

SPECIAL PROVISIONS

WATERWAY PERMITS FOR

**PAU/DEF-24-12.00/0.00
PID: 24336**

CONTENTS:

- **404 PERMIT FROM THE US ARMY CORPS OF ENGINEERS (PERMIT No. 200500745; EFFECTIVE APRIL 12, 2006, EXPIRES DECEMBER 31, 2009)**
- **401 WATER QUALITY CERTIFICATION & INDIVIDUAL ISOLATED WETLAND PERMIT (LEVEL 2) FROM THE OHIO EPA (CERTIFICATION No. 052318; EFFECTIVE FEBRUARY 2, 2006, EXPIRES FEBRUARY 2, 2011)**
- **WATERWAY PERMIT APPLICATIONS (SECTION 404/401 APPLICATION, ISOLATED WETLAND PERMIT APPLICATION)**



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

REPLY TO

ATTENTION OF:
Operations and Readiness Division
Regulatory Branch
North Creek-200500745

APR 12 2006

RECEIVED

APR 17 2006

OFFICE OF
ENVIRONMENTAL SERVICES

Gordon Proctor
Ohio Department of Transportation
1980 West Broad Street
Columbus, Ohio 43223

Dear Mr. Proctor:

Enclosed in duplicate is the individual permit authorizing the placement of fill material into 7,944' of eleven stream channels and 20.03 acres of eighteen wetlands in conjunction with the construction of 26-miles of U.S. Route 24 on a new alignment in Paulding and Defiance Counties, Ohio. The CRS and PID Numbers for this project area PAU/DEF US 24.00/0.00 (18904).

Upon acceptance of the terms and conditions of the permit, you must sign and date both copies on page 3 and return one copy of the permit within 30 days from the date of this letter. If any changes in the location and plans of the work are found necessary, revised plans must be submitted to this office for approval as required by law, before the work is begun. Enclosed is your copy of the permit to be kept at the site during construction. It is recommended that you supply a copy of the permit to your project engineer responsible for the construction activities.

Enclosed is a form titled "Notification of Applicant Options for Parties Issued a Department of the Army Permit". You are hereby advised that the following option is available to you in your evaluation of the enclosed permit. You may accept the permit or you may decline to accept the permit because you object to certain terms and conditions therein. If you decline this permit, you may request that the permit be modified according to your objections.

It is imperative that this office be notified two weeks in advance of the commencement of construction, and again upon completion. Upon completion of the work, the attached certification must be signed and returned to this office. If you have any questions, please call Kimberly Courts-Brown at 304-399-5210.

Sincerely,

for Mark A. Rutherford
Rebecca A. Rutherford
Chief, North Regulatory Section

Enclosures

Copies Furnished

Mr. Dave Schulenburg
U.S. Environmental Protection Agency
Region 5, WW-16J
77 West Jackson Street
Chicago, Illinois 60604
With Enclosure

Dr. Mary Knapp
U.S. Fish and Wildlife Service
6950-H Americana Parkway
Reynoldsburg, Ohio 43068
Akron, Ohio 44333
With Enclosure

Mr. Art Coleman
Ohio Environmental Protection Agency
Division of Surface Water
Post Office Box 1049
Columbus, Ohio 43216-1049
With Enclosure

U.S. Army Corps of Engineers
Detroit District
Regulatory Branch
Post Office Box 1027
Detroit, MI 48231-1027

Mr. Mark Epstein
Ohio Historic Preservation Office
567 East Hudson Street
Columbus, Ohio 43211-1030
With Enclosure

Mr. Randy Sanders
Ohio Dept. Natural Resources
Fountain Square, Bldg. C-4
Columbus, Ohio 43224-1386
With Enclosure

U.S. Army Corps of Engineers
Buffalo District
Regulatory Branch
1776 Niagara Street
Buffalo, New York 14207-3199
With Enclosure

DEPARTMENT OF THE ARMY PERMIT

Permittee Ohio Department of Transportation

Permit No. North Creek-200500745

Issuing Office Huntington District and Buffalo District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: You are authorized to place approximately 26,400 cubic yards of earthen and concrete fill material into 7,944' of eleven stream channels and 20.03 acres of eighteen wetlands in conjunction with the construction of 26-miles of U.S. Route 24 on a new alignment in accordance with the attached tables and drawings entitled "PAU/DEF 24-0.00 PID 18904 - 10/19/04"

Project Location: The proposal is located in the Maumee River, Tiffin River, North Creek, Zuber Cutoff, Sixmile Cutoff, Steven Ditch, Dowe Ditch, and their unnamed tributaries and adjacent wetlands along the 26-mile alignment of the U.S. Route 24 in Paulding and Defiance Counties, Ohio

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on December 31, 2009. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

The Special Conditions for this permit are listed on a separate page and are entitled "Special Conditions for the Permit Issued to the Ohio Department of Transportation – U.S. Route 24 (PAU/DEF 24-0.00/0.00 PID 18904) – North Creek-200500745"

Further information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
 - (X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
 - (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
 - () Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).
2. Limits of this authorization:
 - a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
 - b. This permit does not grant any property rights or exclusive privileges.
 - c. This permit does not authorize any injury to the property or rights of others.
 - d. This permit does not authorize interference with any existing or proposed Federal project.
3. Limits of Federal Liability: In issuing this permit, the Federal Government does not assume any liability for the following:
 - a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
 - b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
 - c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
 - d. Design or construction deficiencies associated with the permitted work.
 - e. Damage claims associated with any future modification, suspension, or revocation of this permit.
4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.
5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:
 - a. You fail to comply with the terms and conditions of this permit.
 - b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

- c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

- 6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Urban Proctor MCE _____ 4/11/06
 (PERMITTEE) (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Mark A Taylor _____ 4-11-06
 (DISTRICT ENGINEER) (DATE)
 WILLIAM BULEN
 Colonel, Corps of Engineers

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

 (TRANSFEREE) (DATE)

SPECIAL CONDITIONS OF THE PERMIT ISSUED TO
THE OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24
(PAU/DEF 24-0.00 PID 18904)
NORTH CREEK-200500745

1. The Section 401 Water Quality Certification issued by the Ohio Environmental Protection Agency for the minimum degradation alternative on February 2, 2006 and all conditions therein are made a part of this permit.
2. The approved final mitigation plan entitled "Final Wetland and Stream Mitigation Plan – PAU/DEF 24-0.00/0.00 (PID 18904) New Road Alignment" dated March 17, 2006 is made a part of this permit authorization.
3. As indicated in the final mitigation plan, to compensate for the loss of approximately 7,944' of stream channel, you will preserve, in perpetuity, 3,268' of Stevens Ditch and 1,060' of an unnamed tributary of Stevens ditch and 33 acres of forested buffer immediately adjacent to the project area (Plummer Property) via a conservation easement. You will also preserve 5991' of the east bank of the Maumee River and 35 acres of wooded buffer at the Smith Property via a conservation easement. Within one year of this authorization, you will provide this office with copies of the finalized conservation easements and/or deed restrictions for the preserved stream channels. A copy of the conservation easement and/or deed restriction must also be filed with Paulding and/or Defiance County Courthouses within 60 days of procurement of the easement for the site.
4. As indicated in the final mitigation plan, to compensate for the loss of 20.03 acres of jurisdictional wetland, you will restore 26 acres of forested, shrub-scrub, and emergent wetlands and preserve approximately 61 acres of Category 3 forested wetland on the Plummer Property. The restored and preserved wetland areas will be protected, in perpetuity, via a conservation easement and/or deed restriction. Within one year of this authorization, you will provide this office with copies of the finalized conservation easement/deed restriction for the preserved wetlands. A copy of the conservation and/or deed restriction must also be filed with the Paulding and/or Defiance County Courthouses within 60 days of the procurement of the easement for this site.
5. All stream and wetland restoration activities will be monitored for a minimum of five years following their construction. The monitoring will be conducted in accordance with the approved monitoring and management plan, which is incorporated as a part of the approved final mitigation plan. Annual monitoring reports will be submitted to this office no later than **December 31** of the year following completion of the dam removal activities. The monitoring report will include the inspector's report, performance parameters as described in the plan, photographs with locations or stations depicted on plan views and any noted deficiencies and associated corrective measures.
6. You will arrange an on-site meeting after the third year monitoring report has been submitted. The purpose of this meeting is to determine if the wetland and stream restoration sites have been

constructed in accordance with the approved plans and are functioning as expected. If it is determined the stream is not meeting the designated QHEI scores as stated in the final mitigation plan, a contingency plan must be provided to this office that details the measures taken to allow the wetlands and streams to reach their proposed functional status.

7. If any archeological sites or human remains are uncovered during construction, you will cease all work immediately and contact this office, the Ohio Historic Preservation Office, the Wyandotte Nation at 918-678-2297, the Saginaw Chippewa Indian Tribe at 989-775-4730, the United Keetoowah Band of the Cherokee Indians of Okalahoma at 918-456-6533, the Sax & Fox Tribe of the Mississippi in Iowa at 641-484-4678, the Delaware Tribe of Nations at 620-341-5724, and the Paulding and Defiance County Sheriff's Office.

8. The project lies within the range of the Indiana Bat (*Myotis sodalis*), a Federally listed endangered species. The United States Fish and Wildlife Service have provided a Biological Opinion for the proposal. The Biological Opinion, dated September 28, 2005, entitled "Biological Opinion on the Construction, Operation, and Maintenance of the U.S. 24 New Haven, Indiana to Defiance, Ohio Project for the Federally Listed Endangered Indiana Bat (*Myotis sodalis*) is made a part of this permit authorization.

9. Appropriate, site specific best management practices for sediment and erosion control will be fully implemented during construction activities at the site. Best management practices (BMPs), including but not limited to utilization of silt fences, straw bales, check dams, limiting vegetation removal and bank shaping to the maximum extent practicable, mulching and seeding, and the prohibition of the use or storage of toxic or hazardous materials within the construction areas, must be implemented during construction activities. All areas disturbed during construction will be seeded to encourage the establishment of a vegetative cover and decrease erosion potential. No area for which grading has been completed will be unseeded or unmulched for longer than 14 days.

10. You will not initiate activities in the permit area associated with this authorization that have not previously been evaluated by this office as part of the permit review for this project, until such work has been submitted to and approved by this office. Such activities include, but are not limited to, haul roads, equipment staging areas, and borrow and disposal sites within waters of the United States. The permit area includes all waters of the United States affected by activities associated with the project, as well as any additional area(s) of non-waters of the United States in the immediate vicinity of, directly associated with, and/or affected by, activities in waters of the United States. Special restrictions may be required for such work. You will develop procedures to ensure that contractors are aware of this condition and encourage contractors to coordinate their selection of these sites with you as soon as possible to avoid construction delays.

Project # P201A1E3C NOVEMBER 2004



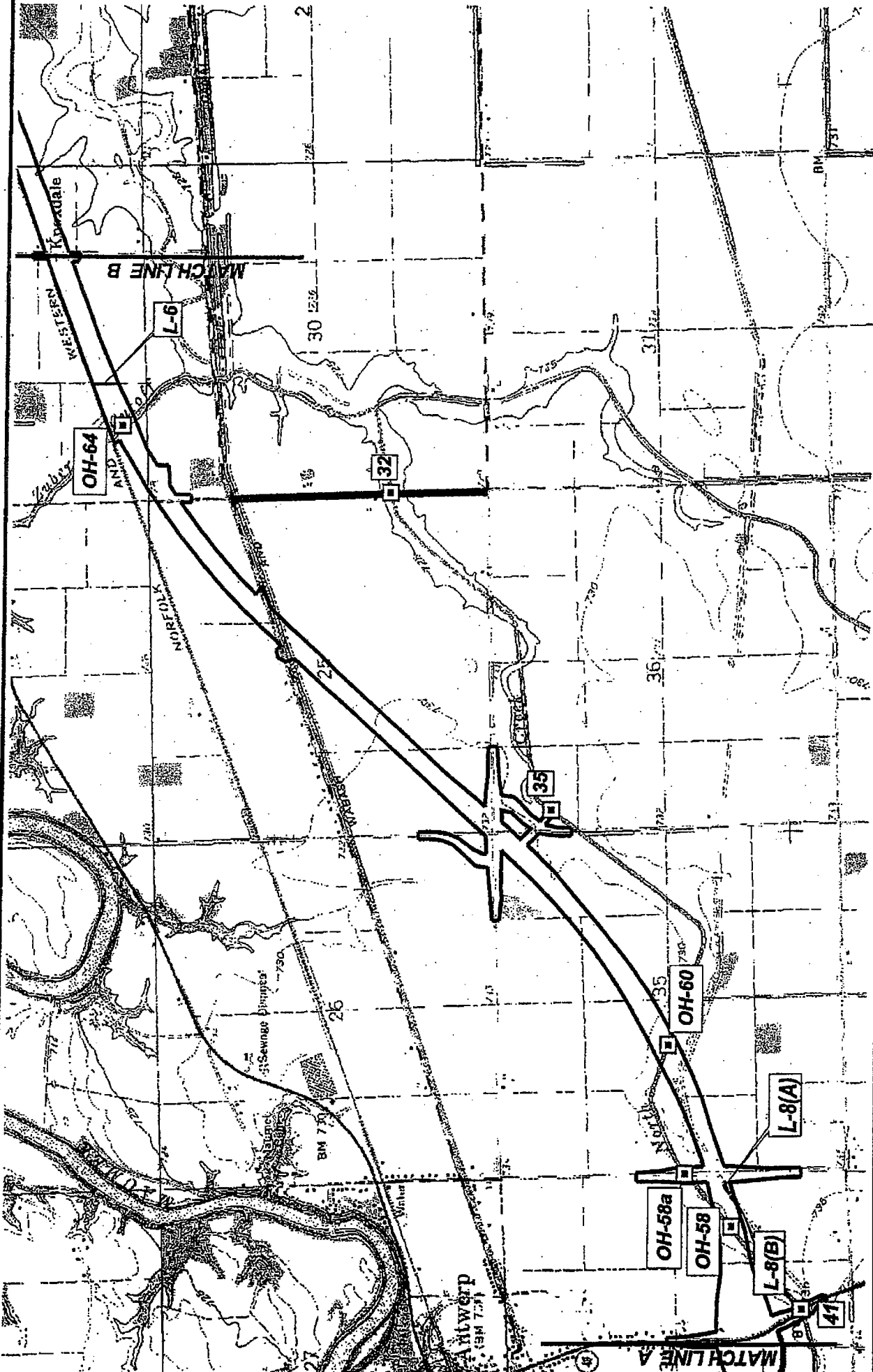
Legend

- Right-of-Way
- Stream Impact
- Wetland Impact

FIGURE 1A
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Mannik & Smith
 Group
 (419) 481-2222
 (419) 481-3385
 Civil Engineering, Surveying and Environmental Consulting
 TOLEDO • MONROE • DETROIT

Project # P201A1ESC NOVEMBER 2004



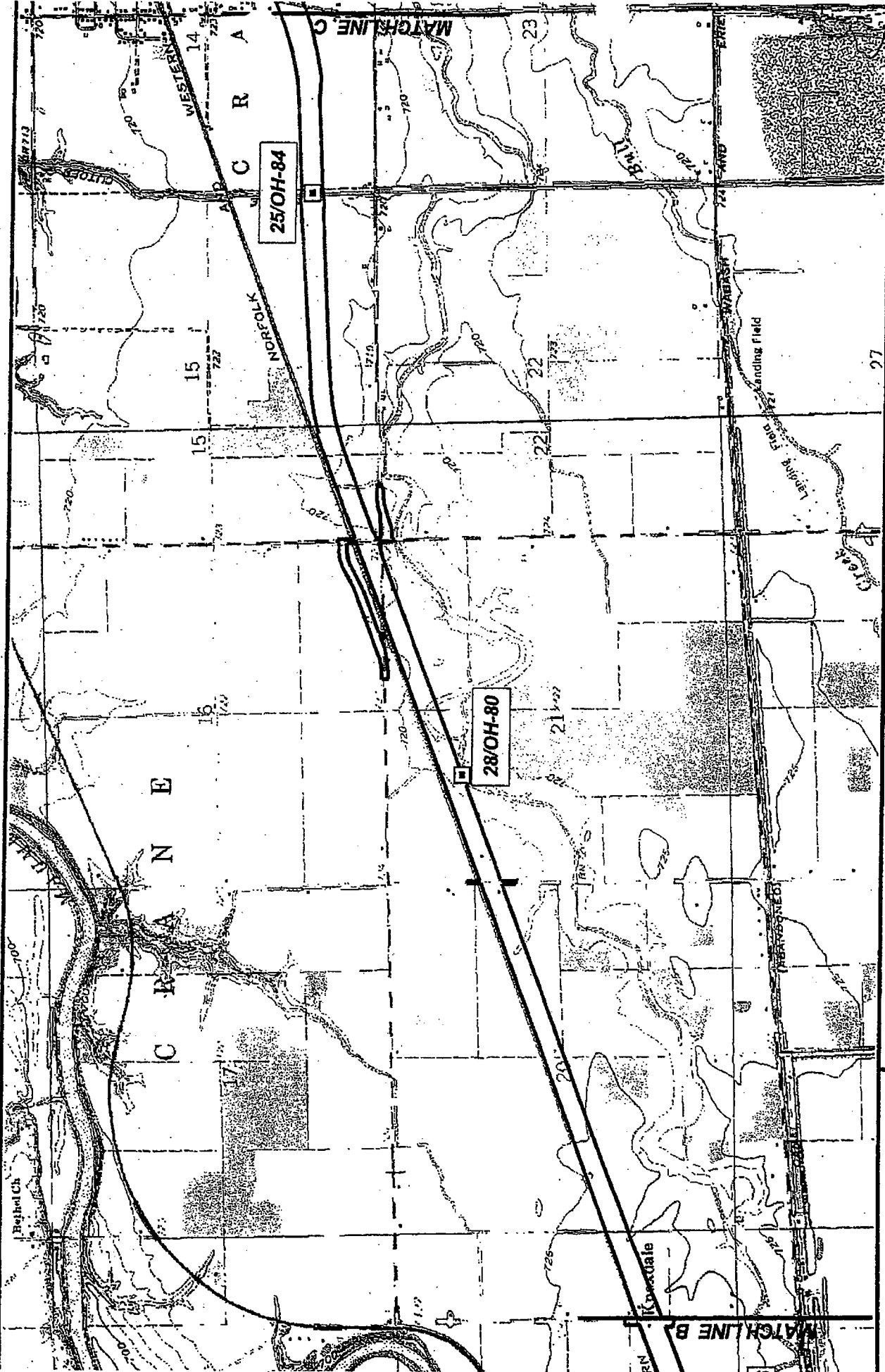
Mannik & Smith
 The Group
 Civil Engineering, Surveying and Environmental Consulting
 1800 Indian Wood Circle
 Maumee, Ohio 43537
 (419) 891-2222
 Fax: (419) 891-4595
 TOLEDO • NANTICOKE • DETROIT

FIGURE 1B
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Legend

- [Symbol] Right-of-Way
- [Symbol] Stream/Impoundment

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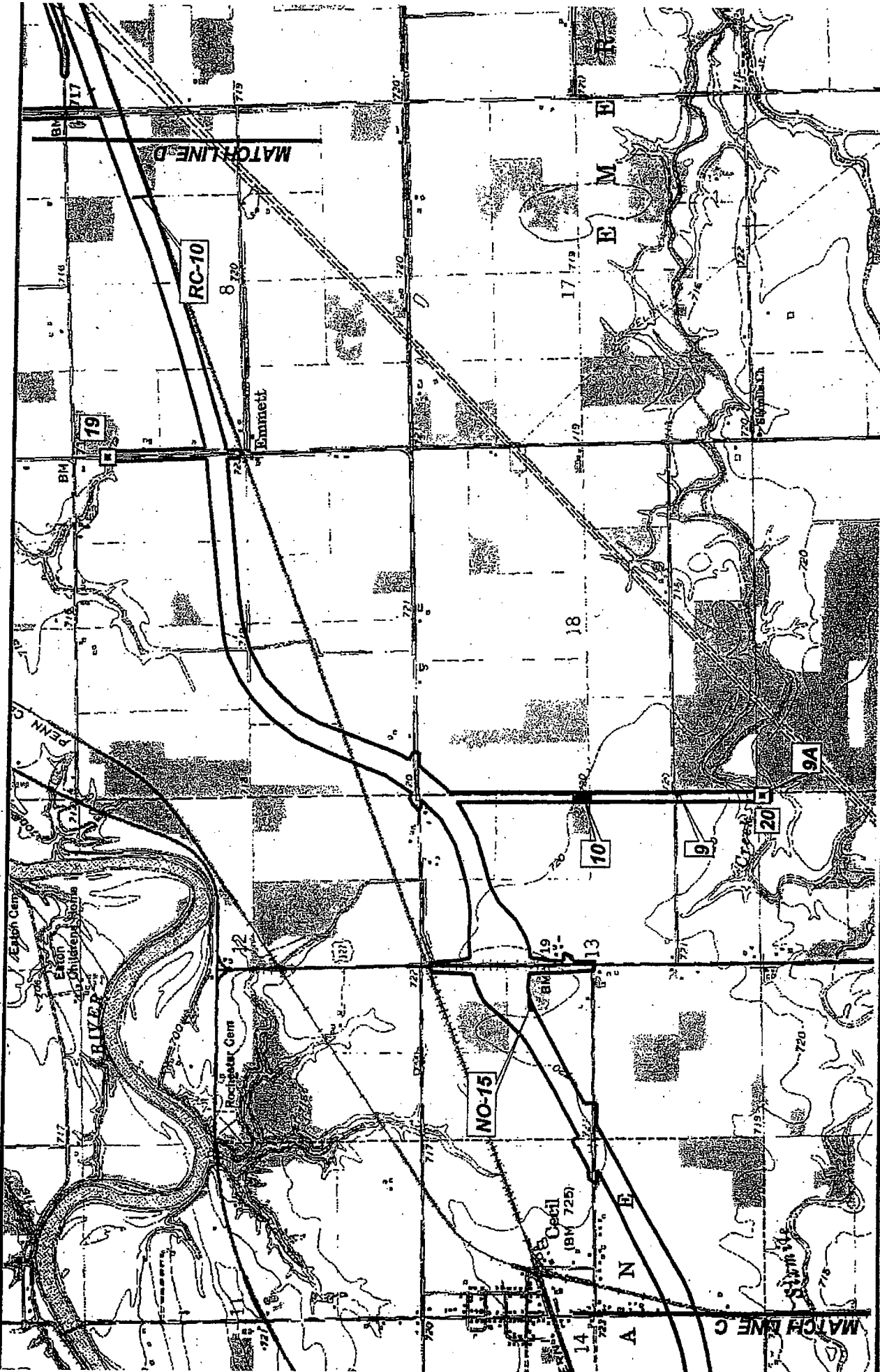
Legend

