwater (5)
  - Other groundwater (3)
  - Precipitation (1)
  - Seasonal/Intermittent surface water (3)
  - Perennial surface water (lake or stream) (5)
- 3b. Connectivity. Score all that apply.
- 100 year floodplain (1)
  - Between stream/lake and other human use (1)
  - Part of wetland/upland (e.g. forest), complex (1)
  - Part of riparian or upland corridor (1)
- 3c. Maximum water depth. Select only one and assign score.
- >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.
- 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)
  - Recovered (7)
  - Recovering (3)
  - Recent or no recovery (1)
- | Check all disturbances observed           |   |
|---|---|
| <input type="checkbox"/> ditch            | <input type="checkbox"/> point source (nonstormwater) |
| <input type="checkbox"/> tile             | <input type="checkbox"/> filling/grading              |
| <input type="checkbox"/> dike             | <input type="checkbox"/> road bed/RR track            |
| <input type="checkbox"/> weir             | <input type="checkbox"/> dredging                     |
| <input type="checkbox"/> stormwater input | <input type="checkbox"/> other _____                  |

18 60

**Metric 4. Habitat Alteration and Development.**

- max 20 pts. subtotal
- 4a. Substrate disturbance. Score one or double check and average.
- 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)
  - Good (5)
  - 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)
  - Recovered (6)
  - Recovering (3)
  - Recent or no recovery (1)
- | Check all disturbances observed               |   |
|---|---|
| <input type="checkbox"/> mowing               | <input type="checkbox"/> shrub/sapling removal          |
| <input type="checkbox"/> grazing              | <input type="checkbox"/> herbaceous/aquatic bed removal |
| <input type="checkbox"/> clearcutting         | <input type="checkbox"/> sedimentation                  |
| <input type="checkbox"/> selective cutting    | <input type="checkbox"/> dredging                       |
| <input type="checkbox"/> woody debris removal | <input type="checkbox"/> farming                        |
| <input type="checkbox"/> toxic pollutants     | <input type="checkbox"/> nutrient enrichment            |

60

subtotal this page

WETLAND: K

Site: Vrooman Rater(s): BMF/JRA Date: 11-3-04

60

subtotal first page

5 65

**Metric 5. Special Wetlands.**

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)

14 79

max 20 pts. subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub *Bull-bush*
- Forest
- Mudflats
- Open water
- Other

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- 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)
- 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.

- Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

79 GRAND TOTAL (max 100 pts)

WETLAND: L

Site: VROOMAN RD ALT-B Rater(s): BME Date: 11/03/04

0 0

Metric 1. Wetland Area (size).

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)

8 8

Metric 2. Upland buffers and surrounding land use.

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)
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), shrubland, young second growth forest. (5)
MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

12 20

Metric 3. Hydrology.

max 30 pts.

subtotal

3a. Sources of Water. Score all that apply.

- High pH groundwater (5)
Other groundwater (3)
Precipitation (1)
Seasonal/Intermittent surface water (3)
Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- >0.7 (27.6in) (3)
0.4 to 0.7m (15.7 to 27.6in) (2)
<0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- None or none apparent (12)
Recovered (7)
Recovering (3)
Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- 100 year floodplain (1)
Between stream/lake and other human use (1)
Part of wetland/upland (e.g. forest), complex (1)
Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- Semi- to permanently inundated/saturated (4)
Regularly inundated/saturated (3)
Seasonally inundated (2)
Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed: ditch, tile, dike, weir, stormwater input, point source, filling/grading, road bed/RR track, dredging, other

9 29

Metric 4. Habitat Alteration and Development.

max 20 pts.

subtotal

4a. Substrate disturbance. Score one or double check and average.

- 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)
Good (5)
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)
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

29

subtotal this page

WETLAND: L

Site: YROOMAN RD - A+B Rater(s): BMF Date: 11/3/04

29

subtotal first page

0 29

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 32

max 20 pts. subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

**6a. Wetland Vegetation Communities.**

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other \_\_\_\_\_

**6b. horizontal (plan view) Interspersion.**

Select only one.

- High (5)
- Moderately high(4)
- 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)
- 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.

- Vegetated hummocks/tussocks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

32 GRAND TOTAL (max 100 pts)

Site: VROODMAN RD ALT B. Rater(s): BMF Date: 11/03/04

**3** **3**

**Metric 1. Wetland Area (size).**

- 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)

**10** **13**

**Metric 2. Upland buffers and surrounding land use.**

- 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)
  - 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), shrubland, young second growth forest. (5)
  - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
  - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

**18** **31**

**Metric 3. Hydrology.**

- max 30 pts. subtotal
- 3a. Sources of Water. Score all that apply.
- High pH groundwater (5)
  - Other groundwater (3)
  - Precipitation (1)
  - Seasonal/Intermittent surface water (3)
  - Perennial surface water (lake or stream) (5)
- 3b. Connectivity. Score all that apply.
- 100 year floodplain (1)
  - Between stream/lake and other human use (1)
  - Part of wetland/upland (e.g. forest), complex (1)
  - Part of riparian or upland corridor (1)
- 3c. Maximum water depth. Select only one and assign score.
- >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.
- 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)
  - Recovered (7)
  - Recovering (3)
  - Recent or no recovery (1)
- Check all disturbances observed

<input checked="" type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input checked="" type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other _____

**16** **47**

**Metric 4. Habitat Alteration and Development.**

- max 20 pts. subtotal
- 4a. Substrate disturbance. Score one or double check and average.
- 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)
  - Good (5)
  - 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)
  - Recovered (6)
  - Recovering (3)
  - Recent or no recovery (1)
- Check all disturbances observed

<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

**47**

subtotal this page

WETLAND M

Site: VROOMAN RD. ALTB Rater(s): BMF Date: 11/03/04

47  
subtotal first page

5 52  
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)

10 62  
max 20 pts. subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

6a. Wetland Vegetation Communities. Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other

6b. horizontal (plan view) Interspersion. Select only one.

- High (5)
- Moderately high(4)
- 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)
- 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.

- Vegetated hummocks/tussocks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 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

62 GRAND TOTAL (max 100 pts)

WETLAND: N

Site: VROODMAN RD Rater(s): BMF / JRA Date: 10 NOV 2004

0 0

**Metric 1. Wetland Area (size).**

- 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)

9 8

**Metric 2. Upland buffers and surrounding land use.**

- 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)
  - 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), shrubland, young second growth forest. (5)
  - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
  - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

7 15

**Metric 3. Hydrology.**

- max 30 pts. subtotal
- 3a. Sources of Water. Score all that apply.
- High pH groundwater (5)
  - Other groundwater (3)
  - Precipitation (1)
  - Seasonal/Intermittent surface water (3)
  - Perennial surface water (lake or stream) (5)
- 3b. Connectivity. Score all that apply.
- 100 year floodplain (1)
  - Between stream/lake and other human use (1)
  - Part of wetland/upland (e.g. forest), complex (1)
  - Part of riparian or upland corridor (1)
- 3c. Maximum water depth. Select only one and assign score.
- >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.
- 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)
  - Recovered (7)
  - Recovering (3)
  - Recent or no recovery (1)
- Check all disturbances observed

<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input checked="" type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input checked="" type="checkbox"/> other <u>drive way - yard</u>

7 22

**Metric 4. Habitat Alteration and Development.**

- max 20 pts. subtotal
- 4a. Substrate disturbance. Score one or double check and average.
- 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)
  - Good (5)
  - 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)
  - Recovered (6)
  - Recovering (3)
  - Recent or no recovery (1)
- Check all disturbances observed

<input checked="" type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input checked="" type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

22

subtotal this page

WETLAND: N

Site: VROOMAN RD Rater(s): BME / JEA Date: 10 NOVEMBER 2004

22

subtotal first page

0 22

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)

0

0 22

max 20 pts. subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

**6a. Wetland Vegetation Communities.**

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other

1

**6b. horizontal (plan view) Interspersion.**  
Select only one.

- High (5)
- Moderately high (4)
- 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)
- Moderate 25-75% cover (-3)
- Sparse 5-25% cover (-1)
- Nearly absent <5% cover (0)
- Absent (1)

-1

**6d. Microtopography.**

Score all present using 0 to 3 scale.