- Right-of-Way
- Stream Impact
- Wetland Impact

FIGURE 1C
PAU/DEF 24-0-00 PID 24334
RIGHT-OF-WAY MAP

Mannik & Smith
 Group
 600 Western Wood Circle
 Columbus, Ohio 43237
 (614) 891-2222
 Fax: (614) 891-1555
 Civil Engineering, Surveying and Environmental Consulting
 TOLEDO • HONOLULU • DETROIT

Project # P201A15C NOVEMBER 2004



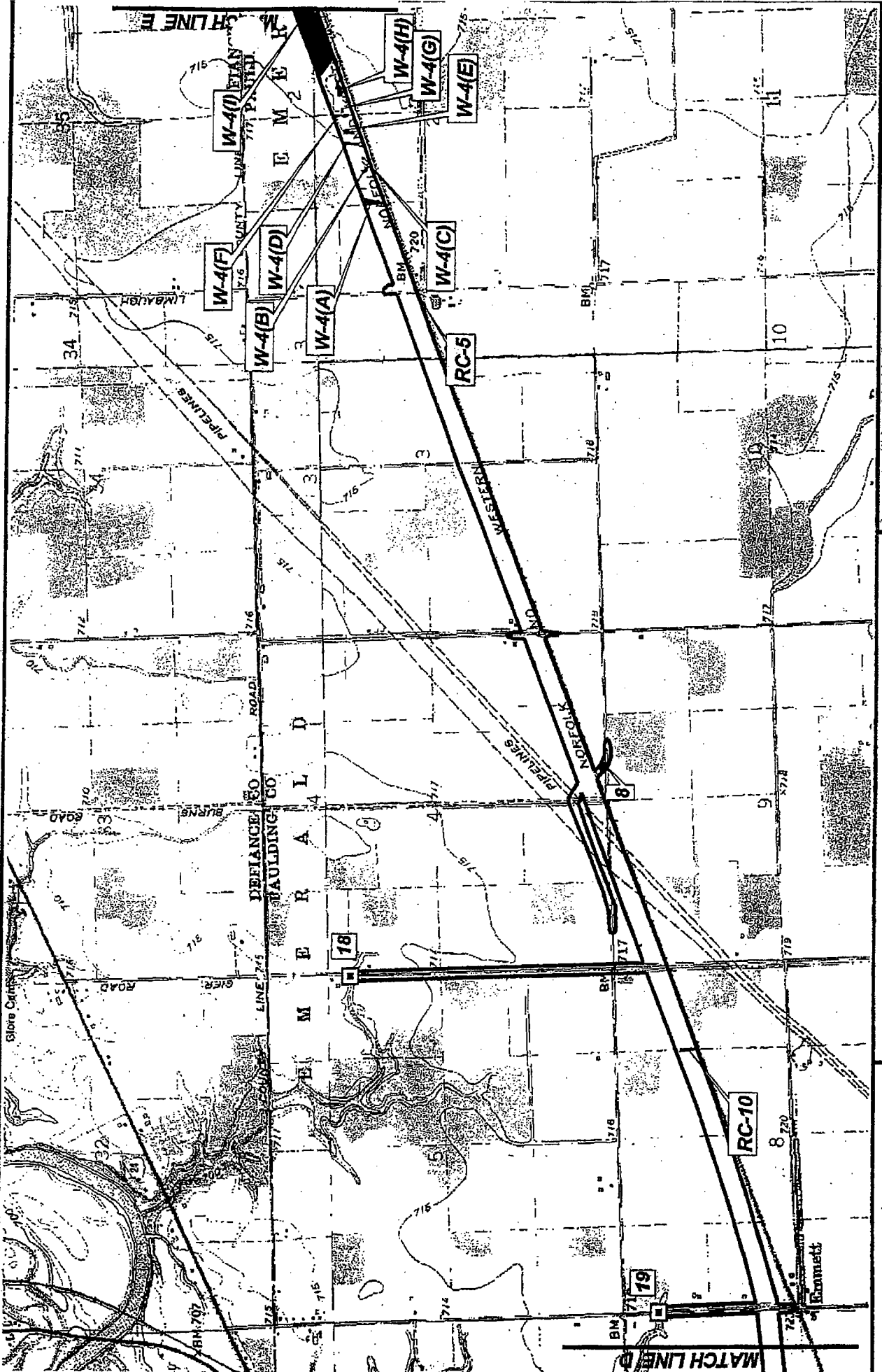
N
124.00'

Legend

- Right-of-Way
- Stream
- Elevation

FIGURE 1D
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Mannick & Smith
Group
180 Eichen Wood Circle
Mansfield, Ohio 43307
(419) 851-2222
Fax: (419) 851-1585
Civil Engineering, Surveying and Environmental Consulting
TULDO • NORWEE • DETROIT



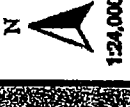
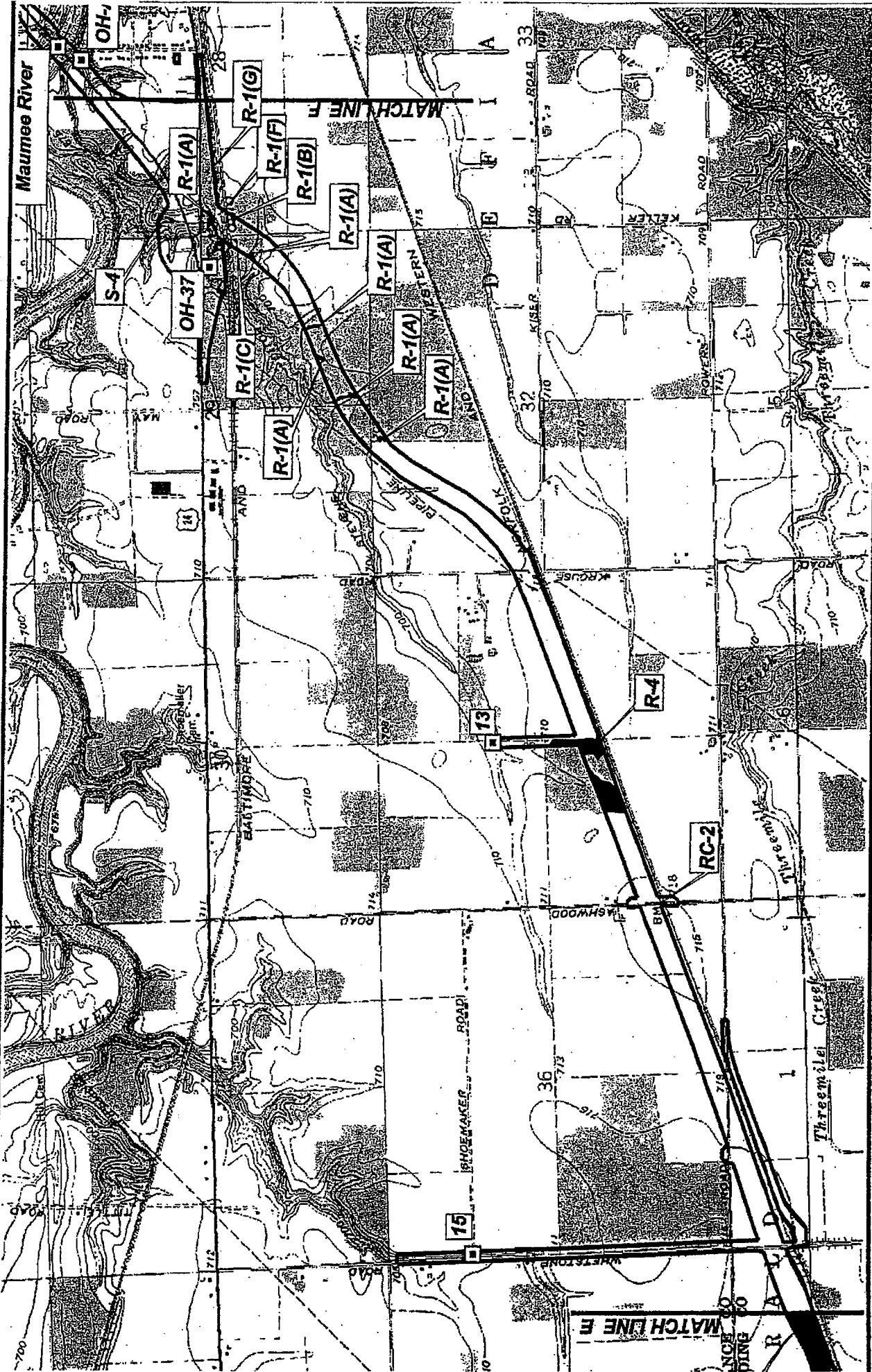
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Legend

- Right-of-Way
- Stream Impacts
- Wells of Impact

FIGURE 1E
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

The Mannik & Smith Group
 1200 Indian Wood Circle
 Mansfield, Ohio 44877
 (419) 831-2222
 Fax: (419) 991-1555
 Civil Engineering, Surveying and Environmental Consulting
 TOLEDO • CINCINNATI • DETROIT



Legend

- Right-of-Way
- Stream Impact
- Water Impact

FIGURE 1F
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Mannik & Smith
 Group
 (419) 881-2222
 Fax (419) 881-1325
 1800 Indian Wood Creek
 Huron, Ohio 43527
 Civil Engineering, Surveying and Environmental Consulting
 TOLEDO • MONROE • DETROIT

ref # P207A1E1C NOVEMBER 2004

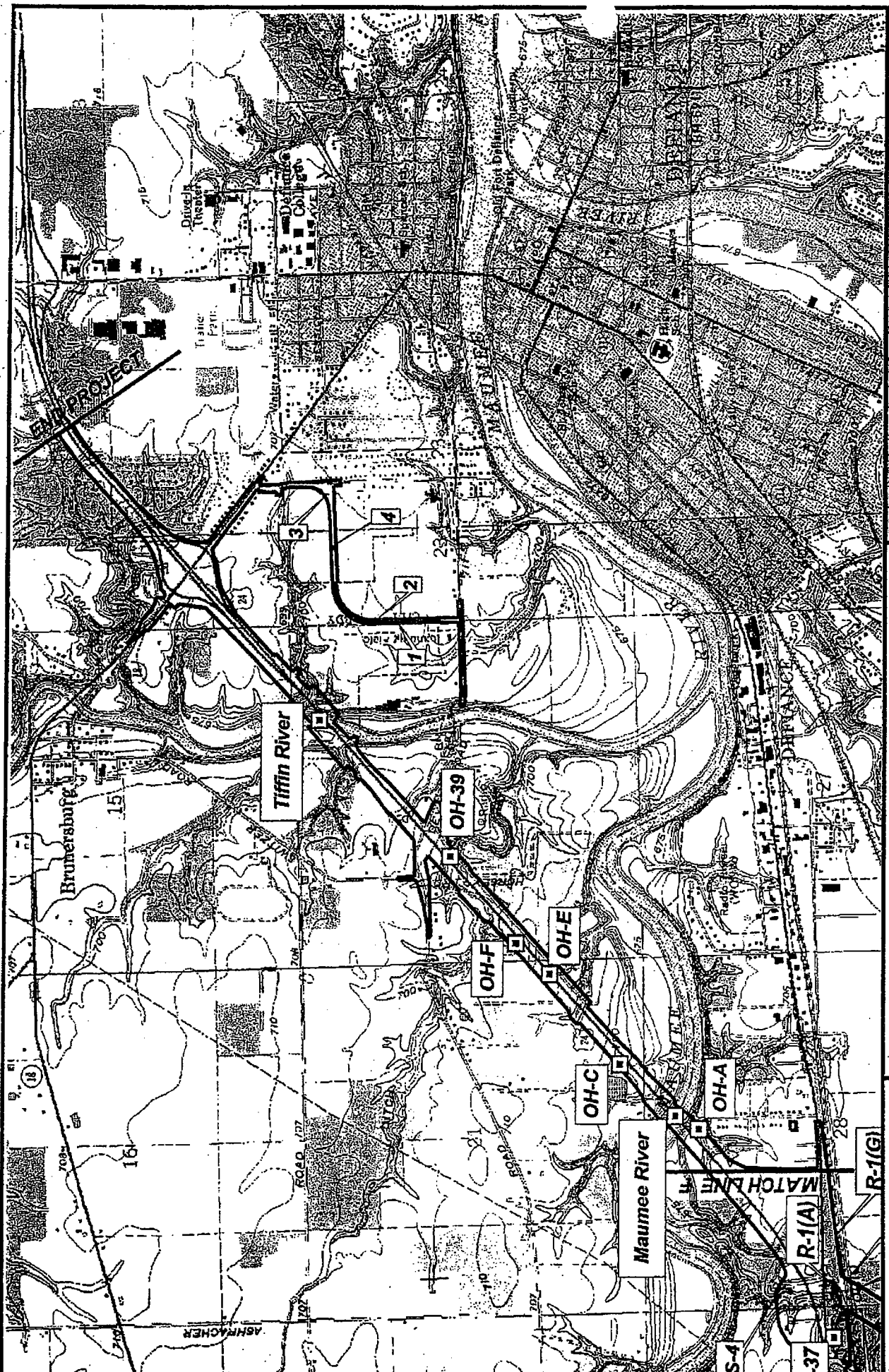


FIGURE 1G
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

The Mannick & Smith Group
 9 Indian Wood Circle
 Troy, Ohio 45377
 (513) 891-2222
 Fax: (513) 891-1555
 Civil Engineering, Surveying and Environmental Consulting
 TOLEDO • MORSE • DETROIT

Project # P201A1EXC January 2005/e:\projects\env\p201a1\p1s\usecd\usaco BAW.apr

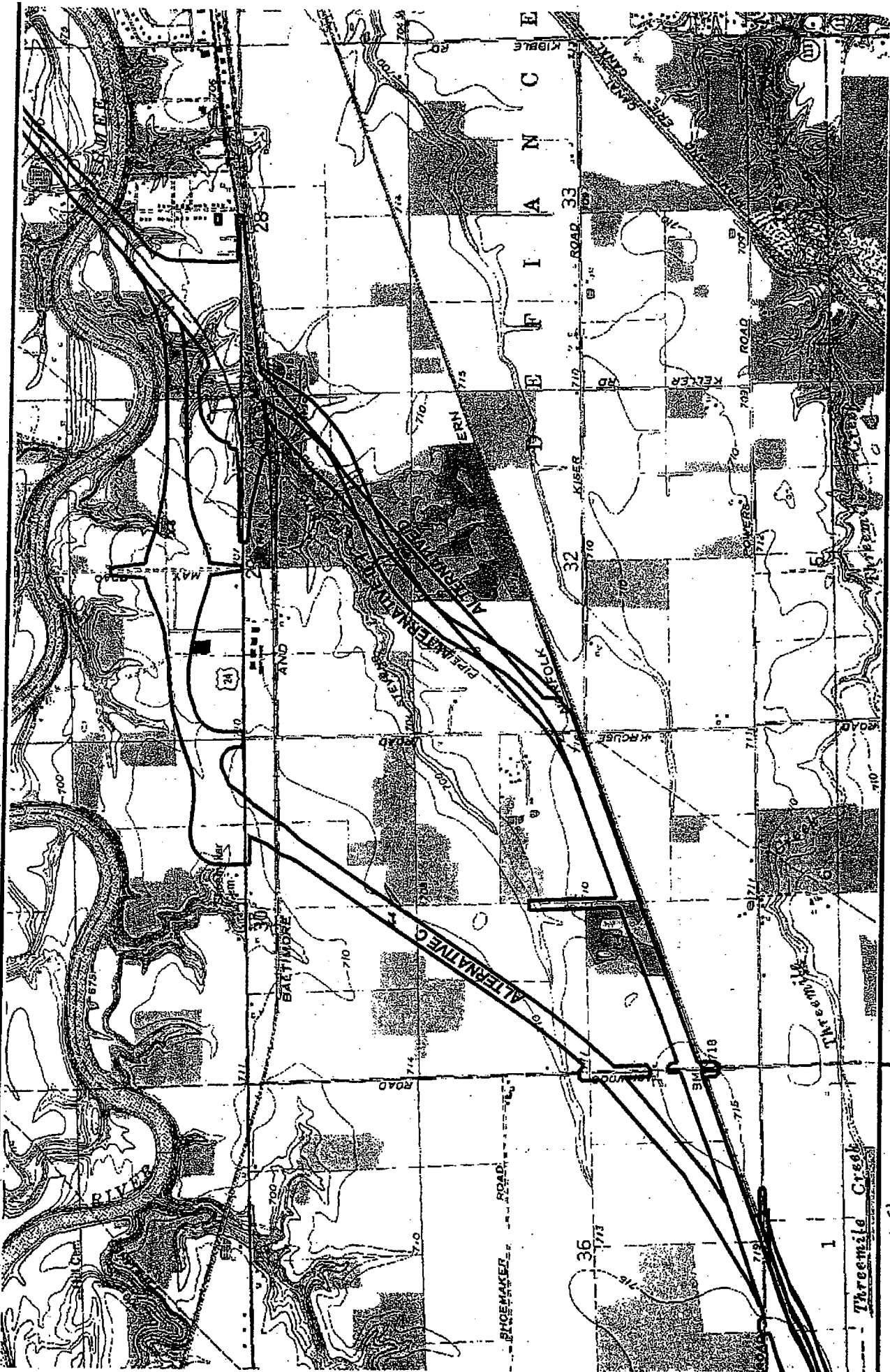
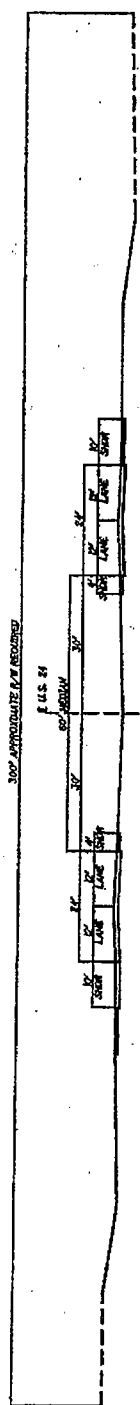


FIGURE 1H
PAU/DEF 24-0-00 PID 24334
RIGHT-OF-WAY MAP

Mannik & Smith
 Group
 1800 Indian Wood Circle
 Parma, Ohio 43327
 (419) 821-2222
 Fax: (419) 851-1595
 OH Engineering, Surveying and Environmental Consulting
 TOLEDO + MONROE + DETROIT



ODOT TYPICAL SECTION - PREFERRED AND MINIMAL DEGRADATION ALTERATION



FIGURE 2
TYPICAL SECTION FOR
PREFERRED & MINIMAL
DEGRADATION ALTERNATIVE
 OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN HENRY & LUCAS COUNTIES
 HEN/LUC-24-10.42/0.00 PID 20404.