- Vegetated hummocks/tussocks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- Amphibian breeding pools

0

**Vegetation Community Cover Scale**

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
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**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

22 GRAND TOTAL (max 100 pts)

**APPENDIX F**

**REGULATORY AGENCY COORDINATION  
(CD OF EA DOCUMENT AND APPENDICES)**

**Federal Highway Administration**

**Finding Of No Significant Impact  
for**

**The Vrooman Road Bridge and Roadway Improvement Project  
ODOT PID 5669/85131  
Perry and Leroy Townships, Lake County, Ohio**

**Issued Pursuant 42 U.S.C. 4332 (2)(c), 23 U.S.C. 128(a), 23 U.S.C. 138, and 49 U.S.C. 303**

**Proposed Project**

FHWA, in coordination with ODOT and LCEO, has selected Alternative B – Lane Road for implementation. The Vrooman Road Bridge and Roadway Improvement Project (the Project) would replace the existing Vrooman Road bridge structure over the Grand River with a high-level bridge on a new alignment that connects to the intersection of SR 84 (Lane Road) and Vrooman Road. River Road would be detached from the existing intersection and a cul-de-sac constructed. A new connecting roadway between State Route 84 (South Ridge Road) and River Road would be constructed approximately 1,400 feet east of the existing intersection.

**Project Background**

The Lake County Engineer's Office (LCEO), the local project sponsor, in conjunction with the Ohio Department of Transportation (ODOT), proposes to replace the existing Vrooman Road Bridge over the Grand River with a new bridge to be located approximately 1,000 feet upstream of the existing structure and improve Vrooman Road between Interstate (I) 90 and State Route (SR) 84. While improvements to the bridge and roadway were previously identified as separate construction projects, they have been combined and advanced in the EA as the Vrooman Road Bridge and Roadway Improvement Project (the Project), a Federal-aid highway project. As such, the project has been and will continue to be developed under ODOT's Project Development Process (PDP) in order to satisfy federal requirements, including the National Environmental Policy Act (NEPA).

Vrooman Road, also known as County Route (CR) 227, traverses portions of Leroy and Perry Townships in Lake County, Ohio. Vrooman Road is approximately 3.05 miles long extending from its southern traffic-circle intersection with State Route (SR) 86, CR 208, and CR 210 in Leroy Township, to its northern terminus, SR 84, in Perry Township. Vrooman Road provides access to and from Perry and Leroy Townships and eastern Painesville to I-90. A noted natural resource in the project area is the Grand River, a state-designated Wild and Scenic River. The project aims to minimize impacts to the Grand River by spanning the river with the new Vrooman Road Bridge.

**Purpose and Need**

The existing Vrooman Road Bridge (SFN 4337107) over the Grand River is structurally deficient and functionally obsolete. The existing bridge has fracture critical floor beams and lower chord and diagonal segments. The floor beam connections are in poor condition, as approximately 35

percent of the rivet-bolt fasteners have extensive corrosion to the nut (*2002 Physical Condition Report*, HNTB). The existing bridge was posted for a reduced load carrying capacity of 16 tons on September 13, 2005, hence the structurally deficient designation. The load rating and subsequent posting followed procedures defined in the Ohio Department of Transportation (ODOT) *Bridge Design Manual*. In accordance with the ODOT *Location and Design (L&D) Manual, Volume 2*, the existing bridge is too narrow for two lanes of traffic, has poor approach geometry, and regularly closes during flood events. These substandard features contribute to the “functionally obsolete” designation.

The roadway approach elevations in the immediate vicinity of the bridge (631.0 feet and 632.0 feet above mean sea level) are subject to flooding. This is a result of their being below the design-year, 25-year flood elevation of 641.02 feet above mean sea level. The approach roadway to the structure also exhibits severe geometric deficiencies, specifically, substandard horizontal curves and excessively steep grades. The intersection of Vrooman Road (CR 227) with SR 84 exhibits poor intersection geometry, including a substandard intersection angle (40 degrees versus 90 degrees preferred, and 60 degrees minimum) and excessively steep approach grades (12 percent grade on the south side of the Grand River Valley and 15 percent grade on the north side). These deficiencies lead to insufficient intersection sight distances. All of these substandard roadway features along Vrooman Road and SR 84 within the study area result in safety deficiencies and high crash rates.

The purpose of this project is to provide a safe and adequate transportation facility that addresses the deficient condition and design of the existing Vrooman Road Bridge (SFN 4337107), eliminates flooding of the existing bridge and approach roadway, addresses deficient design elements of existing Vrooman Road and its intersections, improves the safety of the study area, and maintains connectivity.

During preliminary engineering, LCEO stated publicly that homeland security was an element of the Project’s purpose and need especially given the proximity of the Project to the Perry Nuclear Power Plant. However, in response to citizen inquiries made during the preparation of the Project’s purpose and need statement (P&N), FHWA required ODOT to reanalyze all of the proposed P&N elements to ensure they were valid. As a result, it was found that there was insufficient justification to include homeland security as an element of the P&N. Therefore, homeland security is not an element of the final P&N as approved by FHWA.

### **Alternatives Considered**

The Alternatives Analysis Report (January 2012) evaluated five conceptual alternatives and identified two feasible alternatives to be carried forward for detailed NEPA analysis and consideration along with the no-build. The feasible alternatives were designated Alternative A – Madison Avenue Alignment and Alternative B – Lane Road Alignment. The Conceptual and Feasible Alternatives are fully described in the EA. Alternative B – Lane Road was identified as the Preferred Alternative in the EA.

Alternatives A and B both completely satisfy three of the four components of the Project’s P&N and include:

- A new bridge well above the Grand River’s floodplain not subject to flooding and road closure, thus satisfying two components of the project’s purpose: to replace a substandard bridge and to eliminate flooding and periodic roadway closures
- Upgrading of Vrooman Road to current design standards and upgrading intersections at SR 84, thus satisfying the project’s purpose to improve traveler safety

The fourth component of the project’s Purpose and Need is connectivity, defined in the Project’s FHWA approved P&N statement as providing connectivity between I-90 and eastern Painesville.

The proposed connection of Vrooman Road with Lane Road (Alternative B) will allow more efficient connectivity to I-90 and the eastern Painesville residential communities of Spring Lakes, Halewood Park Estates, Siron Acres, Park Road, Lincoln Farms, and Fruitland Acres.

Alternative A, with its connection with Madison Avenue, provides connectivity to the closer-in southeastern residential suburbs of Painesville, including Eastern Woodlands, Boulder Ridge, Imperial Meadows, and Foxfire Trails, and to downtown Painesville. However, Madison Avenue connects with and becomes Main Street as it enters Painesville and, like the current Vrooman Road, suffers from periodic flooding and closure.

Public involvement was conducted throughout the development and evaluation of conceptual and feasible alternatives, as well as coordination with the applicable resource agencies. Public involvement documentation is contained in the Environmental Assessment (EA).

**The Selected Alternative**

FHWA, in coordination with ODOT and LCEO, has selected Alternative B – Lane Road for implementation. This decision was made after of considering the P&N, the Alternatives Analysis, the engineering design to date, environmental impacts, input from the public and stakeholders, and support of the resource agencies

**Cost**

The estimated construction cost for the entire project is approximately \$31.4 million: the bridge structure and River Road bypass project cost estimate is \$27.6 million, the right-of-way project cost estimate is \$0.35 million, and the Vrooman Road improvement project cost estimate is \$3.5 million. These estimates are made in 2015 dollars. Based on the December 2012 Preliminary Engineering Study, the project’s current secured funding sources and cost estimates are shown below.