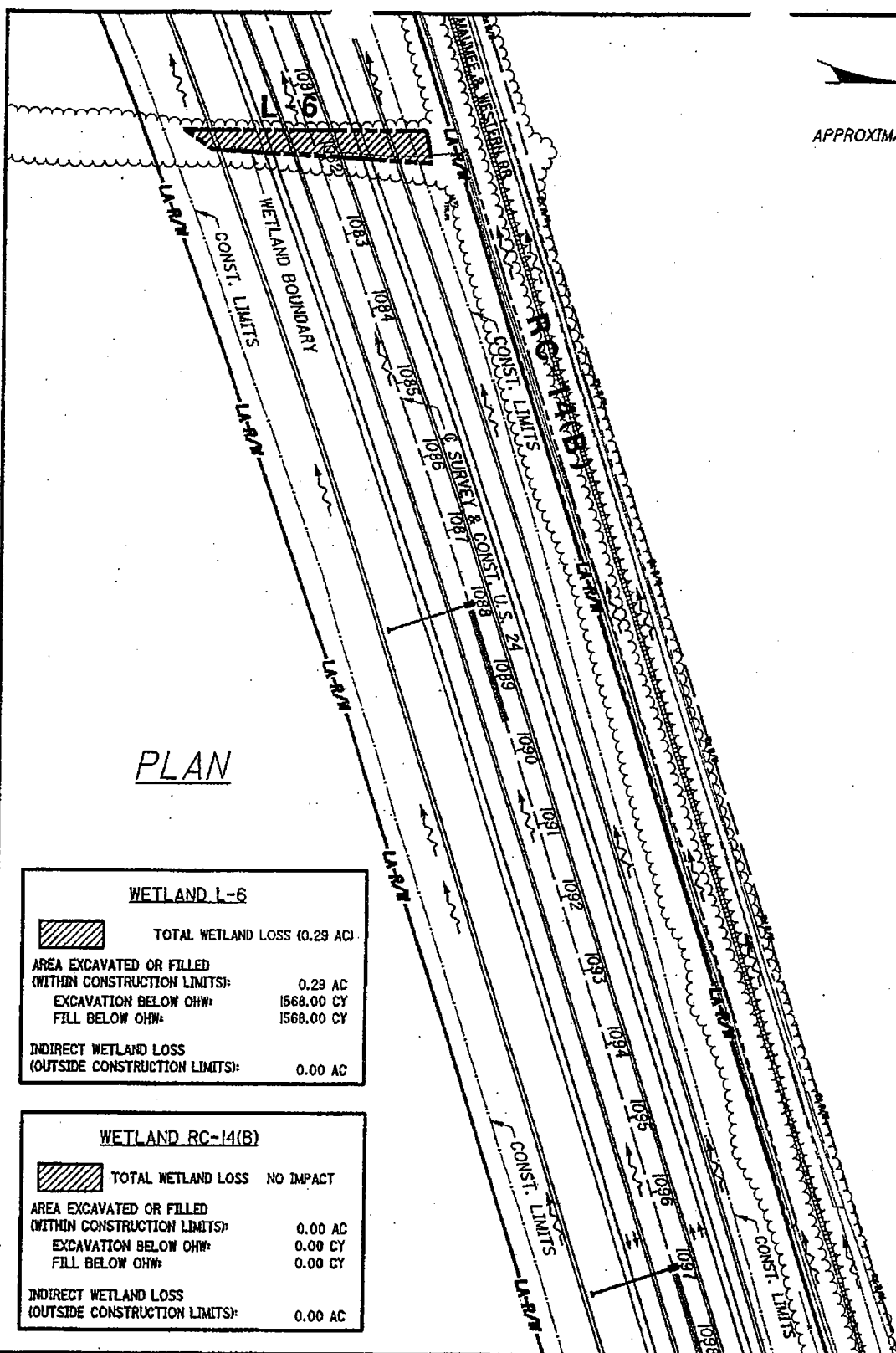
DESIGNED BY:
 MLM

REVIEWED BY:
 JK


REVIEWED DATE:
 3/17/05




APPROXIMATE PLAN SCALE: 1"=200'



PLAN

WETLAND L-6	
	TOTAL WETLAND LOSS (0.29 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.29 AC
EXCAVATION BELOW OHW:	1568.00 CY
FILL BELOW OHW:	1568.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 AC

WETLAND RC-14(B)	
	TOTAL WETLAND LOSS NO IMPACT
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.00 AC
EXCAVATION BELOW OHW:	0.00 CY
FILL BELOW OHW:	0.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 AC



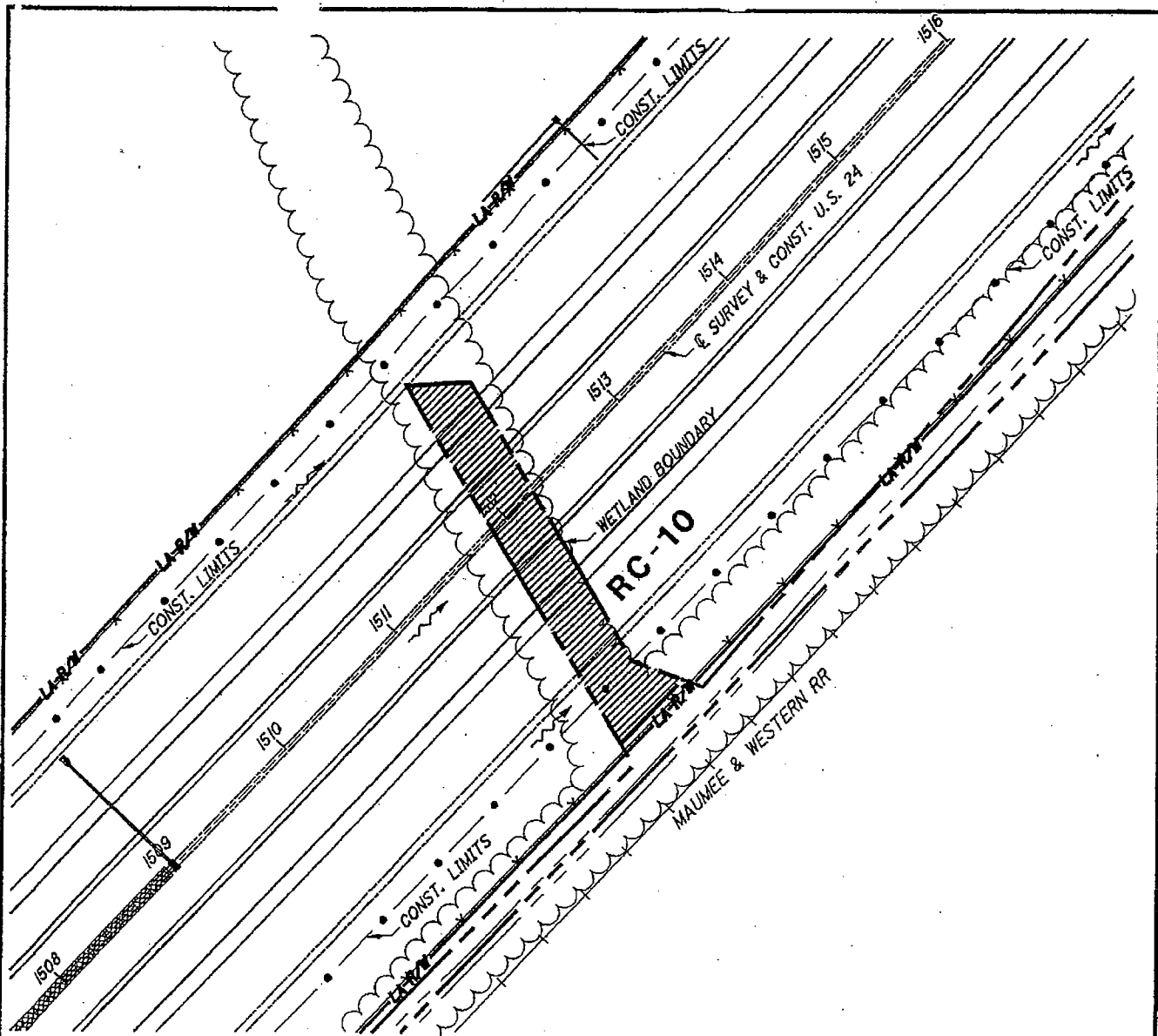
IMPACT TO NON-ISOLATED WETLAND L-6


OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULDING COUNTY
PAU-24-0.00 FID 24334

U.S. Army Corps of
Engineers 404 Permit
and OEPA Section 401
Water Quality
Certification
Application

Date: 10-19-2004

Figure 4



WETLAND RC-10	
	TOTAL WETLAND LOSS (0.40 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
EXCAVATION BELOW OHW:	0.17 AC
FILL BELOW OHW:	38.00 CY
	234.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	
	0.23 AC

PLAN

APPROXIMATE PLAN SCALE: 1"=100'



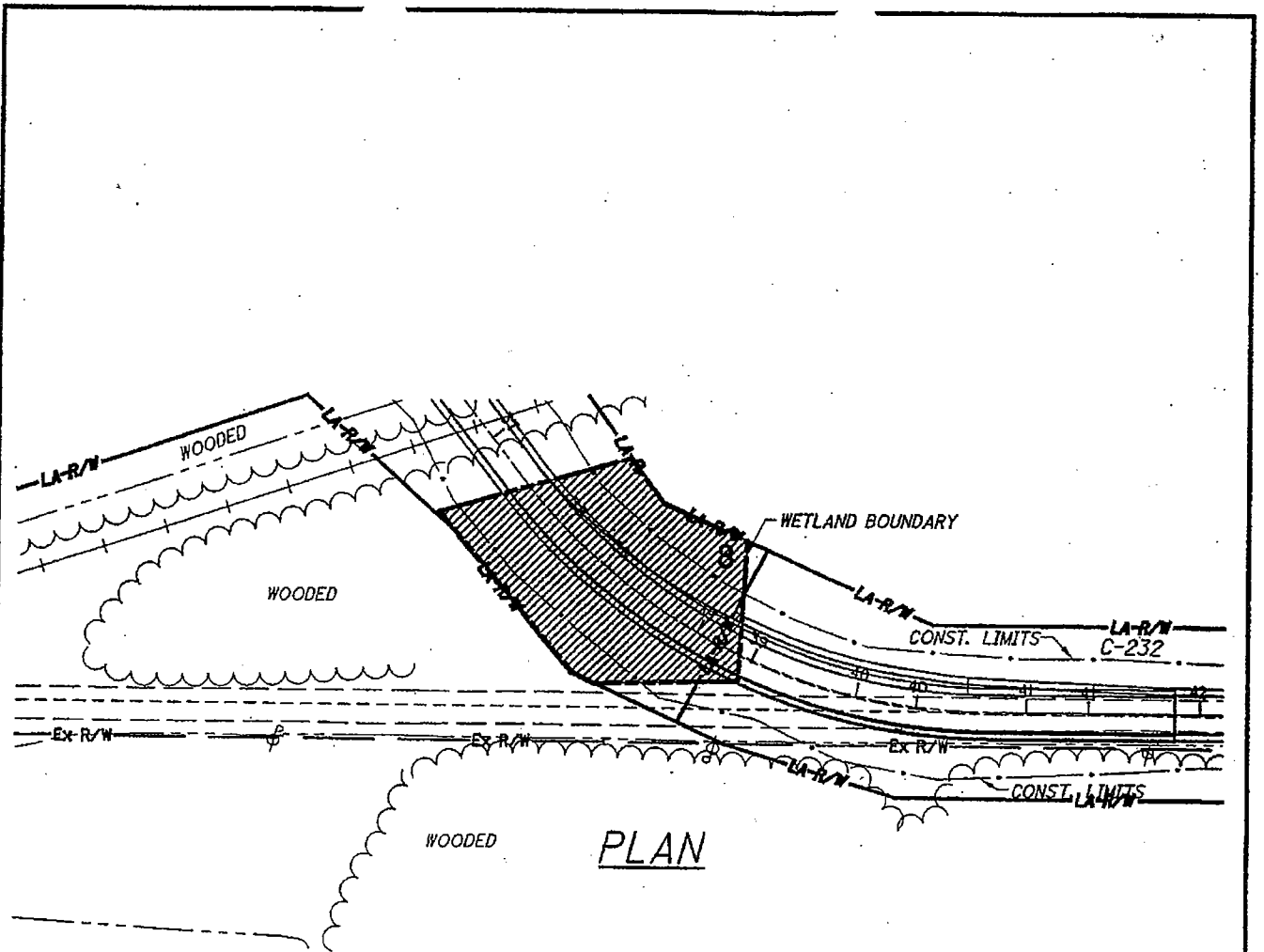
IMPACT TO NON-ISOLATED WETLAND RC-10


OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULDING COUNTY
PAU-24-0.00 PID 24334

U.S. Army Corps of
Engineers 404 Permit
and OEPA Section 401
Water Quality
Certification
Application

Date: 10-19-2004

Figure 6



WETLAND 8	
	TOTAL WETLAND LOSS (0.34 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS)	
EXCAVATION BELOW OHW:	0.25 AC
FILL BELOW OHW:	7.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS)	
	0.09 AC



APPROXIMATE PLAN SCALE: 1"=100'



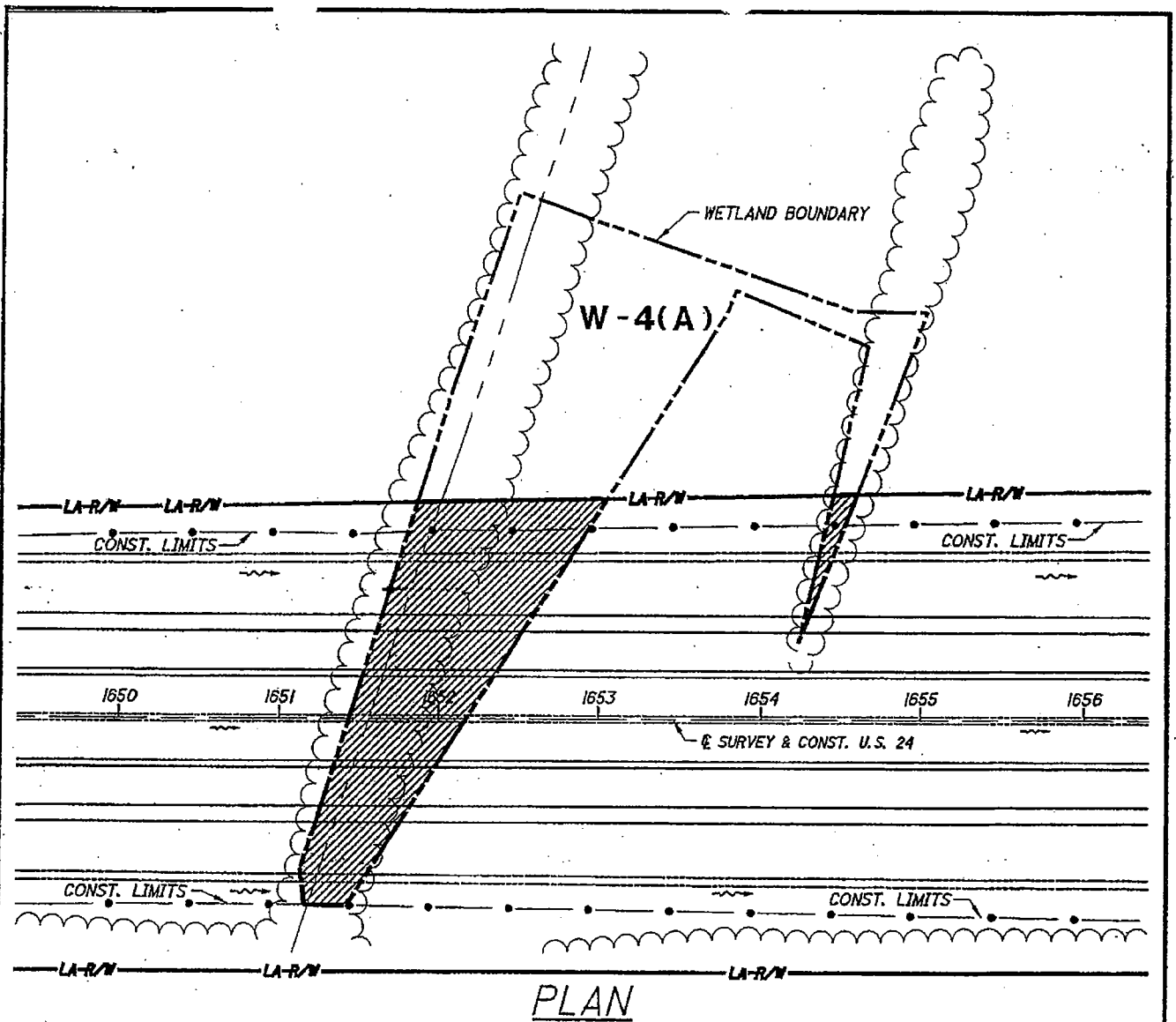
IMPACT TO NON-ISOLATED WETLAND 8


OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULDING COUNTY
PAU-24-0.00 PID 24334

U.S. Army Corps of
Engineers 404 Permit
and OEPA Section 401
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Certification
Application

Date: 10-19-2004

Figure 7



WETLAND W-4(A)	
	TOTAL WETLAND LOSS (0.47 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS): 0.40 CY	
EXCAVATION BELOW OHW: 191.00 CY	
FILL BELOW OHW: 459.00 CY	
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS): 0.07 AC	



APPROXIMATE PLAN SCALE: 1"=100'



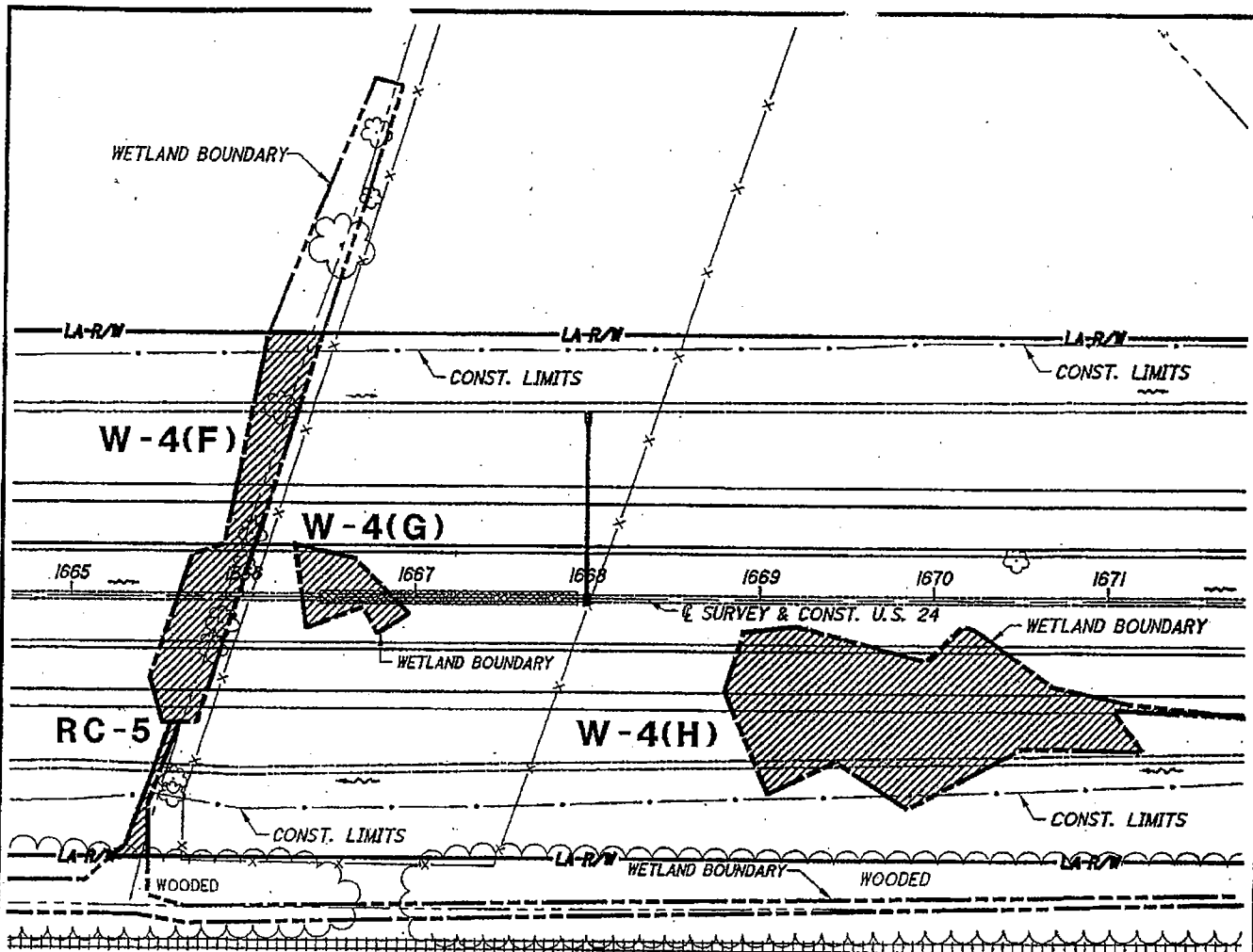
IMPACTS TO NON-ISOLATED WETLAND W-4(A)

OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULDING COUNTY
PAU-24-0.00 PID 24334

U.S. Army Corps of
Engineers 404 Permit
and O&PA Section 401
Water Quality
Certification
Application

Date: 10-19-2004

Figure 8



WETLAND W-4(F)	
	TOTAL WETLAND LOSS (0.15 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.14 AC
EXCAVATION BELOW OHW:	85.00 CY
FILL BELOW OHW:	136.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.01 AC

WETLAND RC-5 (TOTAL FROM FIG. 9, 12, & 13)	
	TOTAL WETLAND LOSS (0.90 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.02 AC
EXCAVATION BELOW OHW:	18.00 CY
FILL BELOW OHW:	12.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.88 AC

MAUMEE & WESTERN RR

PLAN

WETLAND W-4(G)	
	TOTAL WETLAND LOSS (0.04 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.04 AC
EXCAVATION BELOW OHW:	33.00 CY
FILL BELOW OHW:	36.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 AC

WETLAND W-4(H)	
	TOTAL WETLAND LOSS (0.35 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.35 AC
EXCAVATION BELOW OHW:	249.00 CY
FILL BELOW OHW:	316.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 CY



APPROXIMATE PLAN SCALE: 1"=100'