Bridge – PID 5669	
Preliminary Construction Cost (FY 2015)	\$25,800,000.00
(C.E. @ 7%)	<u>\$1,806,000.00</u>
<b>Total</b>	<b>\$27,606,000.00</b>
 NOACA Federal Funds	 \$17,304,830.00

CEAO LBR Funds	\$2,451,760.00
Lake County Funds	<u>\$7,849,410.00</u>
<b>Total</b>	<b>\$27,606,000.00</b>

Right of Way	
NOACA STP	\$150,000.00
Lake County	<u>\$200,000.00</u>
<b>Total</b>	<b>\$350,000.00</b>

Roadway – PID 85131	
NOACA STP Funds	\$2,786,000.00
Lake County Funds	<u>\$696,500.00</u>
<b>Total</b>	<b>\$ 3,482,500.00</b>

**Schedule**

**Vrooman Road Bridge PID 5669**

- Preliminary design is currently being developed.
- Detailed Design will start upon completion of the Finding of No Significant Impact.
- The Lake County Engineer’s Office is beginning the right-of-way acquisition process using local funds.
- Design is anticipated to be completed in late 2014.
- Project will start construction in FY 2015.

**Vrooman Road PID 85131**

- Preliminary Design is currently being performed.
- Design is anticipated to be completed in late 2014.
- Project will start construction in FY 2015.

**Environmental Impact Determination**

The following table provides a summary of the impacts and mitigation for Alternative B, the Selected Alternative and FHWA’s determination of significance.

**Summary of Project Impacts and Mitigation Measures**

Resource Involvement	Impact	Mitigation Measures	Significance Determination
<b>Property Acquisition/Relocation</b>	1 Residential Relocation 2780 South Ridge Road.	The permanent property will be acquired per the requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended and state statutes.	FHWA has determined that this project will not result in a significant impact to properties with the study area.
<b>NRHP Eligible Archaeological Site 33LA158</b>	No Adverse Effect	Project Plan Notes. Environmental Commitments Items 1 - 5.	FHWA has determined that this project will not result in a significant impact to NRHP Eligible Archeological Site 33LA158.
<b>Ecological Resources:</b>			
Endangered Species – Indiana Bat – Snuffbox Mussel	May Affect, but is Not Likely to Adversely Affect May Affect, but is Not Likely to Adversely Affect	Plan Note: Restricted tree clearing dates. Ohio Department of Natural Resources (ODNR) /U.S. Fish and Wildlife Services (USFWS) required plan notes (Environmental Commitments Items 29-35) and agency coordination and review during final design and construction.	FHWA has determined that this project will not result in a significant impact to Endangered Species.
<b>Aquatic Resources</b>	414 linear feet of stream impacts.	Individual 401/Nationwide 404 Permit - Appropriate permit application will be completed during final design; Section 401/404 regulatory oversight and mitigation measures will be determined.	FHWA has determined that this project will not result in a significant impact to aquatic resources.
<b>Wetland Resources</b>	0.49 acres	Individual 401/Nationwide 404 Permit - Appropriate permit application will be completed during final design; Section 401/404 regulatory oversight and mitigation measures will be determined.	FHWA has determined that this project will not result in a significant impact to wetland resources.
<b>Farmland Prime (acres)</b>	0.82 acres 57	None required	FHWA has determined that this project will not have a significant impact to farmland.

Summary of Project Impacts and Mitigation Measures			
Resource Involvement	Impact	Mitigation Measures	Significance Determination
<b>Wild and Scenic Rivers</b>	Grand River	ODNR/USFWS required plan notes (Environmental Commitments Items 18-34) and agency coordination and review during final design and construction.	FHWA has determined that this project will not result in a significant impact to ODNR Wild and Scenic Grand River.
<b>Section 4(f)</b> Mason's Landing Park Indian Point Park Archaeological Site 33LA158	Net Benefit Net Benefit De Minimis	<b>Net Benefit:</b> Measures to Minimize Harm and Mitigation Measures as outlined in the 2012 Section 4(f) Net Benefits document. Environmental Commitments Items 6-17 <b>De Minimis:</b> Plan notes as agreed upon with the September 27, 2012 OHPO concurrence. Environmental Commitments Items 1-5.	FHWA has determined that this project will not result in a significant impact to Section 4(f) resources.
<b>NOAA Great Lakes Coastal Grant Property Easement:</b> LMP (Former Anzels Parcel – 11.99 acres)	1.70 Acres Temporary 0.01 Acres Permanent	Acquisition of the 14.92-acre Sidley property (03-A-002-0-00-005-0) with the same easements dedicated for conservation purposes.	FHWA has determined that this project will not result in a significant impact to NOAA Great Lakes Coastal Grant Property Easement.
<b>Air Quality</b>	<b>MSAT</b> - Low effect on MSAT <b>Carbon Monoxide</b> - Type project is Exempt <b>PM 2.5</b> - Lake County is a Maintenance Area <b>Ozone</b> - In conformance with the NOACA TIP	Mitigation is not required.	FHWA has determined that this project will not result in a significant impact to air quality.
<b>Noise</b>	No Impacts – Noise increases do not exceed acceptable thresholds per ODOT Noise Policy (per 23 CFR 772)	Mitigation is not required.	FHWA has determined that this project will not result in a significant impact to noise sensitive receptors.
<b>Environmental Justice</b>	No Impacts - The proposed project will have no disproportionately high and adverse impacts to minority or low income populations.	Mitigation is not required.	FHWA has determined that this project will not result in a significant impact to minority or low income populations
<b>Hazardous Materials</b>	No Impacts - Phase II Environmental Site Assessment Report determined no further ESA investigation or special material management is warranted.	Mitigation is not required.	FHWA has determined that this project will not result in a significant impact to properties containing hazardous materials.

## Updates to the EA

This section provides additional information to update the EA based on comments received or subsequent coordination that has taken place since the EA was published. Section headings and page numbers refer to sections and pages in the Vrooman Road Bridge and Roadway Improvement Project EA

**Ecological, EA Page 19:** Wetlands directly impacted by Alternative B are 0.41 total acres and Alternative A would impact 0.54 total acres.

**Feasible Alternatives Impact Comparison Table, page 41:** *Wetland Resources*, Alternative B - Lane Road impact is 0.41 acres. *Section 4(f)*, Alternative A - Madison Avenue impacts are 7.54 acres of temporary ROW and 4.31 acres of permanent ROW.

**Environmental Commitments, Page 50, Stream Work:** Work within the ODNR Wild and Scenic Grand River is only allowed for the removal of the center pier from the existing bridge and can only occur between August 1<sup>st</sup> and September 15<sup>th</sup>.

**Farmland Coordination, EA Page 24:** The United States Department of Agriculture's (USDA) Farmland Conversion Impact Rating Form (AD-1006) are included in Appendix C of the EA.

**Section 4(f), Page 26:** The Grand River is not considered a significant Section 4(f) resource, as it does not have a management plan, contain ODNR recreational facilities, nor designated as a canoe trail.

**Northern Long-eared Bat (Proposed Endangered):** The project site was mist netted for bats on July 26<sup>th</sup> through 31<sup>st</sup> 2012. A total of three net sites with eight net sets were placed along the proposed Vrooman Road alignment. No bats were captured during the six night survey. No caves or mine portals that could be acting as day roost or winter hibernacula were observed on the Vrooman Road alignment. Trees will be cleared from the project area from September 30 thru April 1<sup>st</sup>. Due to the absence of bats captured during the mist net survey, it is presumed that the bridge replacement project **May Affect but not likely to Adversely Affect** the Northern Long-eared Bat.

**Rufa Red Knot (Proposed Threatened):** The rufa red knot migrates through Ohio in the spring and fall, but is not known to nest in Ohio. According to the Ohio Ornithological Society, the rufa red knot is considered a "rare migrant, most likely along Lake Erie that prefers mudflats and beaches." This species is typically observed annually within Ohio, but with only a few sighting records per year on average. The USFWS's notification of listing for this species indicated that no designated critical habitat has yet been proposed for this species (within Ohio or elsewhere). The project area is not located along the shore of Lake Erie. No mud flats or beaches were identified within the project area. Impacts to potential habitat are not expected. This project will have **No Effect** on this species.

**Cultural Resources:** In response to a January 24, 2014 e-mail (Mr. Filson to FHWA) and a January 27, 2014 e-mail (Ms. Greene to the Ohio Historic Preservation Office (OHPO)) regarding the eligibility for listing on the National Register of Historic Places (NRHP) the property at 5700 Vrooman Road, the OHPO and ODOT reevaluated the eligibility of the property. Based on information received, the OHPO completed its evaluation and provided its recommendation that the house is not eligible for the National Register. The evaluation and the recommendation were delineated in a letter dated February 11, 2014 from the OHPO to ODOT's Office of Environmental Services. Appendix B contains all correspondence regarding this reevaluation request.

**Coordination with the Seneca Nation:**

ODOT met with Seneca Nation representatives on January 24, 2014. As a result of this meeting, the project will coordinate with the Seneca Nation to:

- Develop an educational kiosk displaying information about the various Native American Tribes that once inhabited the region.
- Identify opportunities for aesthetic treatments to the bridge inspired by the Native American Tribes that once inhabited the region.

**Public Participation**

During project development, there have been continuous opportunities for the public to provide input into the decision-making process. Coordination with Federal, State, and local agencies was also conducted. Since the project's inception, LCEO and ODOT have held numerous stakeholder meetings, public meetings, briefings, a formal public hearing, and meetings with individual groups, organizations, and elected officials; developed a project website; responded to public information requests and individual concerns; and cooperated with local media coverage. Per Title VI of the Civil Rights Act of 1964 which states, "No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance," all efforts were made to be inclusive of all respective groups during the Planning, Project Development and Public Involvement processes. The feedback and input from the public involvement activities following the 2010 FHWA determination that an EA was to be completed for the project, assisted the LCEO in the evaluation of feasible alternatives A and B. The EA details the public involvement process for the project.

The EA was approved on September 4, 2013 and made available for public view. The Notice of EA Availability and Public Hearing letter was mailed to residents and stakeholders, and citizens that previously expressed an interest in the project. The EA was available for review at 12 public locations in Lake County and on ODOT's website ([www.buckeyetraffic.org/vroomanRoad](http://www.buckeyetraffic.org/vroomanRoad)). A Notice of EA Availability and Public Hearing was advertised on October 10, 2013 and October 22, 2013 in the Lake County News-Herald, and included publication on the newspaper's website. One public hearing was held on October 24, 2013 at the Lake County Utilities Learning and Business Center (1981 Blasé Nemeth Road, Painesville, Ohio 44077). The hearing was held from 6:00 pm to 9:00 pm and included a presentation by the project team at 7:00 pm followed by a formal public testimony period. Responses to the public hearing comments are included in the Public Hearing Response Table Finding of No Significant Impact for the Vrooman Rd. Bridge and Roadway Improvement Project

in Appendix A. Written comments on the EA were due by November 8, 2013. Comments received have been documented and addressed in the Public Involvement Summary in Appendix B.

### **Environmental Commitments**

While efforts have been made to avoid or minimize impacts to resources through project design, construction of the Alternative B will have an insignificant effect on the identified resources. Mitigation measures include the environmental commitments (pages 45-51 of the EA), plan notes, and on-going agency coordination during final design and the 401/404 permitting process.

### ***Cultural Resources:***

1. To minimize harm to Site 33LA158, proposed efforts include the protection of intact portions of the site with the use of geosynthetic fabric for the placement of fill, the use of temporary fencing along the work limits in the vicinity of the site, and the use of design modifications to limit work beyond the existing right-of-way and prohibit ditching or underground utility relocation.
2. The relocation of the existing utility poles will adhere to the areas tested in July 2012, essentially 11 feet north of the existing locations (5 8+88/25N, 60+ 25/25N, 61 + 34/25N, 62+60/25N, and 64+02/25N).
3. Archaeological monitoring will be managed per 2013 ODOT Construction and Material Specifications (ODOT CMS) and will be performed during construction along SR 84 and Lane Road to record and recover any archaeological material that might be uncovered during construction.
4. A plan note will be required to notify the contractor of the potential for archaeological material, and, per the 2013 ODOT CMS, establish the procedures to notify OES of the construction schedule so qualified staff can be present to monitor construction.
5. The OHPO will review final plans to ensure the agreed upon measures to minimize effects have been incorporated. No ground disturbance will take place until this commitment has been fulfilled.

### ***Section 4(f):***

6. Access to Lake County Metroparks' (LMP) Mason's Landing Park will be maintained during construction of the bridge and Vrooman Road roadway improvements. Vrooman Road, from SR 84 to the entrance to the park, will be used to transport construction supplies and materials to the construction site on the north side of the river. Infrequent, short-term closures of Vrooman Road and access to Mason's Landing Park from SR 84 may be necessary.

7. Mason's Landing Park facilities (Steelhead Run Trail, parking lot, canoe access, picnic area

with grills, fishing, playground, and portable restrooms) will remain open until the new facilities (parking lot, canoe access, picnic area with grills, fishing, playground, and portable restrooms) are ready for use on the south side of the Grand River.

8. Short-term closures of the Mason's Landing Park's Steelhead Run Trail may be necessary due to access constraints and safety concerns for persons using this trail during removal of the park's parking lot, canoe access, picnic area with grills, fishing, playground, and portable restrooms and construction of the pedestrian bridge (on the location of the existing Vrooman Road Bridge). The park's trail will be re-opened once these activities are completed. The closure is expected to be temporary and will be of short duration and less than the total time needed for construction of the project. Precautions will be taken to protect the park from damage. Mason's Landing Park will not be used for the staging of construction equipment or materials. It is anticipated that construction vehicles and activities during the removal of park equipment may result in voids, pits, and ruts in the ground; changes in grading; or the removal or destruction of vegetation. BMPs will be incorporated in the design and utilized as appropriate during construction. This property will be repaired and re-graded at the conclusion of construction activity.
9. A former farmstead (residence and an outbuilding) at 5343 Vrooman Road is present on the south ridge of the Grand River Valley in Indian Point Park. LMP rents this property to park employees. Access to this property will be maintained during all phases of the project. During construction of the project, it may be necessary to provide a temporary driveway to maintain access to the property from Vrooman Road. Permanent access to this property will be restored as part of the project.
10. A portion of existing Seeley Road is used by vehicular traffic to connect visitors to Indian Point Park from Vrooman Road. This route will be used for construction access and will be reconstructed to a condition at least as good as or better than that which existed prior to the project. Construction traffic on this road during the project could present a safety issue for park visitors. Signs notifying park visitors that the road is being used by construction vehicles will be posted. Should it be necessary to use portions of Seeley Road for construction staging activities, visible detours will be established to route all park visitors and vehicular traffic to access Indian Point Park from alternative roadways. The project will not involve the relocation of Seeley Road from its current location adjacent to the Grand River.
11. A portion of Indian Point Park will be used for construction activities and haul roads. It is anticipated that construction vehicles and activities may result in voids, pits, and ruts in the ground; changes in grading; or the removal or destruction of vegetation to current LMP property during the construction period. BMPs will be incorporated in the design and utilized as appropriated during construction. This property will be repaired or restored at the conclusion of construction activity.