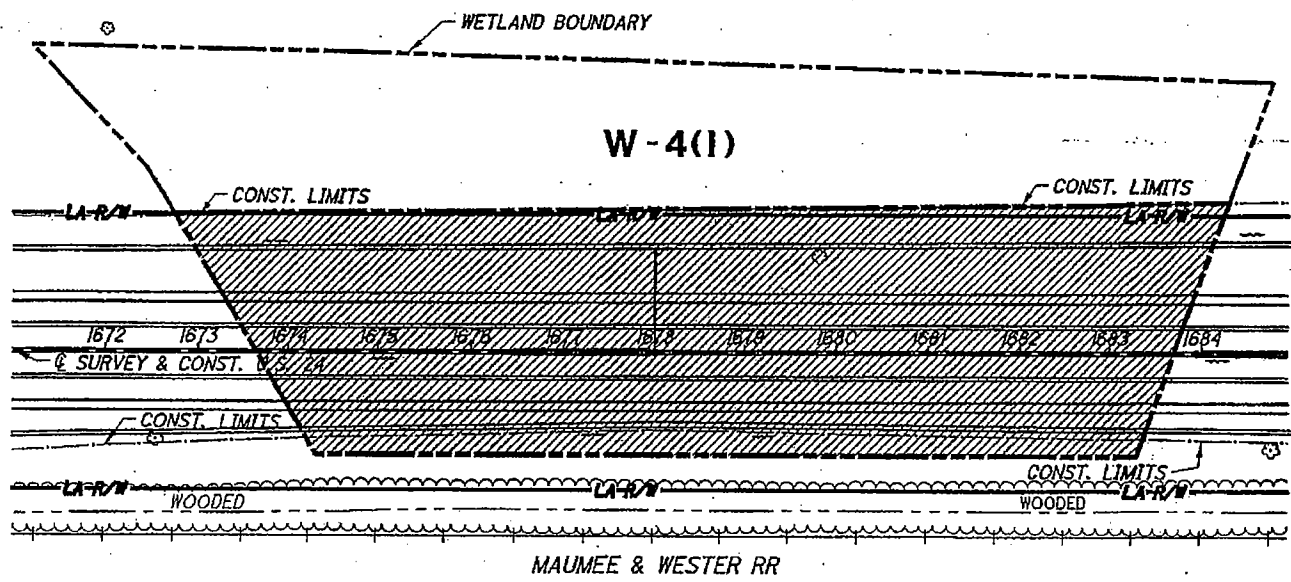


IMPACTS TO ISOLATED WETLANDS W-4(G) & W-4(H) & NON-ISOLATED WETLANDS W-4(F) & RC-5
 OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334


U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application

Date: 10-19-2004

Figure II



PLAN

WETLAND W-4(I)	
	TOTAL WETLAND LOSS 7.00 AC
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS): 5.84 AC	
EXCAVATION BELOW OHW:	4652.00 CY
FILL BELOW OHW:	4771.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS): 1.16 AC	



APPROXIMATE PLAN SCALE: 1"=200'



**IMPACT TO
NON-ISOLATED
WETLAND W-4(I)**

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U.S. ROUTE 24 IN PAULDING COUNTY
PAU-24-0.00 PID 24334

U.S. Army Corps of
Engineers 404 Permit
and OEPA Section 401
Water Quality
Certification
Application


Date: 10-19-2004

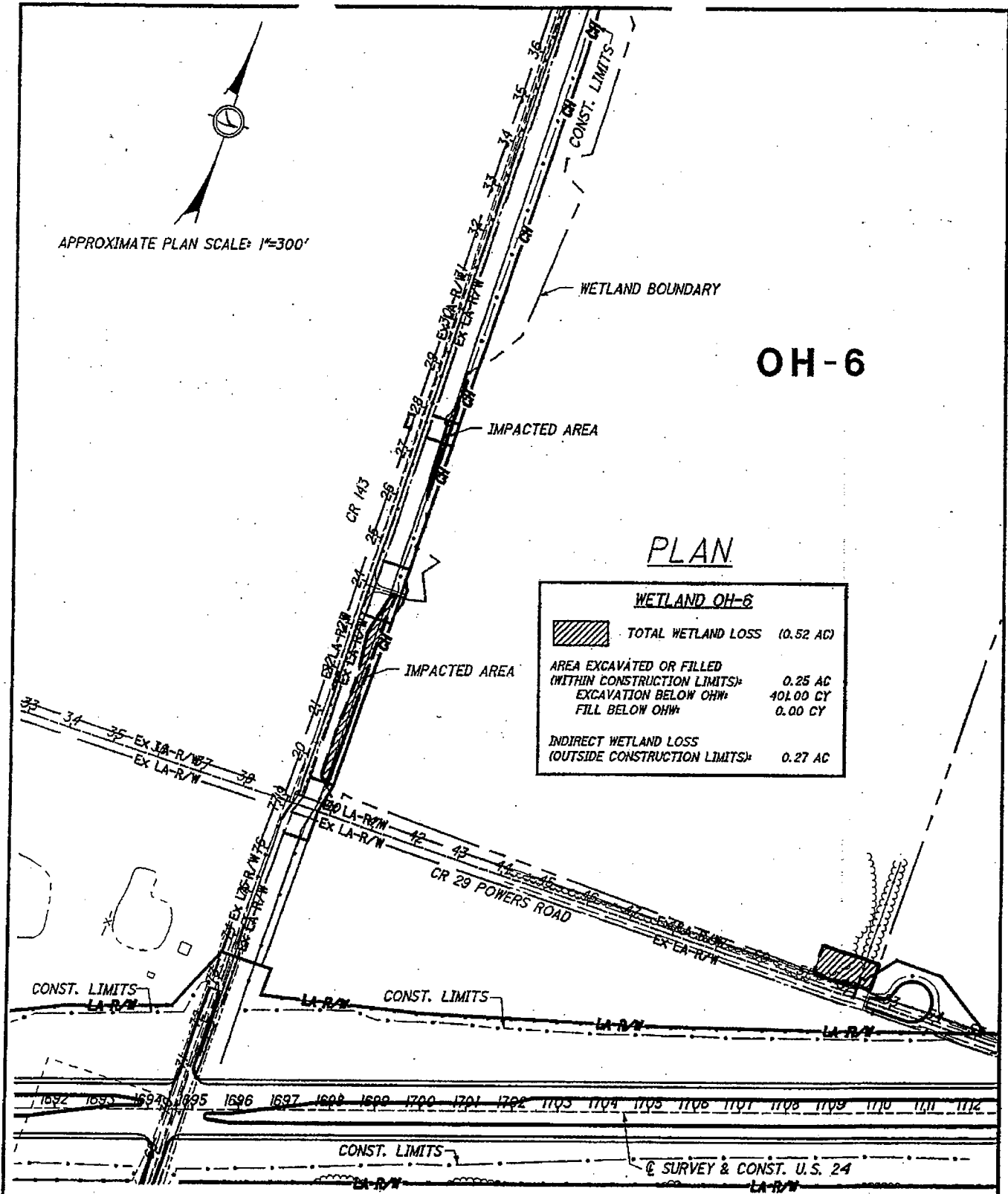
Figure 12

APPROXIMATE PLAN SCALE: 1"=300'

OH-6

PLAN

WETLAND OH-6	
	TOTAL WETLAND LOSS (0.52 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS): 0.25 AC	
EXCAVATION BELOW OHW: 401.00 CY	
FILL BELOW OHW: 0.00 CY	
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS): 0.27 AC	



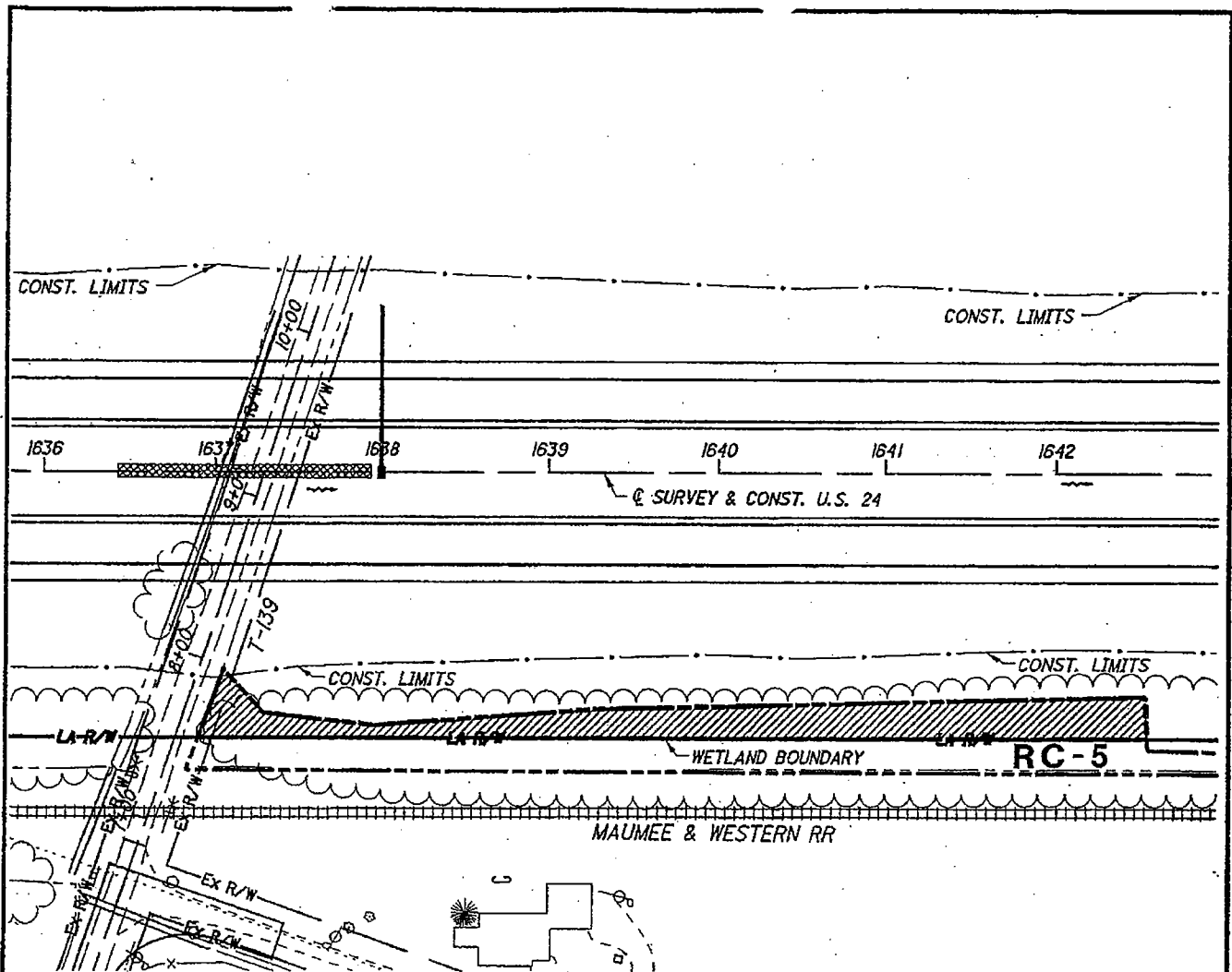
**IMPACTS TO
NON-ISOLATED
WETLAND OH-6**

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PAU-24-0.00 PID 24334


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Engineers 404 Permit
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Water Quality
Certification
Application

Date: 10-19-2004

Figure 13



PLAN

WETLAND RC-5 (TOTAL FROM FIG. 9, 12 & 13)	
	TOTAL WETLAND LOSS (0.90 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
EXCAVATION BELOW OHW:	0.02 AC
FILL BELOW OHW:	18.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	
	0.88 AC

APPROXIMATE PLAN SCALE: 1"=100'



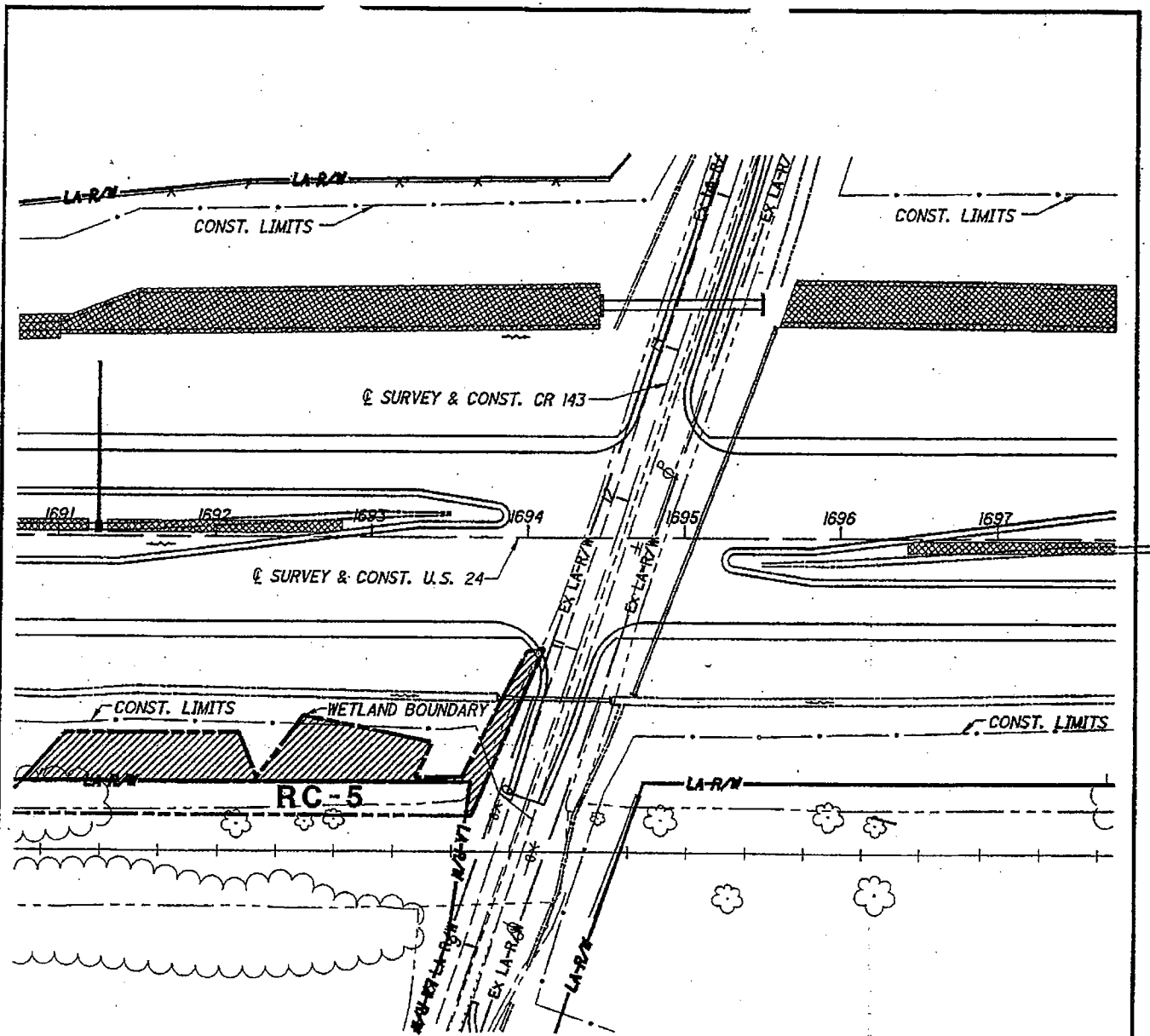
**IMPACTS TO
NON-ISOLATED
WETLAND RC-5**


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PAU-24-0.00 PID 24334

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Engineers 404 Permit
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Water Quality
Certification
Application

Date: 10-19-2004

Figure 14



WETLAND RC-5 (TOTAL FROM FIG. 9, 12 & 13)	
	TOTAL WETLAND LOSS 10.90 AC
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
EXCAVATION BELOW OHW:	0.02 AC
FILL BELOW OHW:	18.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	
	0.88 AC

PLAN

APPROXIMATE PLAN SCALE: 1"=100'



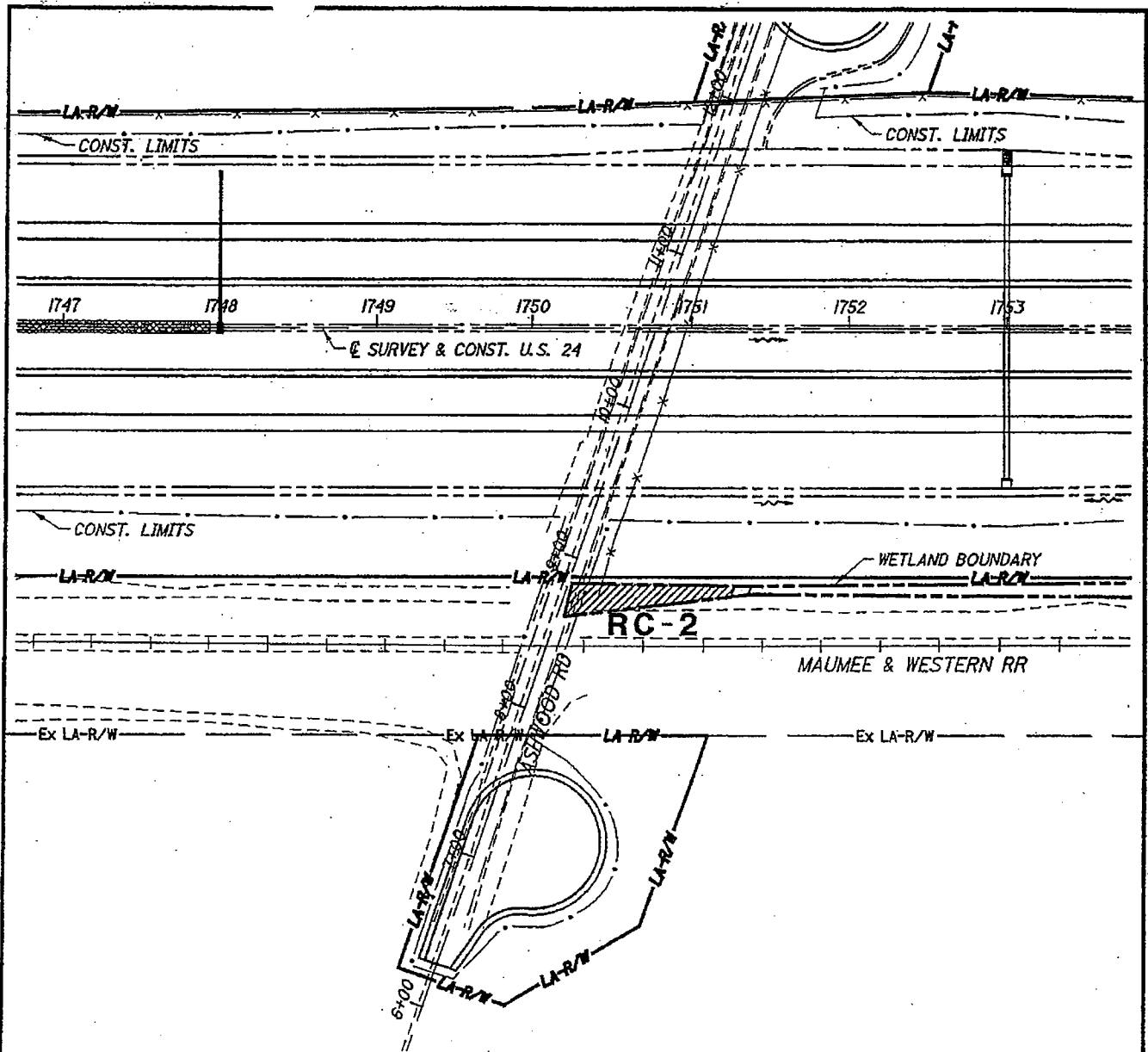
IMPACTS TO NON-ISOLATED WETLAND RC-5

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Engineers 404 Permit
and OEPA Section 401
Water Quality
Certification
Application

Date: 10-19-2004

Figure 15



PLAN

WETLAND RC-2 (TOTAL FROM FIG. 14 & 15)	
	TOTAL WETLAND LOSS (0.13 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS)*	0.00 AC
EXCAVATION BELOW OHW*	7.00 CY
FILL BELOW OHW*	0.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS)*	0.13 AC



APPROXIMATE PLAN SCALE: 1"=100'



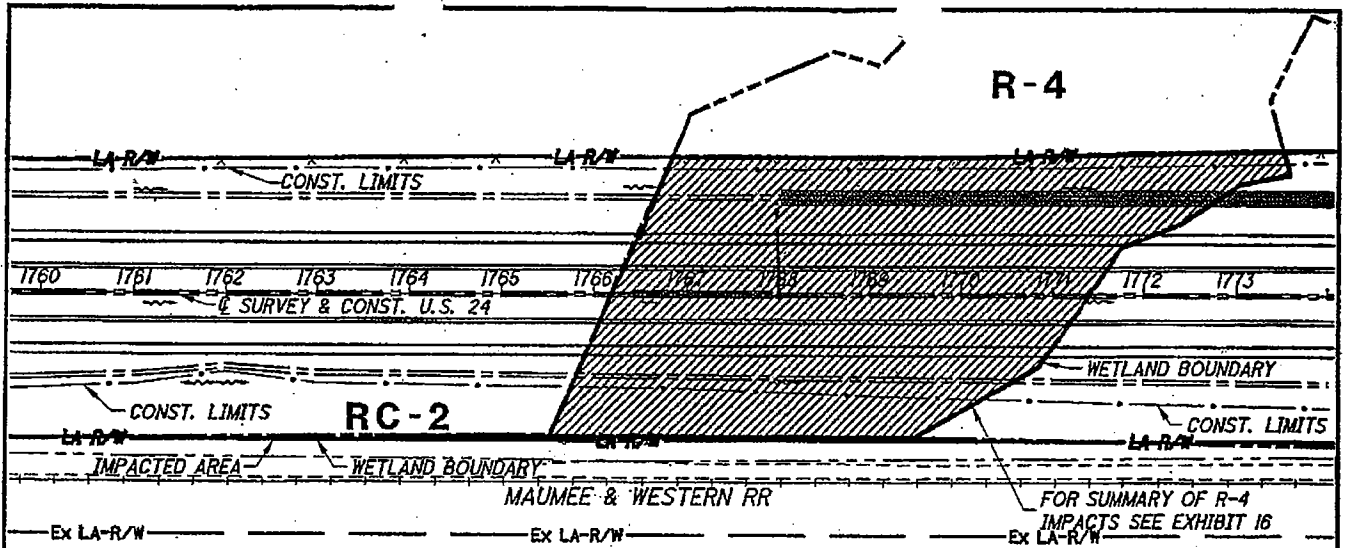
**IMPACTS TO
NON-ISOLATED
WETLAND RC-2**


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PAU-24-0.00 PID 24334

U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application

Date: 10-19-2004

Figure 16



WETLAND RC-2 (TOTAL FROM FIG. 14 & 15)	
	TOTAL WETLAND LOSS (0.13 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.00 AC
EXCAVATION BELOW OHW:	7.00 CY
FILL BELOW OHW:	0.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.13 AC

PLAN



APPROXIMATE PLAN SCALE: 1"=200'



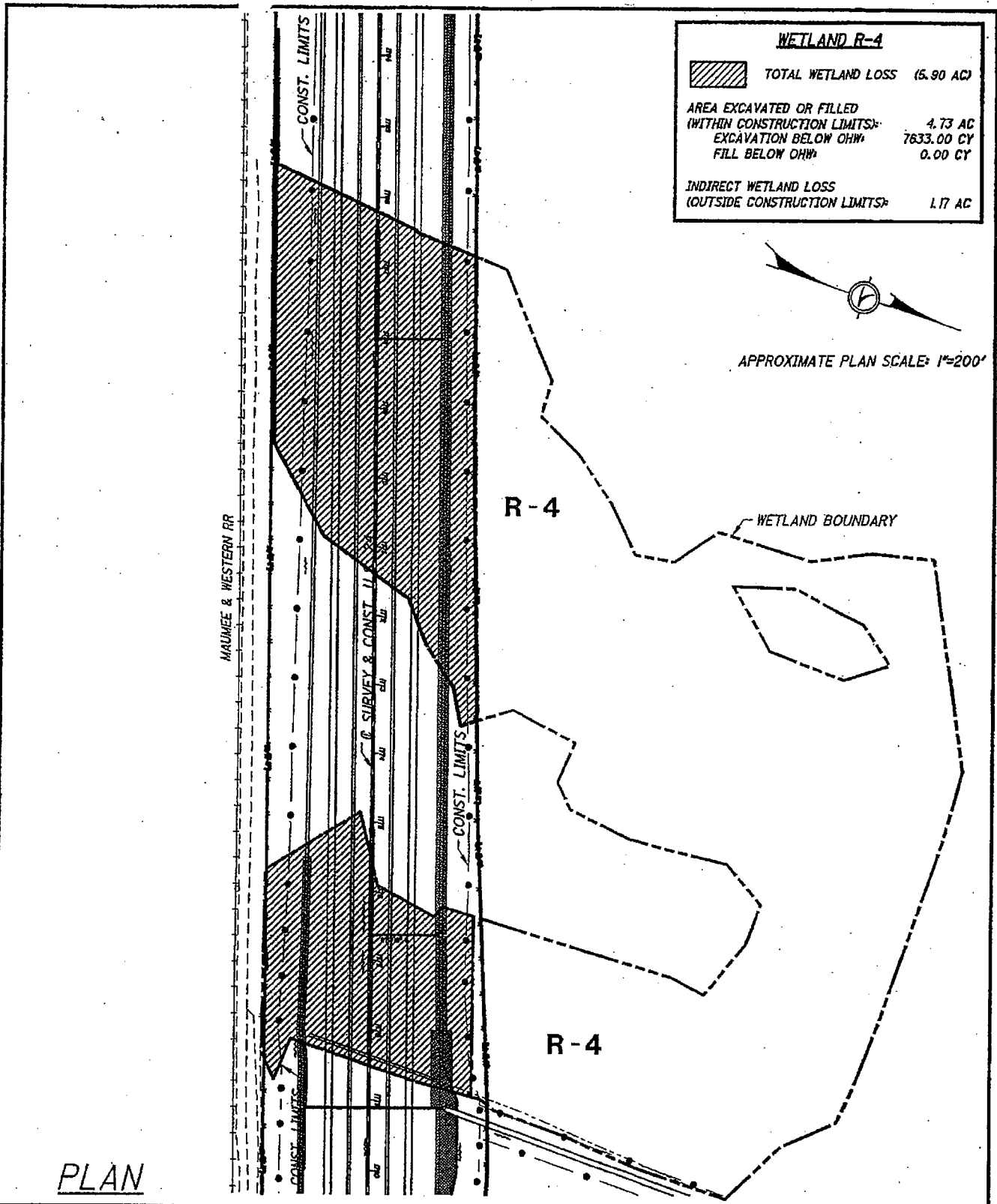
IMPACTS TO NON-ISOLATED WETLAND RC-2


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PAU-24-0.00 PID 24334

U.S. Army Corps of
Engineers 404 Permit
and OEPA Section 401
Water Quality
Certification
Application

Date: 10-19-2004

Figure 17



WETLAND R-4	
	TOTAL WETLAND LOSS (5.90 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
EXCAVATION BELOW OHW:	4.73 AC
FILL BELOW OHW:	7633.00 CY
FILL BELOW OHW:	0.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	
	1.17 AC

APPROXIMATE PLAN SCALE: 1"=200'

PLAN



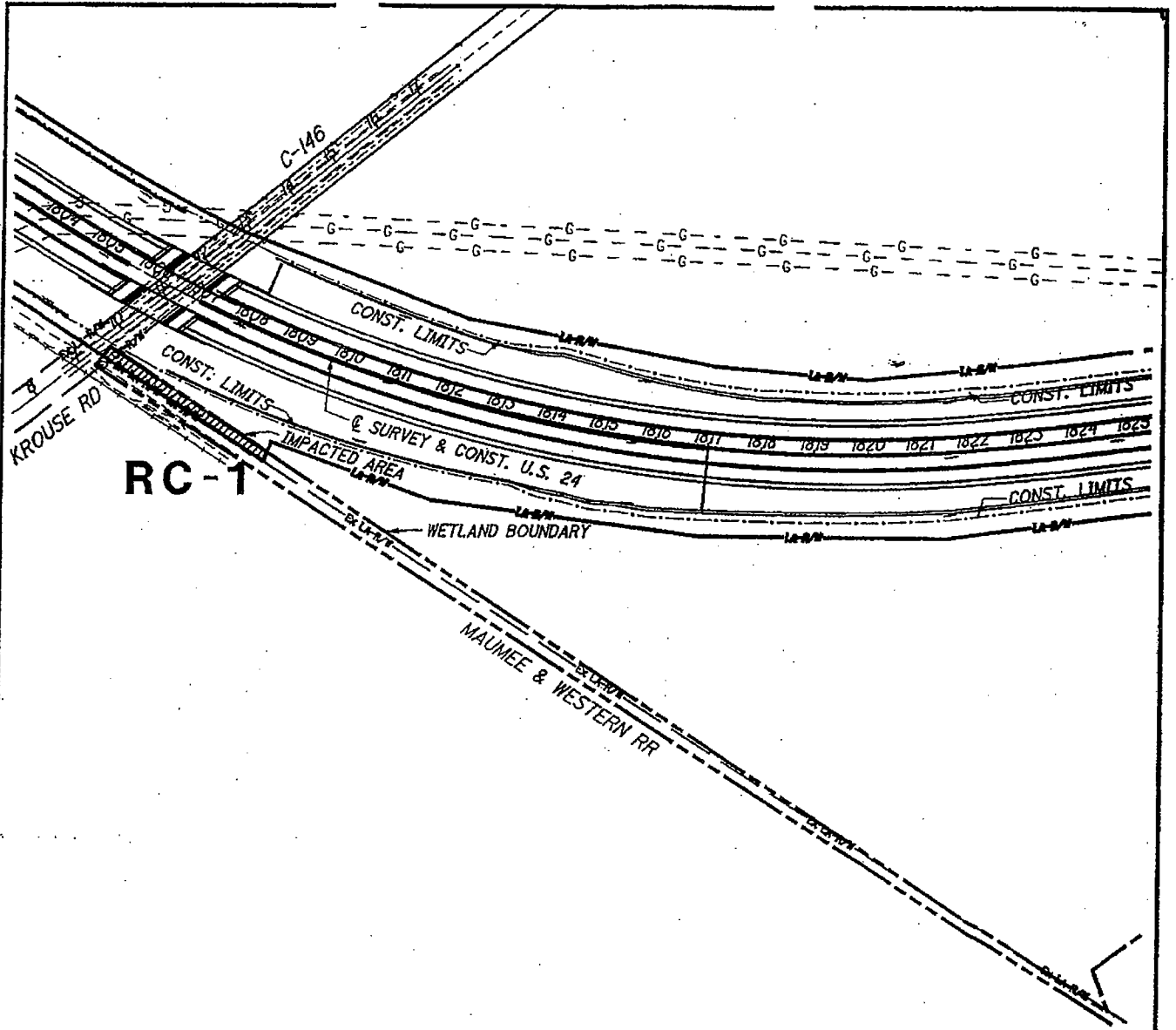
**IMPACTS TO
NON-ISOLATED
WETLAND R-4**

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Engineers 404 Permit
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Water Quality
Certification
Application

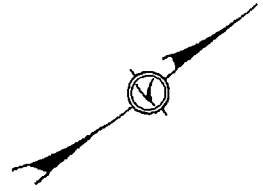
Date: 10-19-2004

Figure 18



RC-1

WETLAND RC-1	
	TOTAL WETLAND LOSS (0.16 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
EXCAVATION BELOW OHW:	0.00 CY
FILL BELOW OHW:	0.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	
	0.16 AC



PLAN

APPROXIMATE PLAN SCALE: 1"=300'



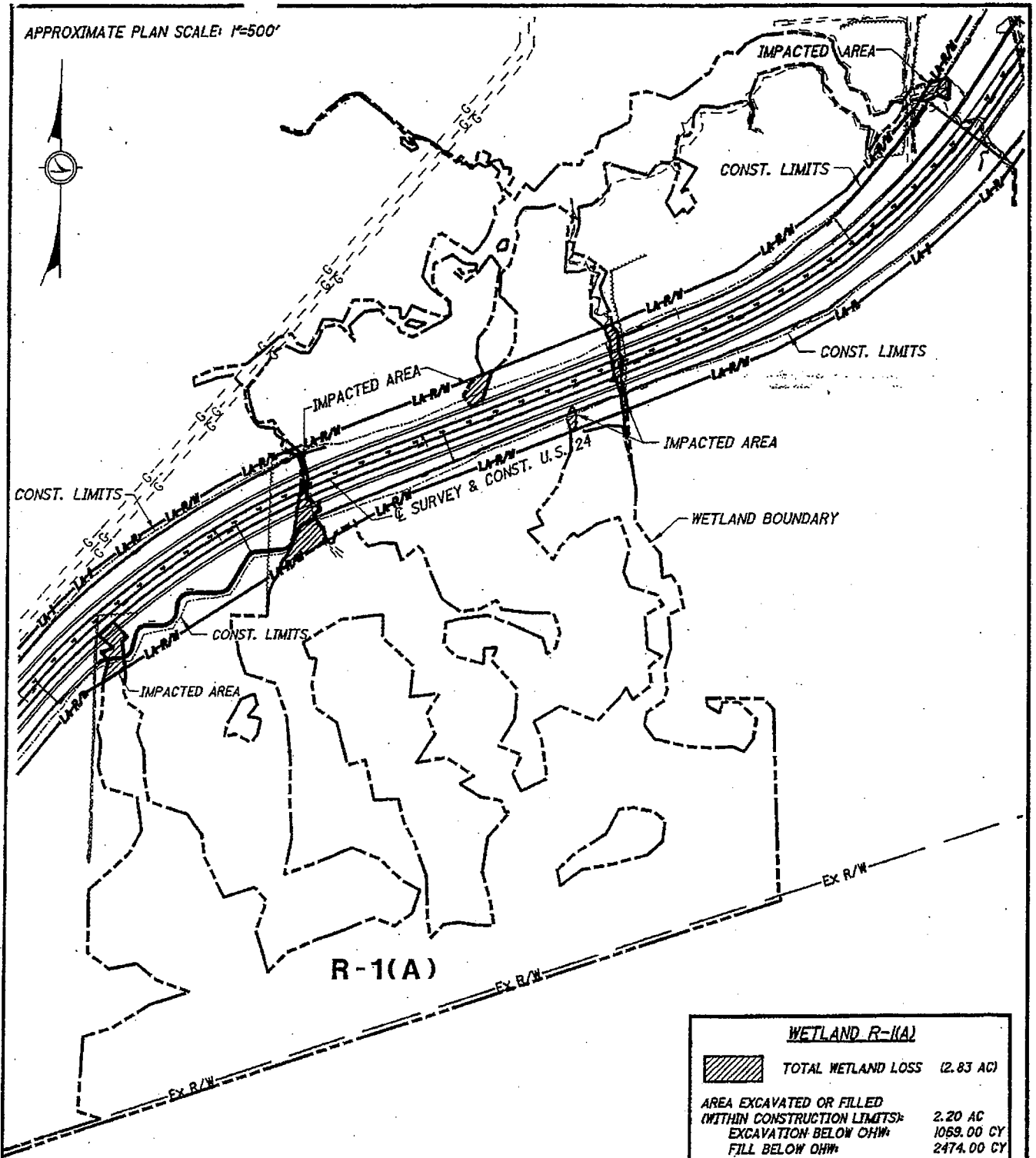
**IMPACT TO
NON-ISOLATED
WETLAND RC-1**
 OHIO DEPARTMENT OF TRANSPORTATION
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 Water Quality
 Certification
 Application


Date: 10-19-2004

Figure 19

APPROXIMATE PLAN SCALE: 1"=500'



PLAN

WETLAND R-1(A)	
	TOTAL WETLAND LOSS (2.83 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
EXCAVATION BELOW OHW:	2.20 AC
FILL BELOW OHW:	1069.00 CY
	2474.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS): 0.63 AC	

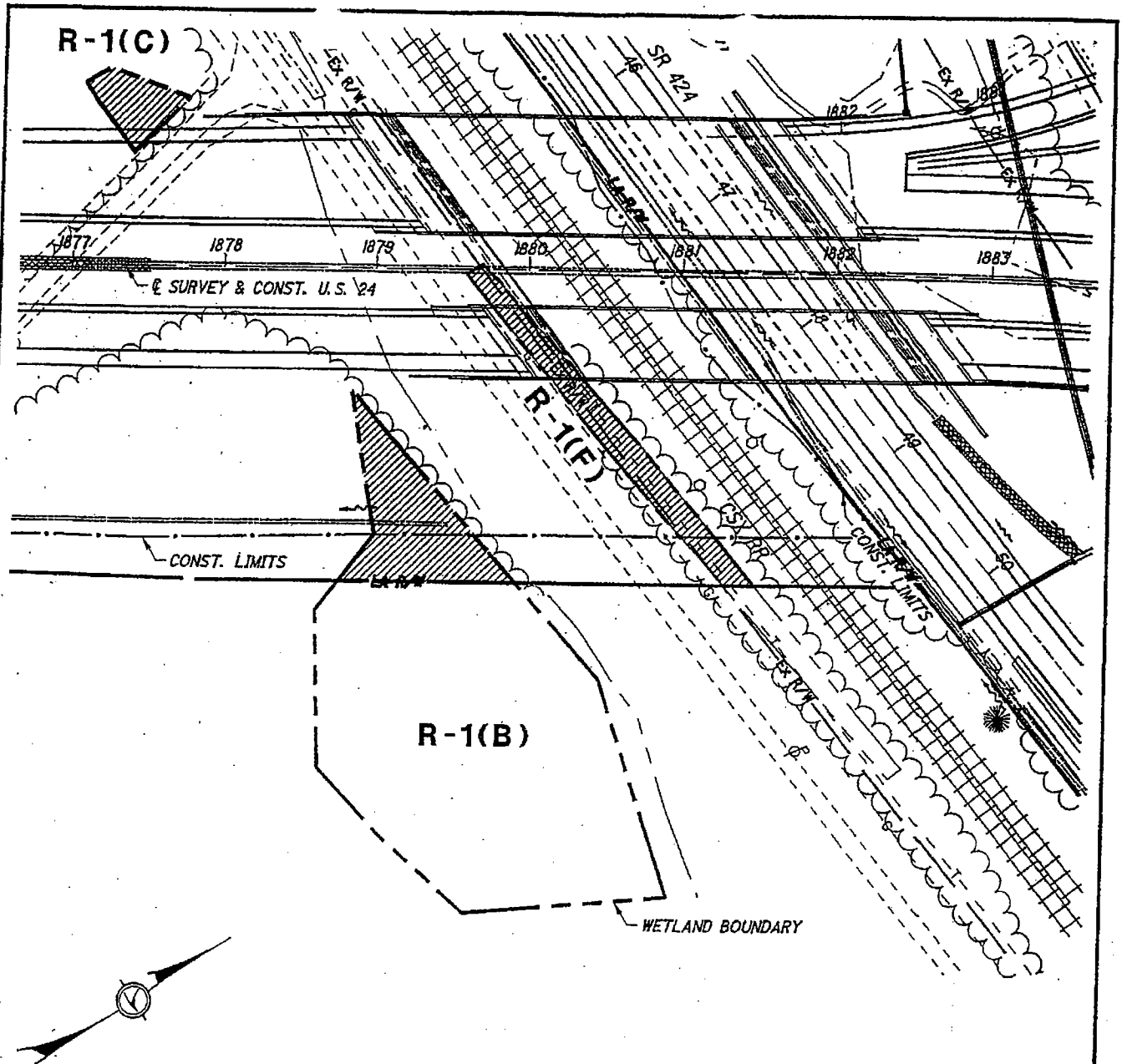


**IMPACTS TO
NON-ISOLATED
WETLAND R-1(A)**
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PAU-24-0.00 PID 24334

U.S. Army Corps of
Engineers 404 Permit
and OEPA Section 401
Water Quality
Certification
Application


Date: 10-19-2004


Figure 20




APPROXIMATE PLAN SCALE: 1"=100'

PLAN

<u>WETLAND R-1(B)</u>	
 TOTAL WETLAND LOSS	(0.13 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.07 AC
EXCAVATION BELOW OHW:	54.00 CY
FILL BELOW OHW:	60.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.06 CY

<u>WETLAND R-1(C)</u>	
 TOTAL WETLAND LOSS	(0.04 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.04 CY
EXCAVATION BELOW OHW:	0.00 CY
FILL BELOW OHW:	65.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 CY

<u>WETLAND R-1(F)</u>	
 TOTAL WETLAND LOSS	(0.09 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.07 AC
EXCAVATION BELOW OHW:	14.00 CY
FILL BELOW OHW:	103.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.02 CY



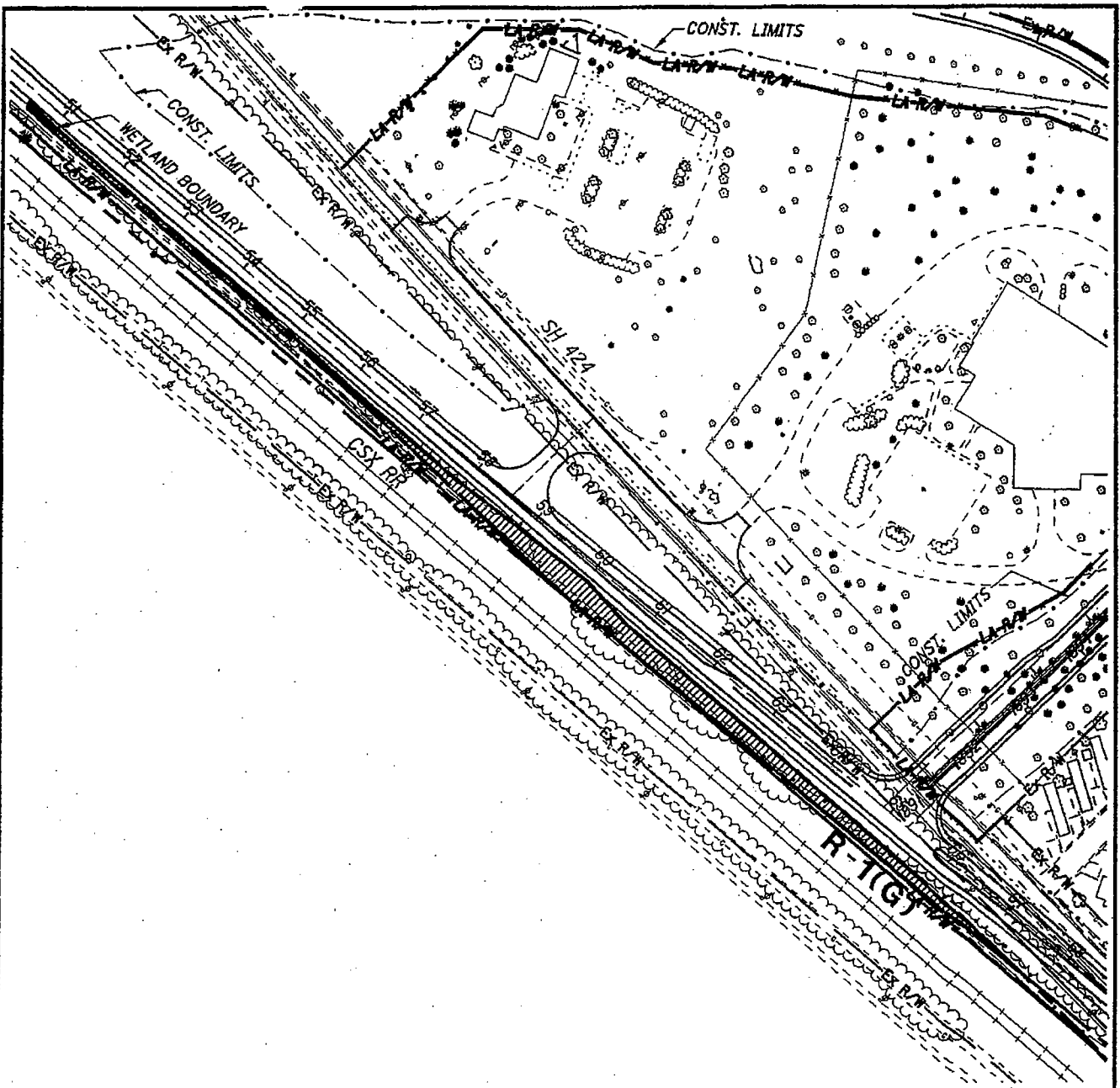
IMPACTS TO NON-ISOLATED WETLANDS R-1(B)-(C) AND R-1(F)