12. If there is an opportunity through final bridge design to identify ways to reduce noise from vehicles on the bridge deck and joints, LMP feels it would be beneficial to the project and the park below. A cost-effective bridge design that would reduce the noise on the proposed bridge would include the use of longitudinal grooves instead of traverse grooves.
13. Certain Mason's Landing Park facilities will be removed from the north side of the river and replaced in-kind on the south side of the river, including the parking lot; playground; canoe access; and amenities (picnic tables, grills, and portable toilets).
14. Access from the south side to the north side of the Grand River will be maintained with a replacement pedestrian bridge suitable for pedestrian and light park service vehicles. This ADA-compliant replacement bridge will be at the same location as the existing Vrooman Road Bridge. The existing bridge and center pier will be removed and replaced with a single-span pedestrian bridge on the existing abutments. LMP will assume ownership of the Vrooman Road pedestrian replacement bridge. This will maintain LMP's direct access to its property from the south side of the Grand River.
15. The Sidley Property (14.92 acres) along the north side of the Grand River, adjacent to the east side of Vrooman Road, has been identified as an acceptable replacement property for the permanent acquisition of 3.50 acres from Indian Point Park and exceeds the amount of replacement land acquired. This property will be owned by LMP and will include all necessary and appropriate conservation easements (USDA Wetland Reserve Program Easement and Great Lakes Coastal Restoration Grant Deed Restriction). This will replace and expand the existing easements on the acquired property.
16. Vacated portions of the current Vrooman Road right-of-way will be transferred to LMP (approximately 2.62 acres). Prior to transfer, the asphalt will be removed from the vacated right-of-way. The specific locations for the removal of asphalt will be determined during detail design and in consultation with LMP.
17. The LMP will assume ownership of the existing retaining wall and will be responsible for its maintenance. The remaining portion of the roadway bed may be converted to an LMP trail from SR 84 to their property on the north side of the Grand River. ODOT will maintain SR 84.

***ODNR Scenic Rivers:***

18. The highway contractor will develop and implement a Storm Water Pollution Prevention Plan (SWPPP) as required by Ohio Environmental Protection Agency. This plan will govern all earth disturbing activities during the construction of this project.
19. The contractor will not store fuels, oils, or other chemicals in the floodplain. It will

be necessary to refuel some equipment in the floodplain. Specifically, a large crane will be needed to construct the high-level (river-spanning) new Vrooman Road Bridge. Due to the size of the crane, it will be in place for weeks at a time. Accordingly, ODOT has developed a strong plan note to include in the highway contract that will govern the contractors operations in the floodplain. Below is the plan note that will be incorporated in the plans:

***PLAN NOTE: AVOIDANCE OF POTENTIAL IMPACTS TO GRAND RIVER***

***1.1 INTRODUCTION***

*THIS PROJECT IS LOCATED IN THE IMMEDIATE VICINITY OF THE GRAND RIVER, A STATE AND FEDERALLY PROTECTED WATER RESOURCE. THIS NOTE GOVERNS THE CONTRACTOR'S, STORAGE, MAINTENANCE, AND REFUELING OPERATIONS DURING THE CONSTRUCTION OF THIS PROJECT.*

***1.2 STORAGE OF EQUIPMENT AND MATERIALS***

*THE CONTRACTOR SHALL NOT STORE IDLE EQUIPMENT WITH THE EXCEPTION OF THE LARGE CRANE, FUEL, OIL, OR OTHER CHEMICALS IN THE FLOODPLAIN OF THE GRAND RIVER.*

***1.3 EMERGENCY RESPONSE CONTINGENCY PLAN***

*THE CONTRACTOR SHALL CERTIFY IN WRITING TO THE ENGINEER WITHIN TWO WEEKS AFTER CONTRACT EXECUTION AND PRIOR TO ANY WORK WITHIN OR OVER THE GRAND RIVER THAT AN EMERGENCY RESPONSE CONTINGENCY PLAN (ERCP) HAS BEEN PREPARED. THE ERCP SHALL INCLUDE, BUT IS NOT LIMITED TO, SPILL PREVENTION, INCLUDING REFUELING AND MAINTENANCE OF EQUIPMENT; SPILL CONTAINMENT; FUEL STORAGE AND TRANSPORT; AND SPILL RESPONSE. IF A SPILL OF FUEL, OIL, OR OTHER CHEMICAL OCCURS, THE CONTRACTOR IS RESPONSIBLE FOR CLEAN-UP AND PROPER DISPOSAL. THE ERCP SHALL BE UTILIZED DURING ALL CONSTRUCTION AND DEMOLITION OCCURRING ON THE PROJECT OVER THE GRAND RIVER. IN ADDITION, THE CONTRACTOR SHALL MAKE THE ERCP AVAILABLE AT THE PROJECT SITE.*

***1.4 BASIS OF PAYMENT***

*THE CONTRACTOR SHALL FURNISH ALL THE LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO PROPERLY DEVELOP AND COMPLY WITH THE ERCP. PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT PRICE AS A LUMP SUM ITEM*

20. The top of the footing for the center pier of the bridge is located just below the riverbed. The project plans will specify the removal of the pier to this elevation and construction of a causeway from the southeast quadrant rather than the northwest quadrant.
21. Work within the Grand River will be conducted during the low-flow period of the Grand River. The contractor's work will be conducted from September 15 to October 31.
22. No runoff from the new Vrooman Road Bridge will fall directly into the Grand River. All deck runoff will be collected in the gutters and flow to the ends of the bridge. The runoff from the bridge will be collected in a closed drainage system and handled using appropriate storm water BMPs. If scuppers are needed, they will outlet into a closed drainage system that will transmit the runoff into a dedicated storm

sewer system that will treat the runoff with appropriate BMPs. No scuppers will be installed on the Vrooman Road Pedestrian Bridge over the Grand River; over-the-edge drainage will be used, per ODOT standards.

23. During pier removal and in-stream work, all wastewater will be pumped onto a vegetated area a sufficient distance from the Grand River to allow for complete infiltration. No wastewater of any kind will be discharged directly into the Grand River or any other tributary drainage ways, ditches, or streams. If discharge to a vegetated area is not feasible, wastewater will be discharged into a sediment filter bag or into a temporary detention/retention pond with sufficient retention time to permit the settling of all suspended solids. A plan note will be incorporated in the plans.
24. Vegetation will be left undisturbed to the extent possible. In areas where vegetation is removed, the area will be re-vegetated with native species. If any tree removal is necessary, replanting will be required and will be consistent with the Section 4(f) agreement between FHWA and LMP.
25. If painting, sand blasting, or water blasting any portion of the existing bridge is necessary, appropriate aprons will be used to provide for complete containment of all paint debris particles and other debris. Appropriate aprons will be used to provide for complete containment of all paint and/or sealant over-spray. Any such debris will be removed immediately from 1,000 feet of the Grand River and disposed of at an approved upland site (above 100-year flood elevations). Disposal in wetlands, floodplains, or within 1,000 feet of the Grand River is prohibited. A plan note will be incorporated in the plans.
26. ODOT will coordinate the project plans with the ODNR Northeast Ohio Assistant Regional Scenic Rivers Manager during Stage 2 (about four months) and Final Plans (about one year). ODOT will invite ODNR Northeast Ohio Assistant Regional Scenic Rivers Manager to the Preconstruction Meeting. ODOT and the ODNR Northeast Ohio Assistant Regional Scenic Rivers Manager will coordinate periodic field reviews to ensure these conditions are met.
27. Signs stating Grand River State Wild & Scenic River will be installed at both approaches of the new Vrooman Road Bridge and new pedestrian bridge. A sign stating bridge name or road name/number) will be installed on the upstream side of the new pedestrian bridge so as to be visible to boat traffic on the Grand River.
28. To ensure that the contractors understand Scenic River Program requirements, the above ODNR conditions will be included in the final project plans. These plan sets must be made available to all construction personnel throughout the duration of the project.