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 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application

Date: 10-19-2004

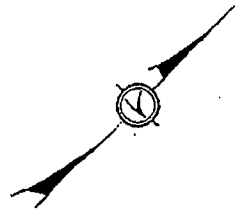
Figure 21



WETLAND R-1(G)	
	TOTAL WETLAND LOSS (0.56 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
EXCAVATION BELOW OHW:	79.00 CY
FILL BELOW OHW:	558.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	
	0.16 AC

PLAN

APPROXIMATE PLAN SCALE: 1"=200'



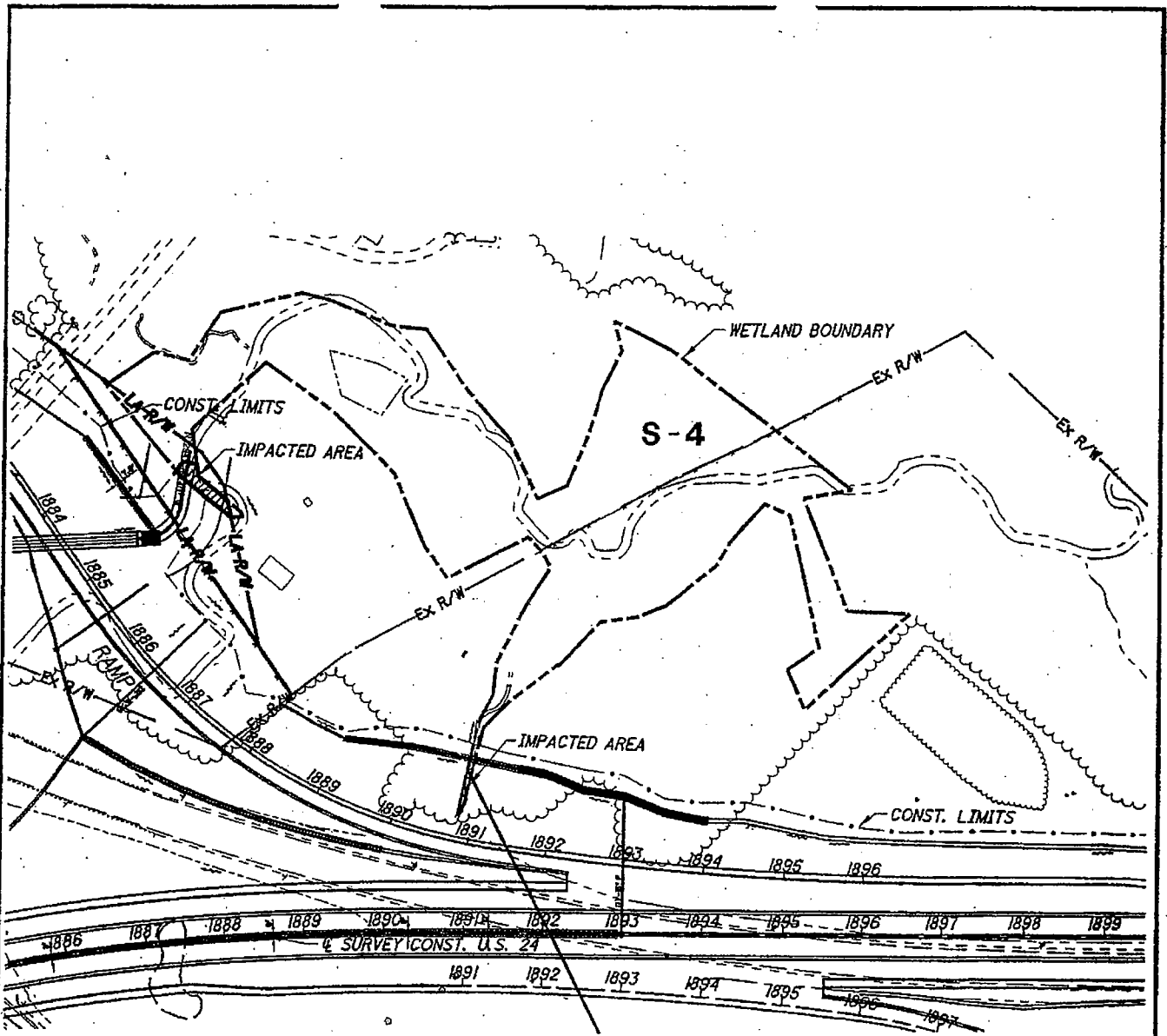
IMPACT TO NON-ISOLATED WETLAND R-1(G)

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PAU-24-0.00 PID 24334


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Engineers 404 Permit
and OEPA Section 401
Water Quality
Certification
Application

Date: 10-19-2004

Figure 22



PLAN

WETLAND S-4	
	TOTAL WETLAND LOSS (0.12 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
EXCAVATION BELOW OHW:	0.03 CY
FILL BELOW OHW:	36.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	
	0.09 CY

APPROXIMATE PLAN SCALE: 1"=200'



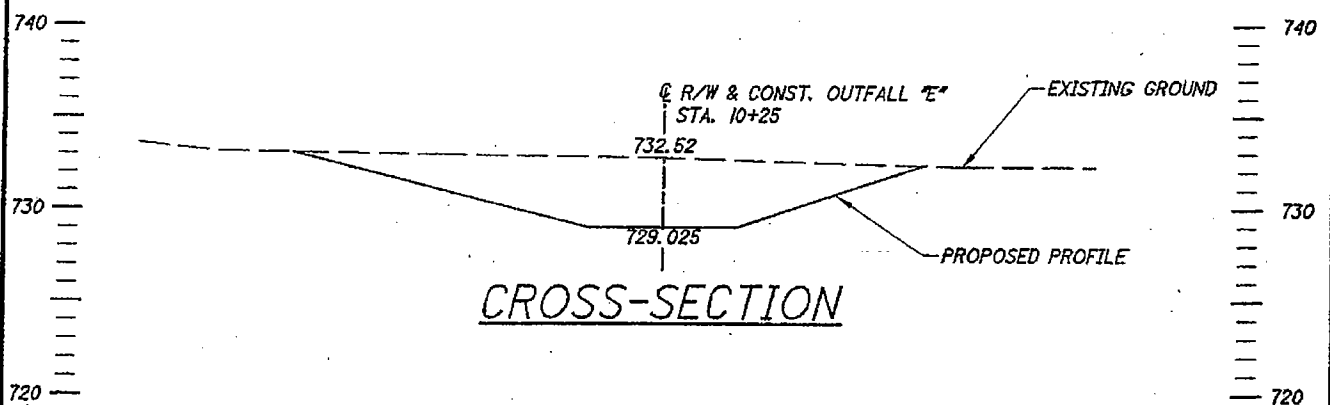
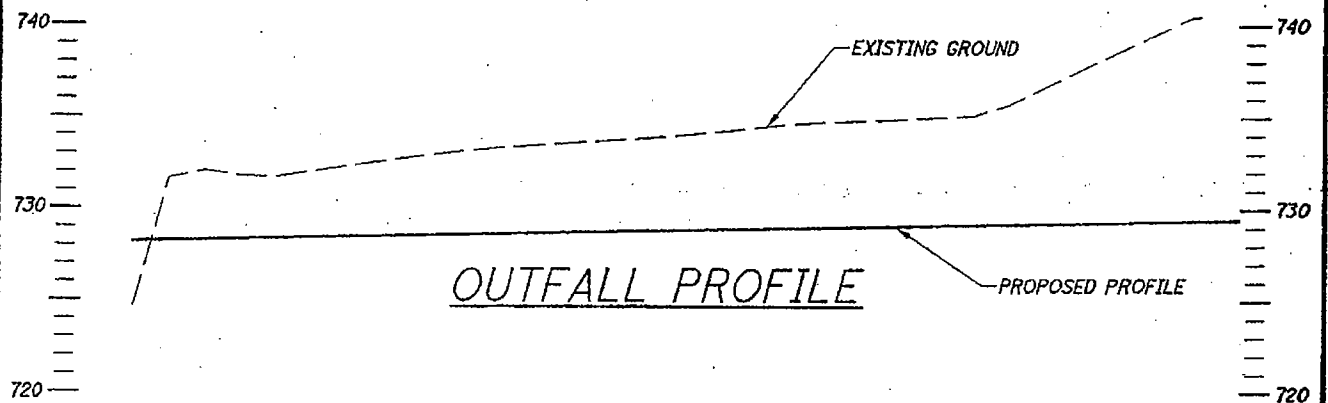
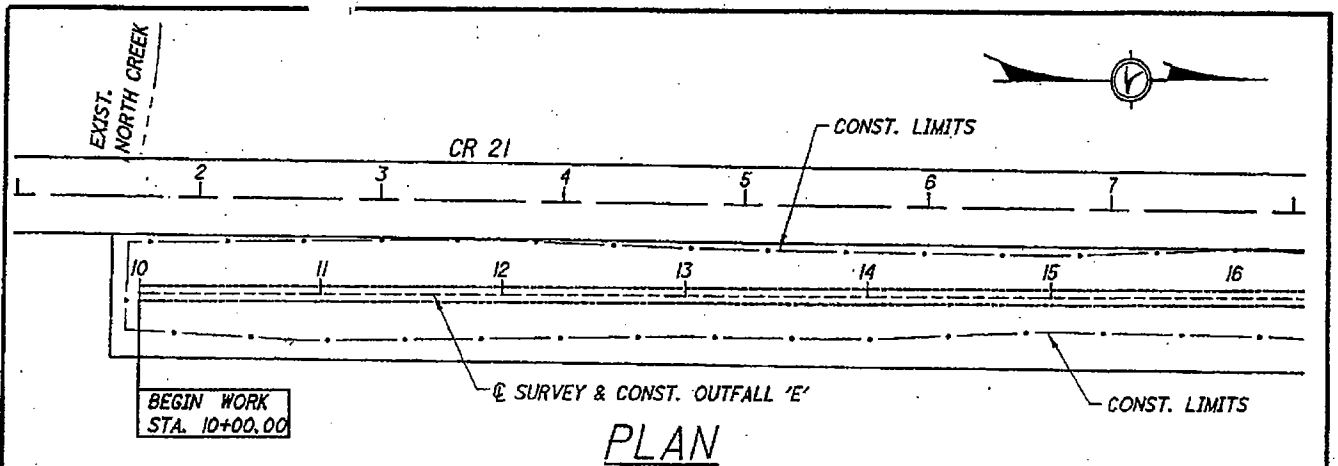
**IMPACTS TO
NON-ISOLATED
WETLAND S-4**

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U.S. Army Corps of
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and OEPA Section 401
Water Quality
Certification
Application

Date: 10-19-2004

Figure 23



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=10'

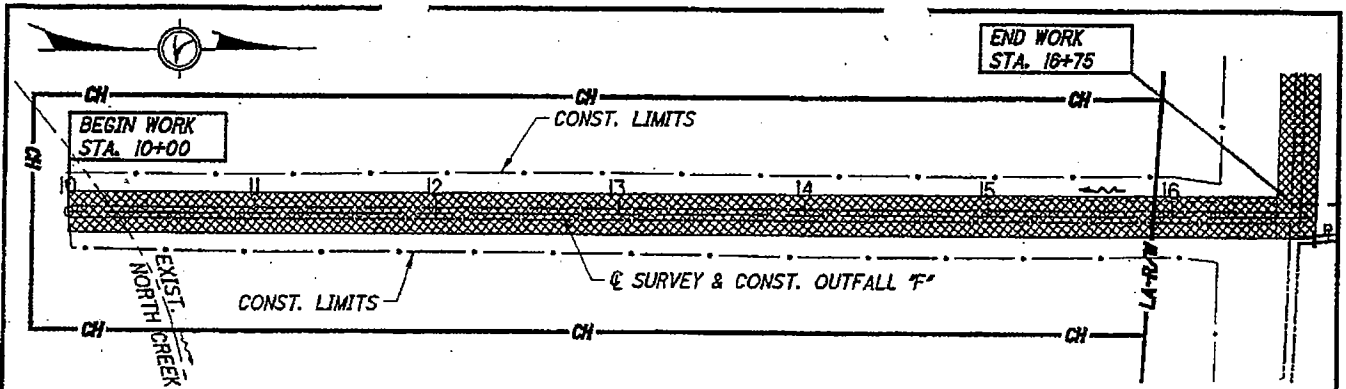


**IMPACT AT
 OUTFALL 44
 NORTH CREEK**
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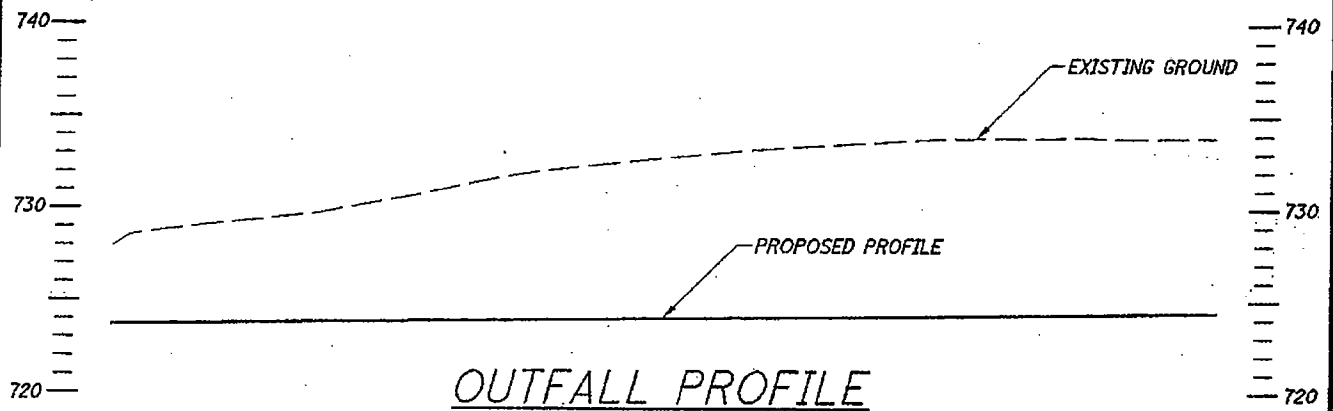
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 Water Quality
 Certification
 Application

Date: 10-19-2004

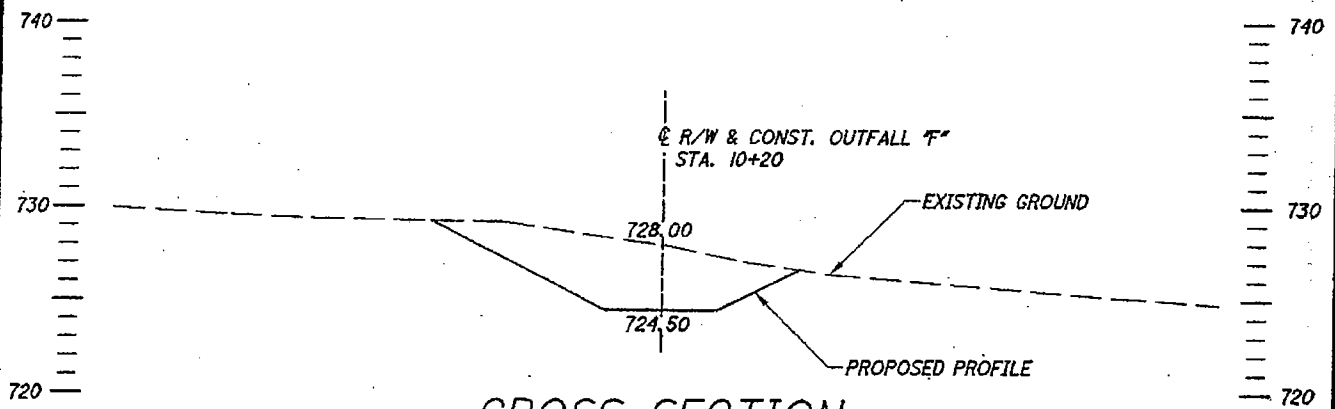
Figure 27



PLAN



OUTFALL PROFILE



CROSS-SECTION

APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS SECTION HORIZONTAL SCALE: 1"=10'



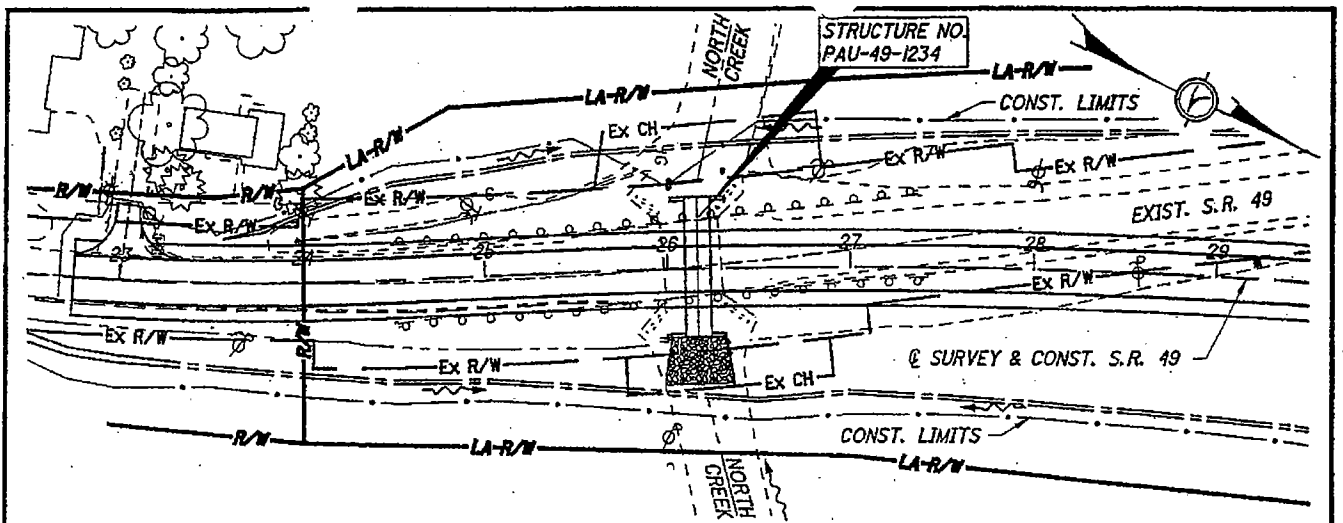
**IMPACT AT
 OUTFALL 42
 NORTH CREEK**

OHIO DEPARTMENT OF TRANSPORTATION
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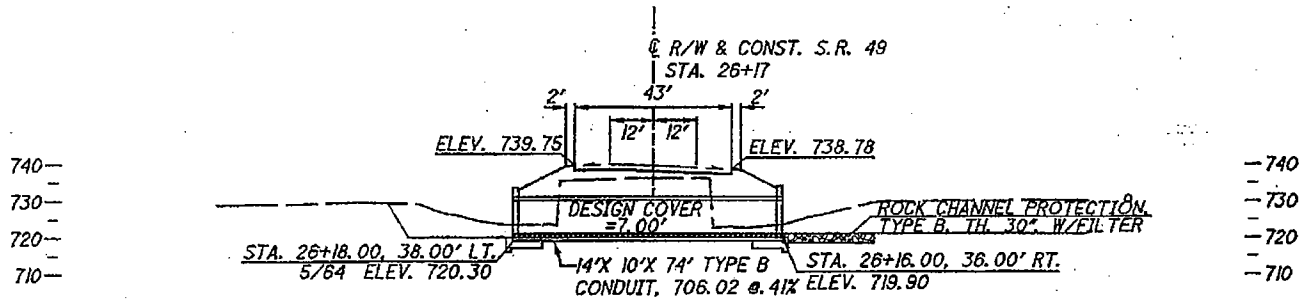
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 Water Quality
 Certification
 Application