***USFWS for Endangered Species:***

29. Removal of the existing bridge by the contractor will be carried out in accordance with the guidance and recommendations provided by the ODNR-SRP to minimize impacts to mussel populations located upstream and downstream of the project construction limits. Any material that enters the water during the demolition process will be removed immediately.
30. The contract will construct the temporary access pad and cofferdam (used in removing the existing bridge and in-stream pier) will be constructed, with dewatering and removal also carried out, in accordance with ODNR SRP's guidance and recommendations.
31. The contractor will perform all in-stream work during low-flow conditions (Aug 1- Oct 31).ODNR has exclusionary dates for in-stream construction/work activities that ODOT must follow. The contractor will need to follow the Scenic River exclusionary dates of November 1 to July 31 and the Seasonally Salmonid dates of September 15 to June 30. These dates in combination with USFWS restrict dates give ODOT a narrow window of in-stream work from September 15 to October 31. These dates will be included in the contract via a plan note stating all in-stream work will be conducted during low-flow conditions from September 15 to October 31.
32. The contractor will develop and implemented on site prior to commencement of earthwork a sediment and erosions control plan should be developed. The contractor must properly maintain all controls in place until final site stabilization is achieved. The contractor will be required to comply with ODOT CMS I 07.19 Environmental Protection and 207 Temporary Sediment and Erosion Controls. Spec. 207.03 requires the contractor to develop a SWPPP. This spec ensures that the contractor will have erosion control measures in place before, during, and after earthwork. These controls will be monitored and repaired as necessary to ensure effective performance.
33. ODOT will invite a biologist from the USFWS Columbus, Ohio Field Office to attend the pre-construction meeting with the contractor to clarify these recommendations and address and concerns, as needed. This request will be added as a plan note to call the USFWS Columbus, Ohio Field Office, (614) 416-8993 Ext 23. USFWS will be invited to the pre-construction meeting with the contractor to clarify recommendation and concerns.
34. ODOT must keep USFWS apprised of the construction schedule for this project and give USFWS the opportunity to conduct periodic site visits. This request will be added as a plan note that the ODOT must keep USFWS apprised of the construction schedule for this project and give USFWS the opportunity to conduct periodic site visits during the course of the action.

35. The clearing of trees in the construction zone will be done only between September 30 and April 1.

***Other Commitments:***

**Wetlands:**

36. USACE 404 Nationwide Permit /Individual OEPA Section 401 Water Quality Certification – The 404 Individual Permit and Section 401 Water Quality Certification applications will be completed and submitted to the USACE and OEPA during final design; Section 404 regulatory oversight and mitigation measures will be determined.

**Streams:**

37. USACE 404 Nationwide Permit /Individual OEPA Section 401 Water Quality Certification – The 404 Individual Permit and Section 401 Water Quality Certification applications will be completed and submitted to the USACE and OEPA during final design; Section 404 regulatory oversight and mitigation measures will be determined.

**NOAA Great Lakes Coastal Grant Property Easement:**

38. The 14.92-acre Sidley property (03-A-002-0-00-005-0) will be acquired, and the same conservation easement that is currently on the LMP property (identified as the 11.99-acre former Anzels Parcel), will be applied.

**Seneca Nation Coordination:**

39. As a part of construction, ODOT and LCEO will build an educational kiosk displaying information about the various Native American Tribes that once inhabited the region, and incorporate aesthetic treatments to the bridge.

**Finding of No Significant Impact**

The Federal Highway Administration (FHWA) has determined Alternative B - Lane Road will have no significant Impact on the human or natural environment. This Finding of No Significant Impact (FONSI) is based on the Environmental Assessment (EA) approved by FHWA on September 4, 2013 along with subsequent comments and responses on the EA and supporting technical studies. This documentation has been independently evaluated by the FHWA and determined to adequately and accurately discuss the need, environmental effects, and impacts of the proposed project and appropriate mitigation measures. It provides sufficient basis to determine that an Environmental impact Statement (EIS) is not required. The FHWA takes full responsibility for the accuracy, scope, and content of the EA and this FONSI determination.

  
\_\_\_\_\_  
Laura S. Leffler, Ohio Division Administrator

5/29/2014  
Date

A Federal agency may publish a notice in the Federal Register, pursuant to 23 USC §139(l), indicating that one or more Federal agencies have taken final action on permits, licenses, or approvals for a transportation project. If such notice is published, claims seeking judicial review of those Federal agency actions will be barred unless such claims are filed within 150 days after the date of publication of the notice, or within such shorter time period as is specified in the Federal laws pursuant to which judicial review of the Federal agency action is allowed. If no notice is published, then the periods of time that otherwise are provided by the Federal laws governing such claims will apply.



**DEPARTMENT OF THE ARMY**  
HUNTINGTON DISTRICT, CORPS OF ENGINEERS  
502 EIGHTH STREET  
HUNTINGTON, WEST VIRGINIA 25701-2070

February 9, 2011

Operations and Readiness Division  
Regulatory Branch  
2009-00448-GRA – Grand River  
LAK-Vrooman Road, PID: 5669

Mr. Timothy M. Hill  
Office of Environmental Services  
Ohio Department of Transportation  
Post Office Box 899  
Columbus, Ohio 43216-0899

Dear Mr. Hill:

This letter is in response to the Level I Ecological Survey Report (ESR) prepared by Michael Baker Jr., Inc., dated July 2009 and supplemental information to the ESR was submitted via email on July 29, 2010. The ESR and supplement contain information concerning potential resources within an approximate 104-acre study area located along and near Vrooman Road between Interstate Route 90 (I-90) and State Route 84 (SR-84) in Leroy and Perry Townships, Lake County, Ohio. A total of twenty potential waters of the United States were identified within the 104-acre study area: four streams and sixteen wetlands.

The United States Army Corps of Engineers (USACE) authority to regulate waters of the United States is based on the definitions and limits of jurisdiction contained in 33 CFR 328 and 33 CFR 329. Section 404 of the Clean Water Act (CWA) requires that a Department of the Army (DA) permit be obtained prior to placing dredged or fill material into waters of the United States, including wetlands. Section 10 of the Rivers and Harbors Act of 1899 requires that a DA permit be obtained for any work in, on, over or under a navigable water.

Based on the information provided and site visit conducted on June 16, 2010 it has been determined that Stream 1, the Grand River (1,660 linear feet [lf]), is a traditional navigable water (TNW). Stream 2 (1,032 lf) and Stream A (398 lf) have been determined to be perennial relatively permanent waters (RPWs) and direct tributaries of the Grand River. Stream 3 (271 lf) has been determined to be an intermittent-seasonal RPW and a direct tributary of the Grand River. Wetlands A (1.02 acres [ac]), B (0.01 ac), C (0.01 ac), D (0.13 ac), E (0.06 ac), I (3.54 ac), J (2.91 ac), K (0.23 ac) and M (1.25 ac) have been determined to be adjacent to Stream 1 (Grand River – TNW). Wetland L has been determined to abut RPW Stream 2. Therefore Stream 1 is a jurisdictional water of the U.S., subject to regulation under Section 10 of the RHA.

and Section 404 of the CWA; Streams 2, 3 and A, and Wetlands A, B, C, D, E, I, J, K, L and M are jurisdictional waters of the U.S., subject to regulation under Section 404 of the CWA.

Wetlands F/G (0.05 ac), N (0.04 ac), N1 (0.05 ac), 1 (0.02 ac), 2 (0.03 ac) and 3 (0.03 ac) are surrounded by upland and exhibit no evidence of a hydrological connection to the tributary system. Based on the absence of a hydrological connection or adjacency to a water of the U.S., these wetlands are isolated with no apparent connection with interstate or foreign commerce and are therefore not waters of the U.S. Isolated waters are only regulated under Section 404 of the Clean Water Act when the use, degradation or destruction of which could affect interstate or foreign commerce. Isolated Wetlands F/G, N, N1, 1, 2 and 3 have no substantial connection to interstate or foreign commerce and are not considered to be waters of the United States. Therefore, no authorization would be required from this office for the placement of dredged or fill material in these wetlands. However, you should contact the Ohio Environmental Protection Agency, Division of Surface Waters at 614-644-2001, to determine state permit requirements.

In accordance with the June 5, 2007 Joint Memorandum between the USEPA and the U.S. Army Corps of Engineers and the January 28, 2008 USACE Memorandum regarding coordination on jurisdictional determinations, this determination was coordinated with USACE Headquarters, with coordination completed on November 29, 2010.

This jurisdictional verification is valid for a period of five years from the date of this letter unless new information warrants revision of the delineation prior to the expiration date. This letter contains an approved jurisdictional determination for the subject site. Should you disagree with our jurisdictional determination, you have the right to file an administrative appeal under the 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 this determination you must submit a completed RFA form to the Great Lakes and Ohio River Division Office at the following address:

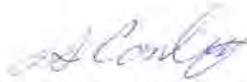
Review Officer  
Great Lakes and Ohio River Division  
550 Main Street, Room 10032  
Cincinnati, Ohio 45202-3222  
Phone: (513) 684-7261  
Fax: (513) 684-2460

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 CFR 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 **April 10, 2011**. **It is not necessary to submit an RFA form to the Division office if you do not object to the determination in this letter.**

This determination has been conducted to identify the limits of the Corps of Engineers' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are United States Department of Agriculture (USDA) program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

If you have any questions concerning the above, please contact Peter Clingan of the Columbus Field Office at 614-692-4654.

Sincerely,



LuAnne S. Conley, P.E.  
Chief, South/Transportation Section

Enclosure

Copy Furnished w/ enclosure via email:

[Art.Coleman@epa.state.oh.us](mailto:Art.Coleman@epa.state.oh.us)

[Mike.Pettegrew@dot.state.oh.us](mailto:Mike.Pettegrew@dot.state.oh.us)

[Ric.Queen@epa.state.oh.us](mailto:Ric.Queen@epa.state.oh.us)

[Adrienne.Smith@dot.state.oh.us](mailto:Adrienne.Smith@dot.state.oh.us)

**NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND  
REQUEST FOR APPEAL**

Applicant	Ohio Department of Transportation	File Number: 2009-00448-GRA	Date: 2/9/2011
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://usace.army.mil/inet/functions/cw/cecwo/reg> 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:  
Ginger Mullins, Chief, Regulatory Branch, 304-399-5710  
Rebecca Rutherford, Ch, North Regulatory Section, 304-399-5210  
Mark Taylor, Chief, Energy Resource Section, 304 399-5610  
LuAnne Conley, Chief, South Regulatory Section, 304-399-5710  
  
Address: U.S. Army Corps of Engineers  
Regulatory Branch  
502 8<sup>th</sup> Street  
Huntington, WV 25701

If you only have questions regarding the appeal process you may also contact:  
  
US Army Corps of Engineers  
Great Lakes & Ohio River Division  
Attn: Pauline Thorndike, Review Officer  
550 Main Street RM 10-524  
Cincinnati, OH 45202-3222  
Phone: (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:
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# Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

**Office of Coastal Management**  
105 West Shoreline Drive  
Sandusky, Ohio 44870  
(419) 626-7980

July 31, 2012

Vince Urbanski  
Lake Metroparks  
Director of Planning  
11211 Spear Road  
Concord Township, Ohio 44077

RE: Parcel Replacement-Mitigation Request for Grand River Indian Point NOAA-funded Acquisition

Dear Mr. Urbanski:

The ODNR Office of Coastal Management has reviewed Lake Metroparks' request for approval to proceed with acquisition of a replacement/mitigation parcel to mitigate expected impacts to Grand River Indian Point from implementation of the proposed Vrooman Road bridge replacement project. The Grand River Indian Point parcel acquisition was funded in part with Great Lakes Coastal Restoration Grant funds from the National Oceanic and Atmospheric Administration administered through the Ohio Coastal Management Program.

The mitigation request has been reviewed by the ODNR Office of Coastal Management and the National Oceanic and Atmospheric Administration. Mitigation for the conservation impacts to the Grand River Indian Point parcel will be required and is approved within the guidelines described in the attached National Oceanic and Atmospheric Administration letter dated July 27, 2012.

If you have any questions or concerns, please contact me at [yetty.alley@dnr.state.oh.us](mailto:yetty.alley@dnr.state.oh.us).

Sincerely,

A handwritten signature in cursive script that reads "Yetty M. Alley".

Yetty M. Alley  
Local Liaison

Attachment

cc: Deborah L. Beck, P.E., Interim Chief, ODNR Office of Coastal Management  
Steve Holland, Office of Coastal Management



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
OFFICE OF OCEAN AND COASTAL RESOURCE MANAGEMENT  
Silver Spring, Maryland 20910

Yetty M. Alley, Local Liaison  
Office of Coastal Management  
Ohio Department of Natural Resources  
105 W Shoreline Dr  
Sandusky OH 44870

JUL 27 2012

Dear Ms. Alley:

This letter is in response to previous discussions between the National Oceanic and Atmospheric Administration (NOAA) and the Ohio Department of Natural Resources regarding the 11.99 acre 'Anzelc' property (03-A-009-0-00-005-0) that was purchased in 2004, in part, using federal funds allocated through section 310 (the Great Lakes Coastal Grant Program supplement) of the Ohio Coastal Zone Management award # NA17OZ1134. As intended by the project scope, the property is currently owned by the Lake Metroparks (TNC) for conservation purposes, but it is NOAA's understanding that the Vrooman Road bridge replacement project proposed by the Ohio Department of Transportation (ODOT) will likely impact a portion of this property. The "Vrooman Road Bridge Replacement and Roadway Improvement Project, Coordination of NOAA Grant for the Anzelc Property" document dated May 25, 2011 described several impacts to the Anzelc property.

The proposed undertaking proposes the placement of two piers on the valley floor east of Borden's Ditch within the parcel. The two piers will incorporate approximately 0.011 acres of permanent right-of-way. The piers will be placed as far from the Grand River as allowable by design requirements. A total of 1.70 acres of temporary right-of-way from this property will be needed to provide a 100' wide construction corridor that will be below the proposed bridge alignment and utilized during construction activities. Vegetation and trees will be removed from the area of the temporary right-of-way during construction and re-vegetated following construction. A total of 1.70 acres of temporary right-of-way from this property will be needed to provide a 100' wide construction corridor that will be below the proposed bridge alignment and utilized during construction activities.

ODOT and Federal Highway Administration have identified acquisition of the 16.7 acre Sidley property (03-A-002-0-00-005-0) as a possible mitigation for the impacts to the 'Anzelc' property. Given the circumstances of this scenario, NOAA will allow Lake Metroparks to grant the described easements on the Anzelc property so long as the Sidley property is acquired and dedicated for conservation purposes.



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NOAA will require mitigation for the entire 1.70 temporary right of way (~14% of the 'Anzelc' property) since the conservation impacts will be fairly long-term and last beyond the period of bridge construction. Based on Lake County auditor's valuations, the Sidley property appears to be approximately the same value as the 1.7 acre portion of Anzelc property. Given the relatively low value of each of these parcels, NOAA will accept the Lake County Auditor's valuation of the properties rather than requiring appraisals for each property. If it is not possible to purchase the Sidley property or another conservation property acceptable to NOAA, then funds equal to the value of the 1.7 acre temporary right-of-way portion of the Anzelc property must be returned to NOAA. Please note that this letter should only be granted as approval for the use of the Sidley property as mitigation for the NOAA-funded conservation acquisition and should not be construed as federal approval for the property's use as mitigation for damages to other federal interests on the project site.

We appreciate your cooperation on this project. If you have any questions, or would like to discuss this project further, please contact either myself at (301) 713-3155 ext. 188, or Liz Mountz at (301) 713-3155 ext 148.

Sincerely,

A handwritten signature in black ink, appearing to read 'Joelle', with a long horizontal flourish extending to the right.

Joelle Gore, Acting Chief  
Coastal Programs Division

cc: Elizabeth Mountz, CPD



# Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

## Division of Watercraft

Rodger M. Norcross, Chief  
2045 Morse Road, Building A-3  
Columbus, Ohio 43229-6693  
Phone: (614) 265-6480 Fax: (614) 267-8883

October 3, 2012

Mr. Tom Sorge  
Environmental Specialist 2  
ODOT, District 12  
5500 Transportation Blvd.  
Garfield Heights, Ohio 44125

Dear Mr. Sorge:

On Tuesday, September 11, 2012, a conference call was conducted to discuss the results and implications of the recent mussel survey in the vicinity of the old Vrooman Road Bridge. Representatives of the Ohio Department of Transportation (ODOT), Ohio Department of Natural Resources (ODNR), United States Fish and Wildlife Service (USFWS) and the Lake County Engineer's Office participated in the call.