Date: 10-19-2004

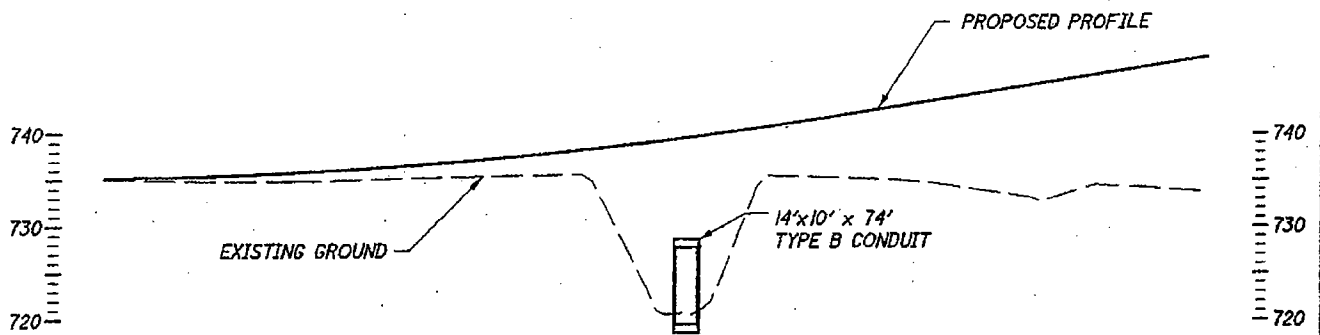
Figure: 28



PLAN



CULVERT PROFILE



CROSS-SECTION

APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=50'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=100'



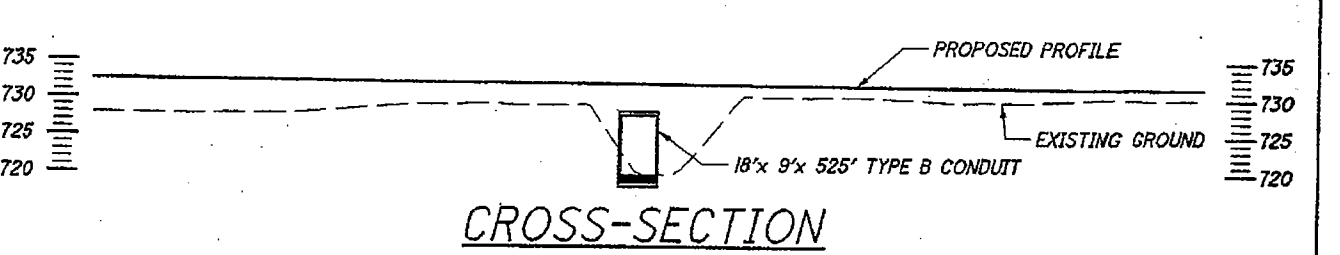
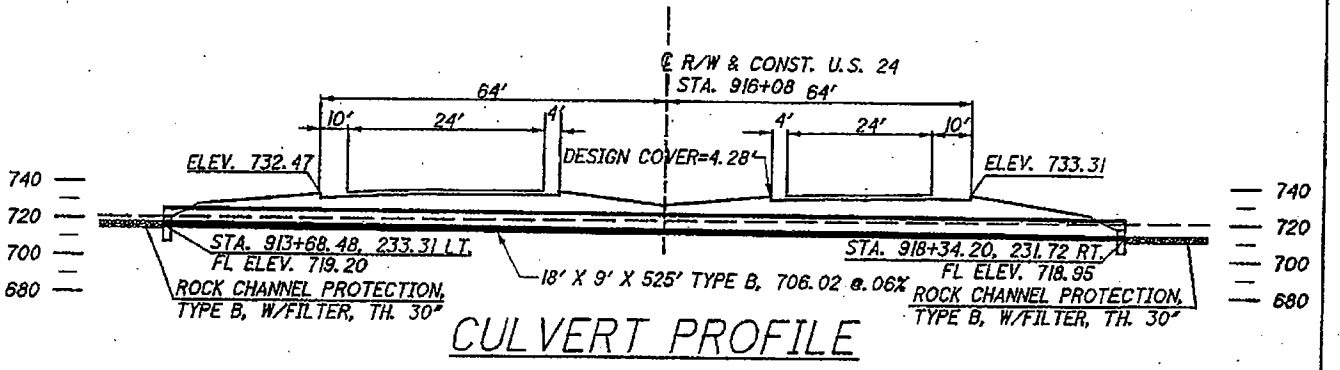
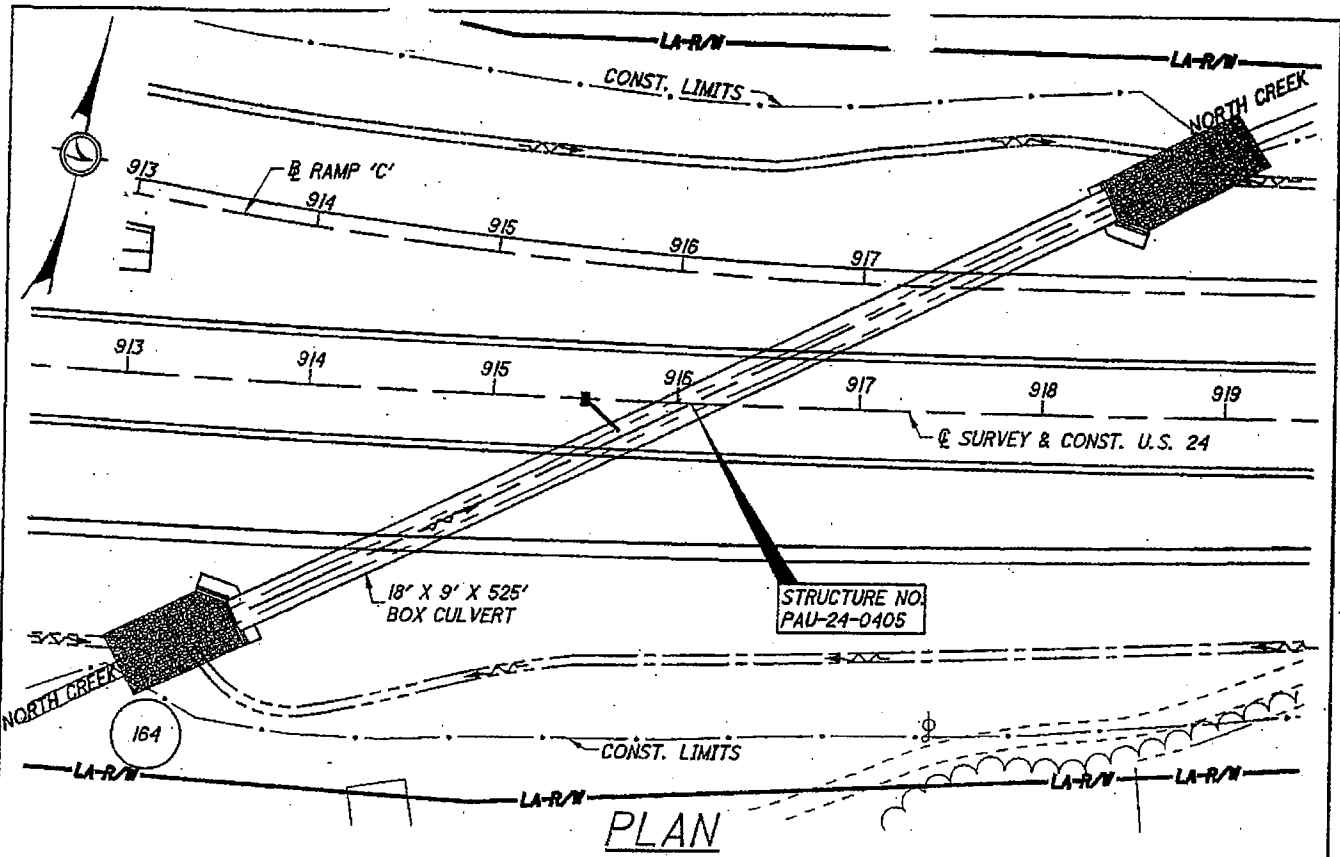
**IMPACTS AT STREAM
 CROSSING 41
 NORTH CREEK**

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 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of
 Engineers 404 Permit
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 Water Quality
 Certification
 Application

Date: 10-19-2004

Figure 29



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE HORIZONTAL PROFILE SCALE: 1"=100'
 APPROXIMATE HORIZONTAL CROSS-SECTION SCALE: 1"=100'

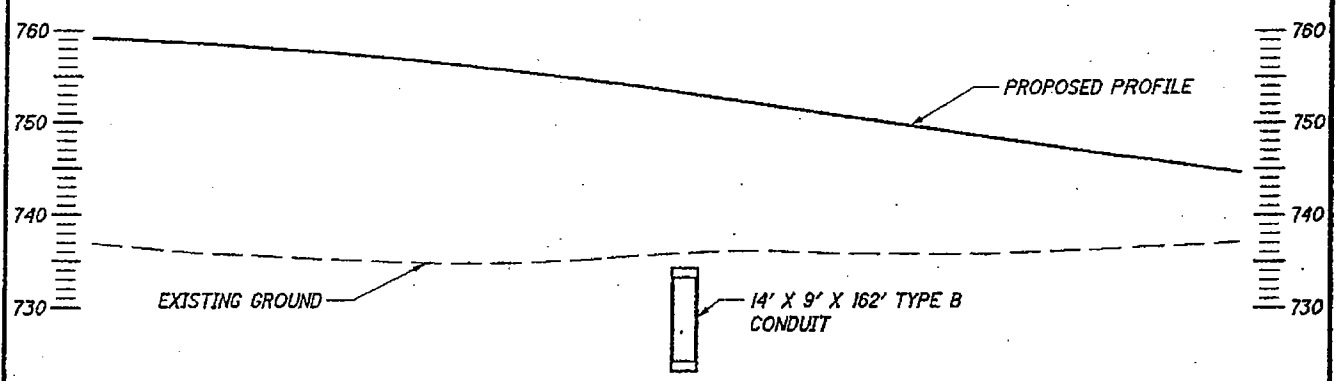
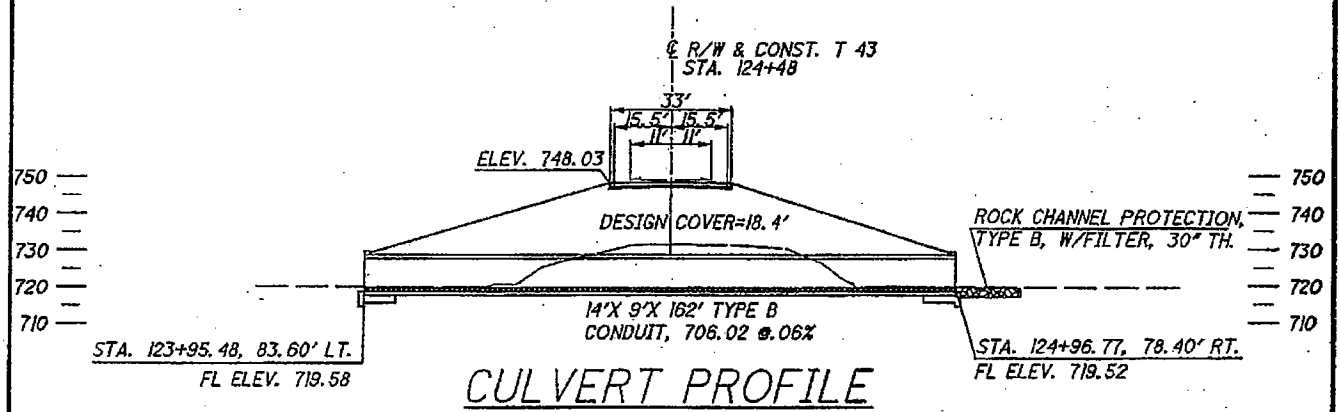
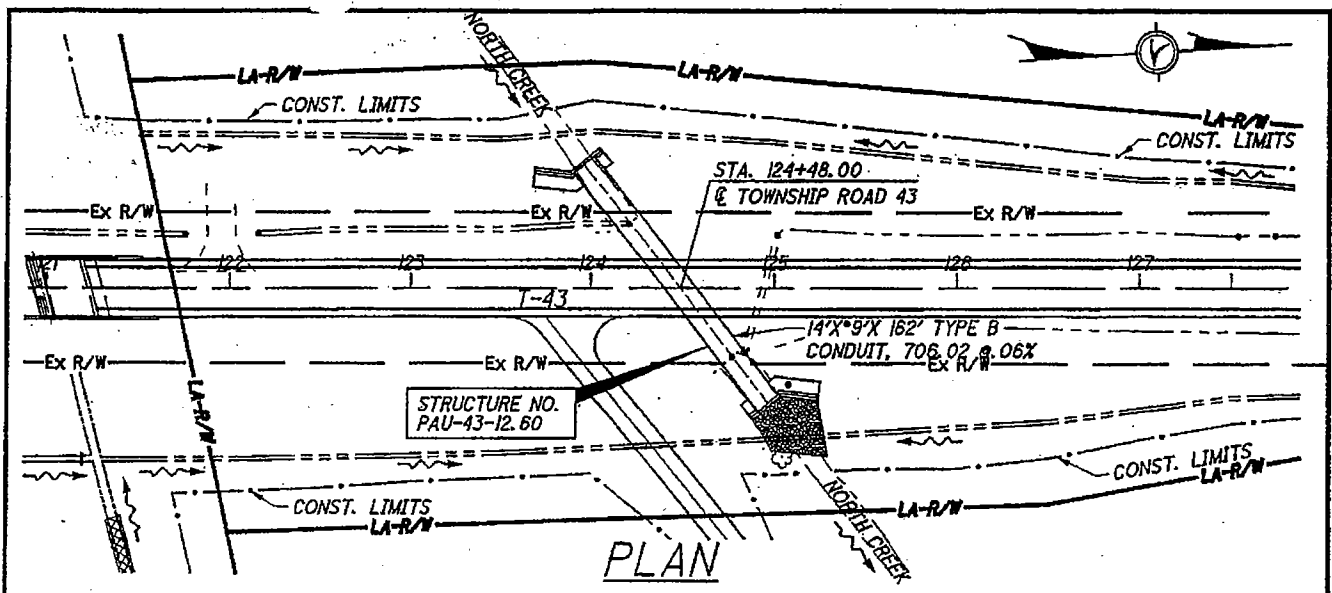


**IMPACTS AT
 STREAM CROSSING OH-58
 NORTH CREEK**

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 Water Quality
 Certification
 Application

Date: 10-19-2004
 Figure 30



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=50'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=100'



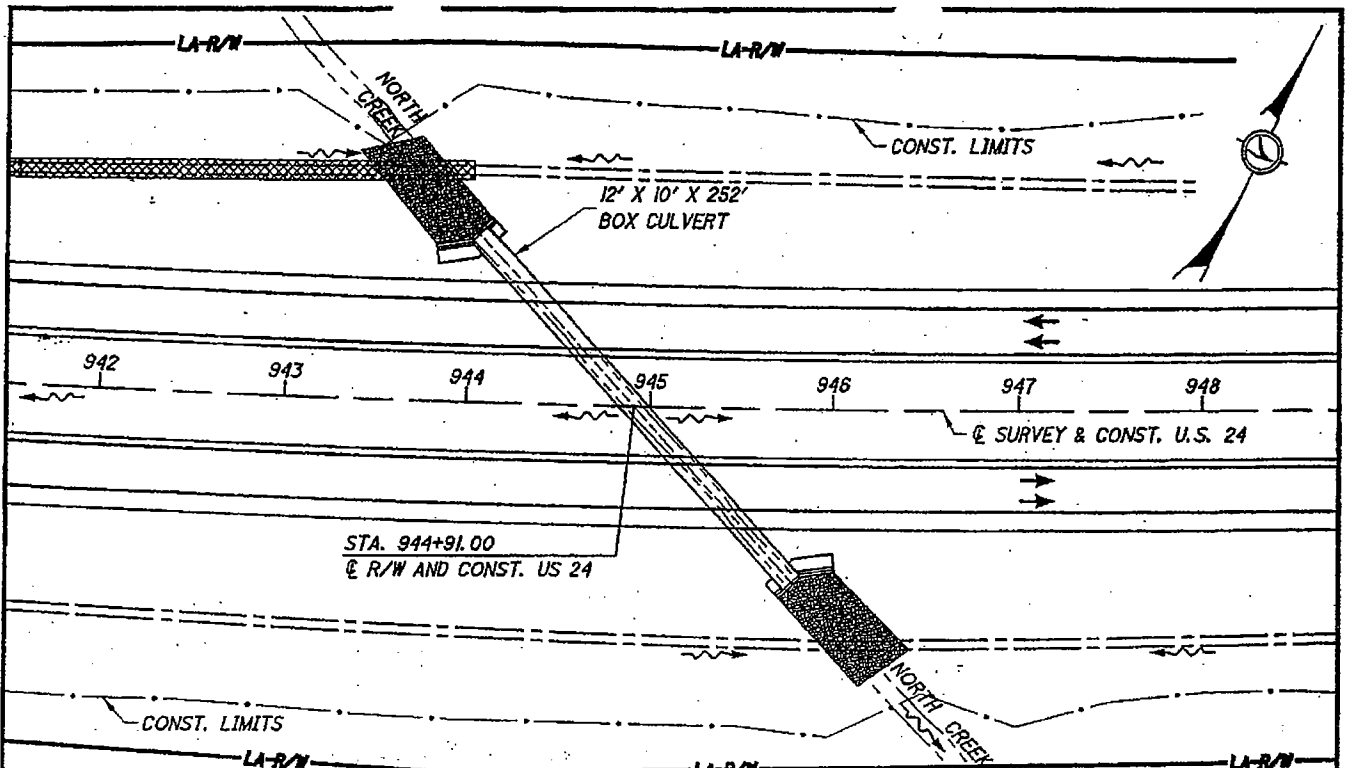
**IMPACTS AT
 STREAM CROSSING OH-58A
 NORTH CREEK**

OHIO DEPARTMENT OF TRANSPORTATION
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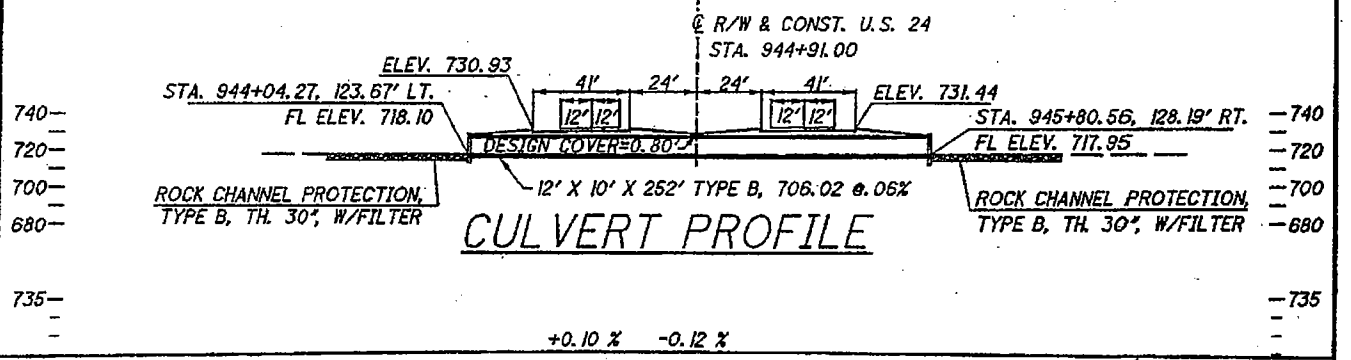
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 Water Quality
 Certification
 Application

Date: 10-19-2004

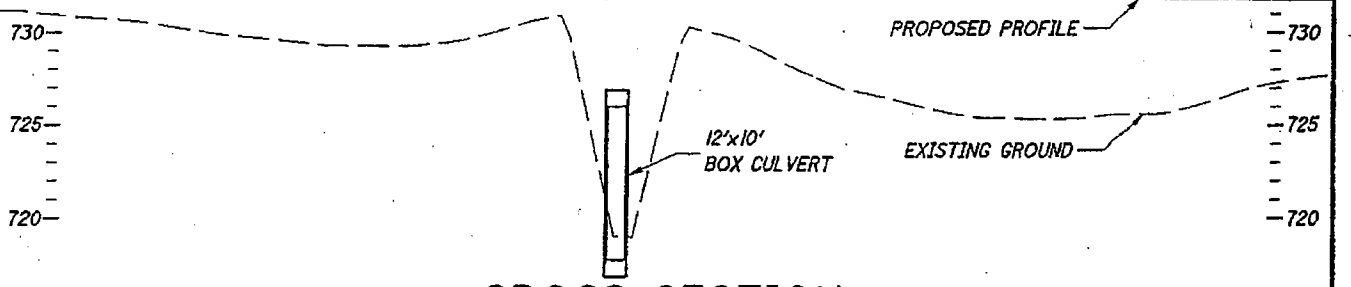
Figure 31



PLAN



CULVERT PROFILE



CROSS-SECTION

APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE HORIZONTAL PROFILE SCALE: 1"=100'
 APPROXIMATE HORIZONTAL CROSS-SECTION SCALE: 1"=100'