The primary topic of discussion and purpose of this call was to determine if the center pier for the existing Vrooman Road Bridge could be removed without negatively impacting mussel beds located downstream. Ultimately, it was concluded that Lake County/ODOT would move forward with the removal of the center pier as part of rehabilitating the existing Vrooman Road Bridge for pedestrian use. It was also determined that removal of the pier down to the stream bottom elevation will be required.

In addition, the following conditions shall be applied to the removal/rehabilitation of the existing Vrooman Road Bridge structure:

1. A sediment and erosion control plan shall be developed for the site and implemented before earthwork commences. Particular attention shall be given to any drainage ways, ditches and streams that could convey sediment laden water directly to the Grand Wild and Scenic River. Properly installed (framed and entrenched) sediment fence shall be utilized around the work site perimeter and storm water inlets. Appropriately designed rock-check dams and other erosion controls shall be utilized in ditches and drainage ways. All controls shall be properly maintained and inspected daily until final site stabilization is achieved. All sediment and erosion controls shall be removed upon

stabilization of the project area with vegetation. Straw bales shall not be permitted as a form of erosion control. All denuded areas, including ditches, culverts and river/stream banks, shall be permanently seeded and mulched, or fiber mat, immediately upon completion of earthwork or temporarily seeded and mulched, or fiber mat, within seven days if the area is to remain idle for more than thirty days. Access roads constructed on slopes shall be graveled to prevent erosion from surface runoff.

2. Idle equipment, petrochemicals and toxic/hazardous materials shall not be stored in the floodplain or near any drainage ways, ditches or streams that could convey such materials to the Grand Wild and Scenic River. Petrochemicals and toxic/hazardous materials shall not be discharged into the Grand River, its floodplain or any drainage ways, ditches or streams. Refueling of equipment shall not occur in the floodplain or near any drainage ways, ditches or streams. A spill containment and cleanup plan shall be generated prior to the start of the project.
3. The existing pier in the Grand River shall be removed down to the same elevation as the surrounding riverbed. All fill material used as rip-rap, work platforms or cofferdams shall be a minimum of three inches in diameter and be washed to remove fine particulate matter (clay, silt, sand and soil). Work platforms shall be kept to the absolute minimum size needed to facilitate in-stream work. In-stream work shall be conducted through the use of water diversions not requiring the placement of earthen fill (sheet piling, membrane dams, etc.) wherever possible. If feasible, the use of Aqua Barriers is recommended. Any fill shall be completely removed from the streambed immediately upon completion of in-stream work. Stream access to facilitate pier removal shall be developed at the northwest corner of the Vrooman Road Bridge over the Grand River adjacent to Mason's Landing. This is the most disturbed of the four corners of the bridge crossing over the Grand River. Once pier removal has been completed the area disturbed for access to the river shall be returned to its pre-existing condition or re-vegetated with native tree species.
4. All in-stream work shall be conducted during low flow period (August 1 through October 31). Any disturbed areas in the stream bottom shall be returned to pre-construction contours. Stream bottom elevations

shall be determined before in-stream work commences to ensure that all fill material and debris is completely removed before construction is completed.

5. Asphalt deck material shall be removed before any portion of the bridge is removed. Every effort shall be made to keep deck material and other debris out of the river during removal, appropriate falsework or aprons should be employed during deck removal to prevent debris from entering the water. If any material falls into the water, it shall be removed immediately. All debris, excess fill material and material used in work platforms shall be disposed of at an approved upland site (above 100 year flood elevations). Disposal in wetlands, floodplains or within 1000 feet of the Grand Wild and Scenic River is prohibited. All storm water drainage from the refurbished bridge deck shall be directed onto a vegetated area to allow for complete infiltration. Scuppers discharging untreated stormwater directly through the bridge deck will not be permitted.
6. If dewatering is necessary to facilitate in-stream work or pier removal, all wastewater shall be pumped onto a vegetated area a sufficient distance from the Grand River to allow for complete infiltration. No wastewater of any kind shall be discharged directly into the Grand Wild and Scenic River or any other tributary drainage ways, ditches or streams. If discharge to a vegetated area is not feasible, then wastewater shall be discharged into a sediment filter bag or into a temporary detention/retention pond with sufficient retention time to permit for the settling of all suspended solids.
7. All streambank vegetation shall be left undisturbed to the maximum extent possible. Areas where vegetation is removed shall be re-vegetated with native tree species. Any disturbed streambanks shall be returned to previously existing contours and elevations. A native tree species list will be provided by the Northeast Ohio Assistant Regional Scenic Rivers Manger. Trees shall be one gallon containerized nursery stock at a minimum. After a full growing season for the trees, any stakes and guide wires shall be removed and properly disposed of. Any trees that die during the first growing season shall be replaced. Cutting or clearing of any riparian vegetation within 1000 feet of the Grand River beyond the existing right-of-way shall be prohibited, however vertical trimming is permitted

where necessary. Care shall be taken not to girdle or scuff tree trunks or damage any standing trees.

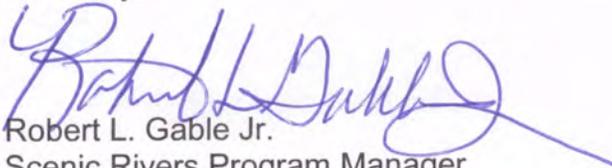
8. If painting, sand or water blasting any portion of the bridge is necessary then appropriate aprons shall be utilized to provide for complete containment of all paint debris particles and other debris. Appropriate aprons shall be utilized to provide for complete containment of all paint and/or sealant over-spray. Any such debris shall be removed immediately from 1000 feet of the Scenic River and disposed of at an approved upland site (above 100 year flood elevations). Disposal in wetlands, floodplains or within 1000 feet of the Scenic River is prohibited.
9. The NE Ohio Assistant Regional Scenic River Manager, Matthew Smith, shall be invited to a pre-construction meeting with the contractor present. Matthew shall be notified of the project start date and completion date, be allowed to conduct a final inspection before the project closes and receive a final plan set for review. Periodic inspections of the project shall take place to ensure Scenic River requirements are being met. The Scenic River Act, ORC 1547.82, requires the ODNR Director or his representative to approve any public project. Such approval shall be granted after a review of the final plan set by Scenic River staff. Matthew Smith (Assistant Regional Scenic River Manager) can be contact at: P.O. Box 441, Newton Falls, Ohio 44444 or office phone: 330-872-0040, cell phone 440-225-5582 or [matthew.smith@dnr.state.oh.us](mailto:matthew.smith@dnr.state.oh.us).
10. Signs stating ("Grand River State Wild & Scenic River") shall be provided and installed at both approaches of the new Vrooman Road Bridge and new pedestrian bridge. A sign stating (bridge name, road name/number) shall be installed on the upstream side of the new pedestrian bridge so as to be visible to boat traffic on the river.
11. These conditions shall be included in the final project plan set and must be made available to all construction personnel throughout the duration of the project. This shall ensure that the contractors understand Scenic River Program requirements.

Mr. Tom Sorge  
Vrooman Road Bridge Rehabilitation  
October 3, 2012  
Page 5

Lake Metro Parks, Lake County Engineer and ODOT should continue to work with the Scenic Rivers Program staff to develop plans for the proposed relocation of Mason's Landing and the conversion of existing sections of Vrooman Road to use as a pedestrian trail. Such coordination will facilitate any subsequent project approvals in accordance with ORC Section 1547.82.

If you have any additional questions please contact Matthew Smith, Northeast Ohio Assistant Regional Scenic Rivers Manger at (330) 872-1227 or [matthew.smith@dnr.state.oh.us](mailto:matthew.smith@dnr.state.oh.us).

Sincerely,



Robert L. Gable Jr.  
Scenic Rivers Program Manager

cc: Vince Urbanski, Lake County Metroparks  
James Gills, P.E., P.S., Lake County Engineer  
Karen Hallberg, USFWS  
Chris Staron, ODOT, OES  
Glen Cobb, Deputy Director, ODNR  
Rodger Norcross, Chief, Division of Watercraft  
Rick Barrera, Deputy Chief, Division of Watercraft  
Matthew Smith, NE Ohio Assistant Regional Scenic Rivers Manager