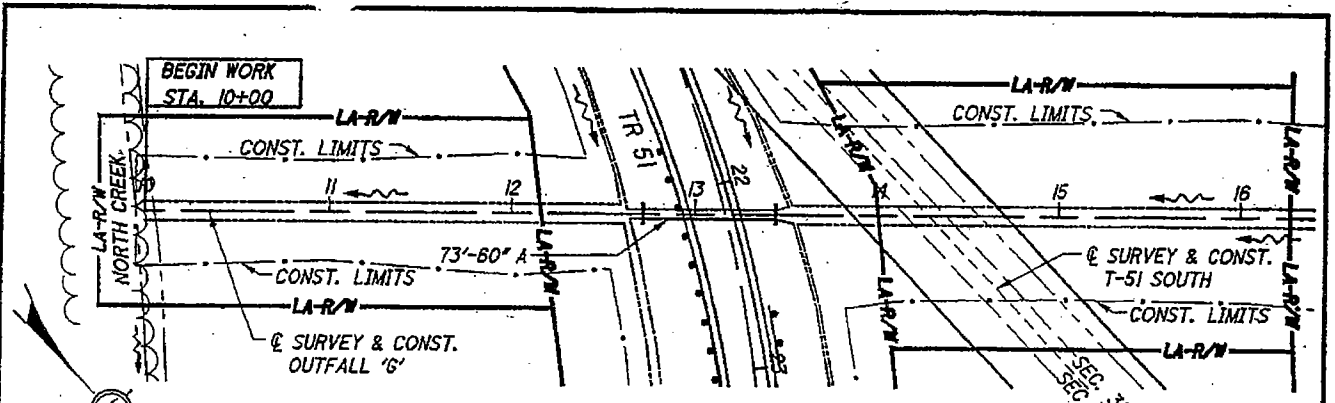


**IMPACTS AT
 STREAM CROSSING OH-60
 NORTH CREEK**
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 PAU-24-0.00 PID 24334

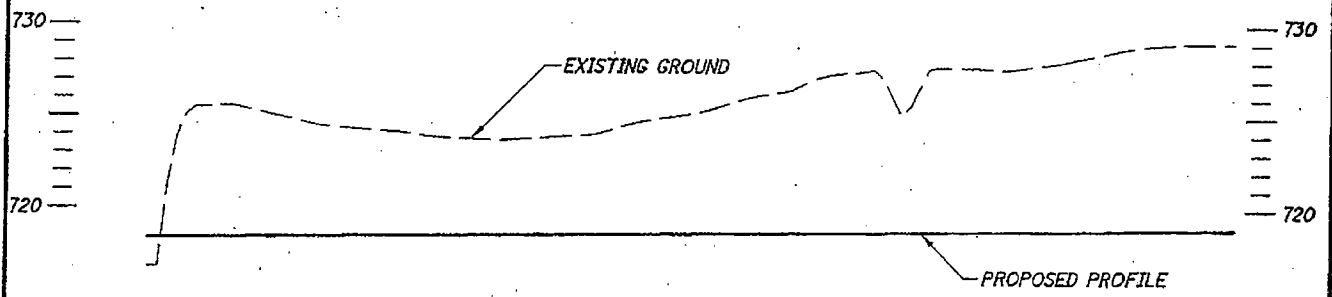
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 Water Quality
 Certification
 Application

Date: 10-19-2004

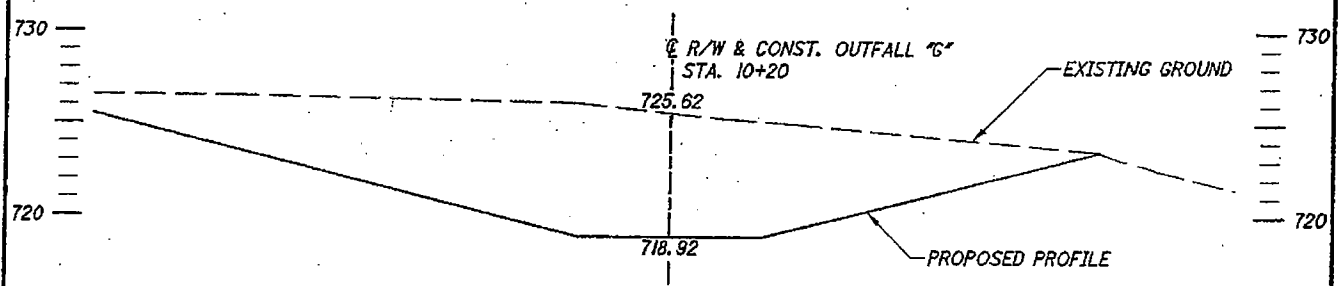
Figure 32



PLAN



OUTFALL PROFILE



CROSS-SECTION

APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=10'

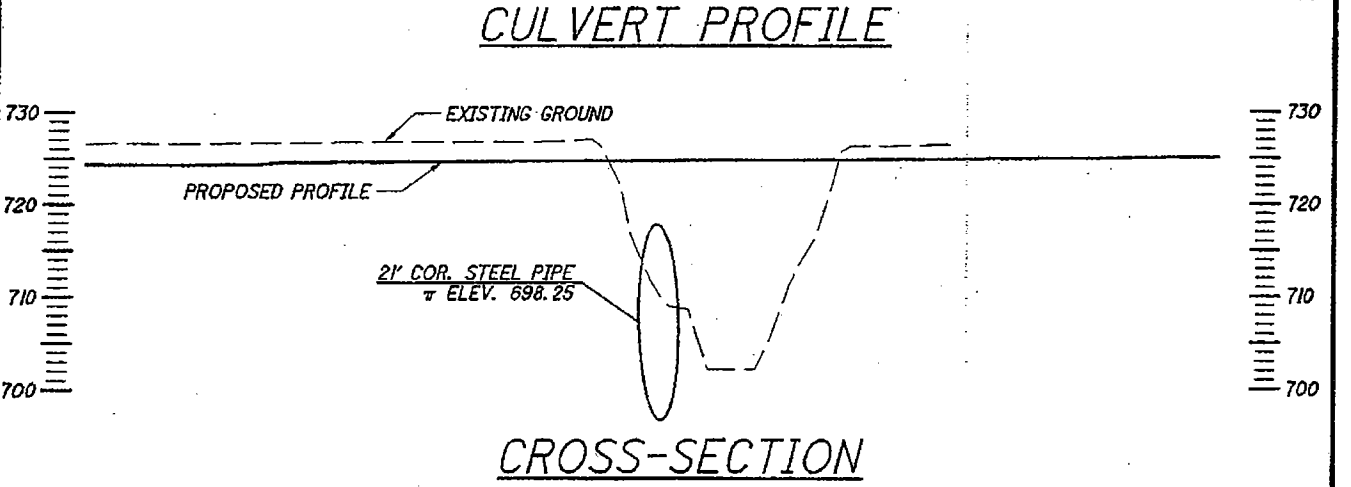
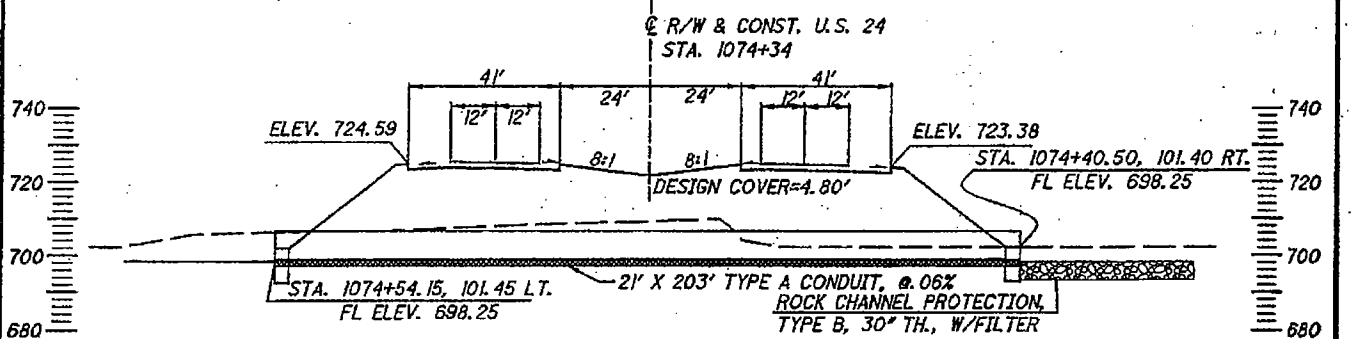
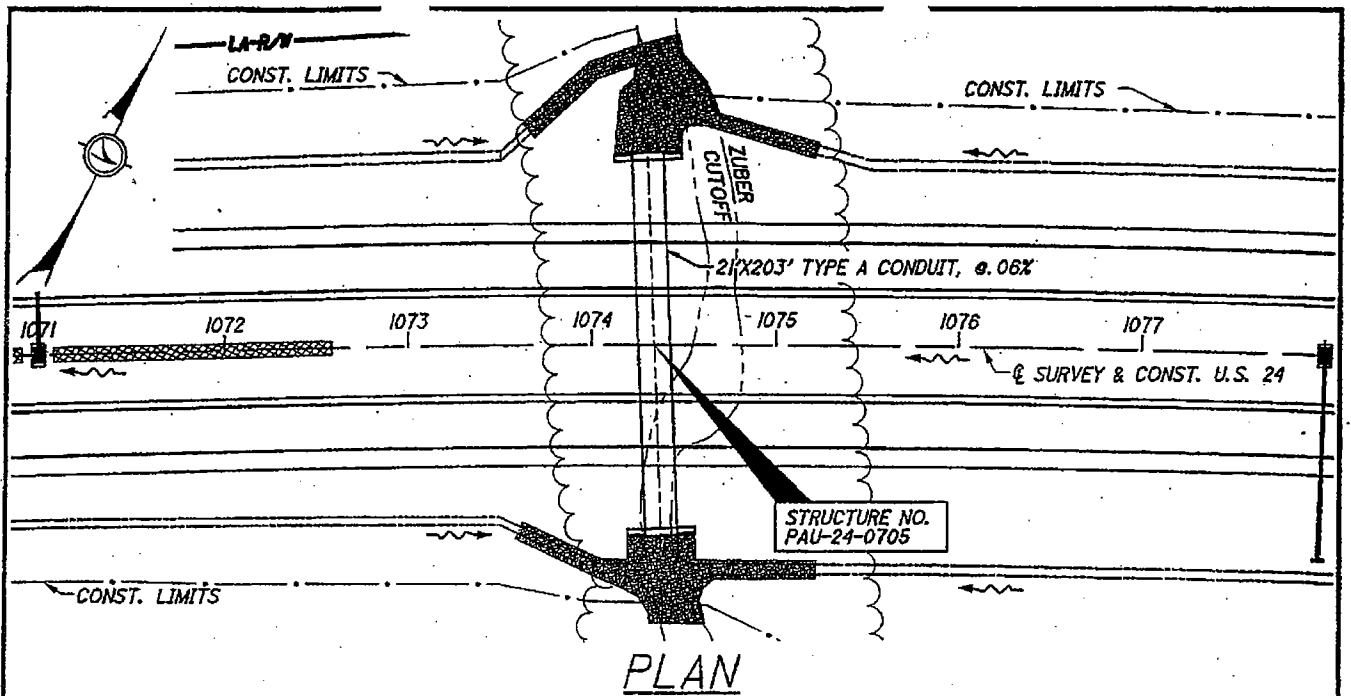


**IMPACT AT
 OUTFALL 35
 NORTH CREEK**

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 PAU-24-0.00 PID 24334**

U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004
 Figure 33



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=50'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=100'



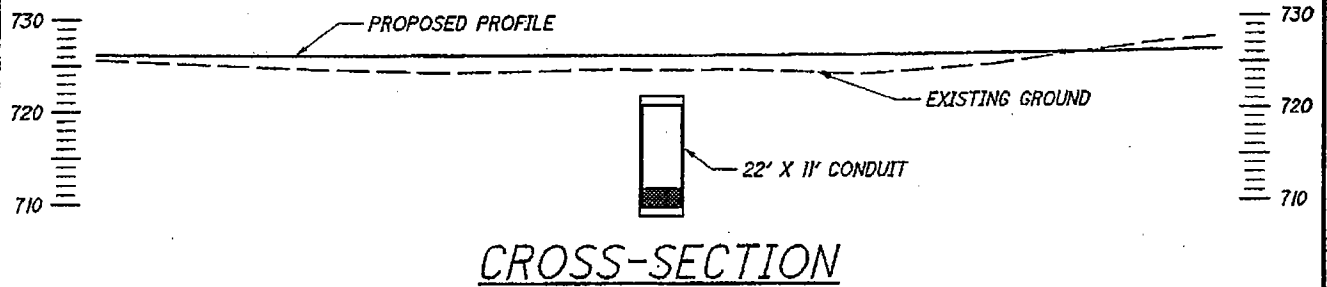
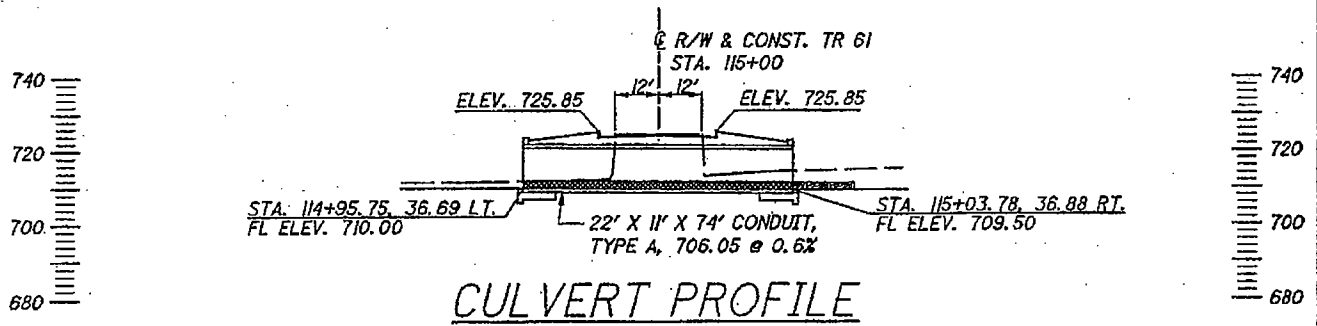
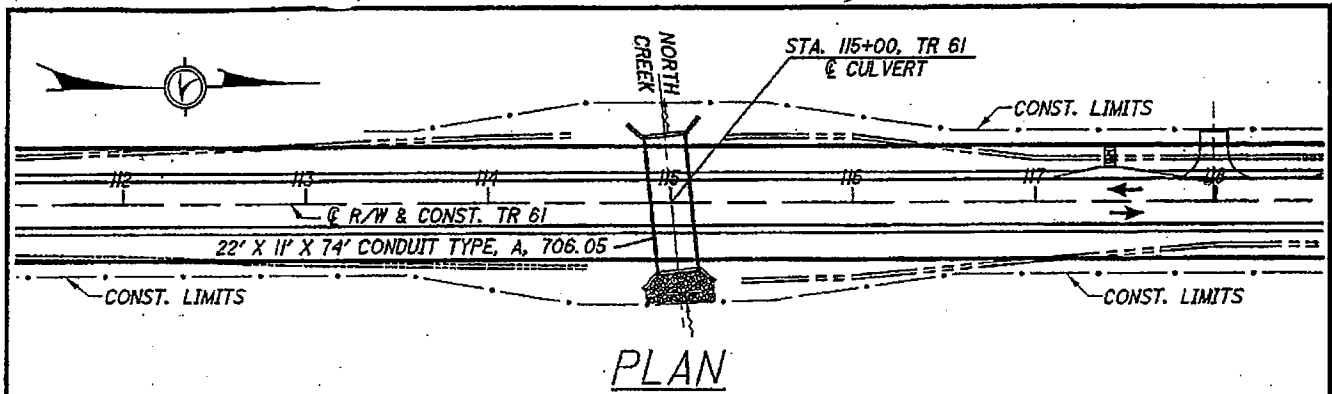
**IMPACTS AT
 STREAM CROSSING 30/ OH-64
 ZUBER CUTOFF**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004

Figure 34



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=50'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=100'



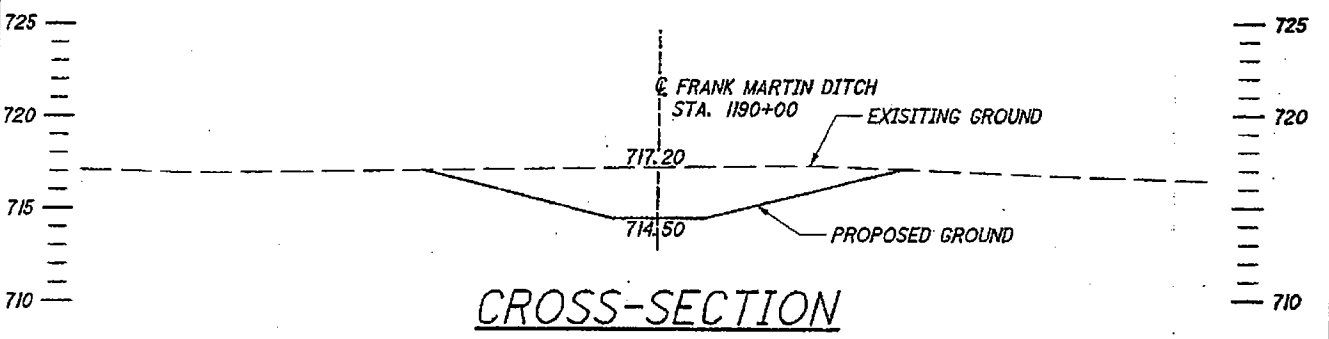
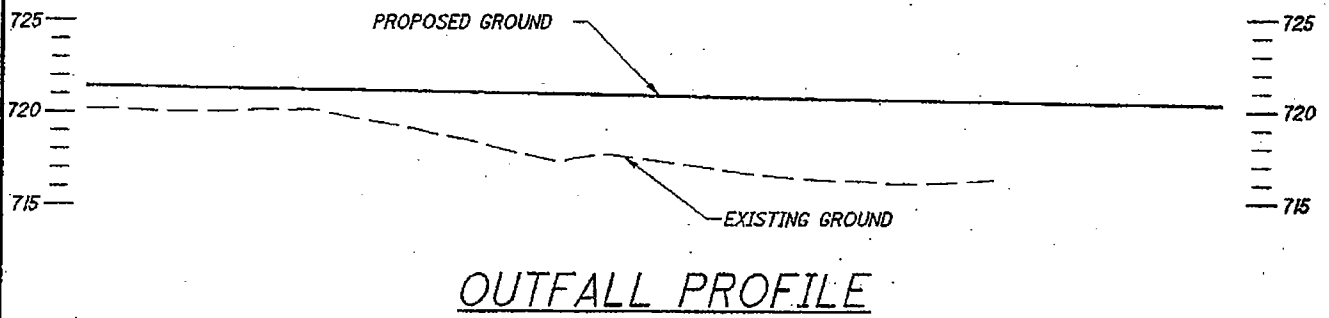
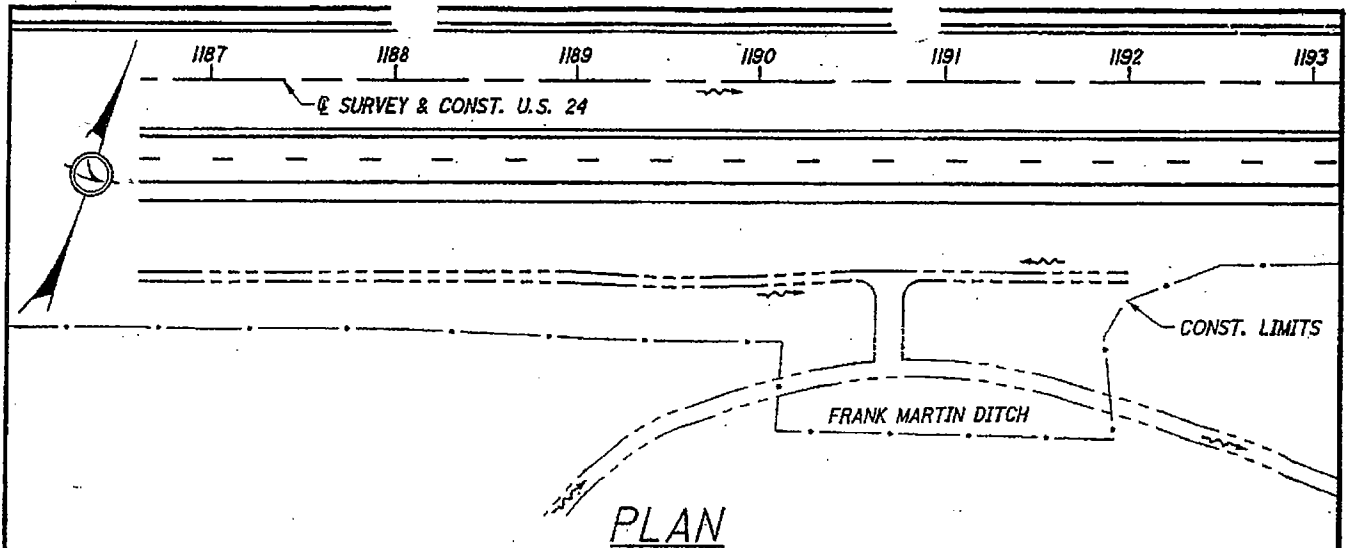
**IMPACT AT
 STREAM CROSSING 32
 NORTH CREEK**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004

Figure 35



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=10'



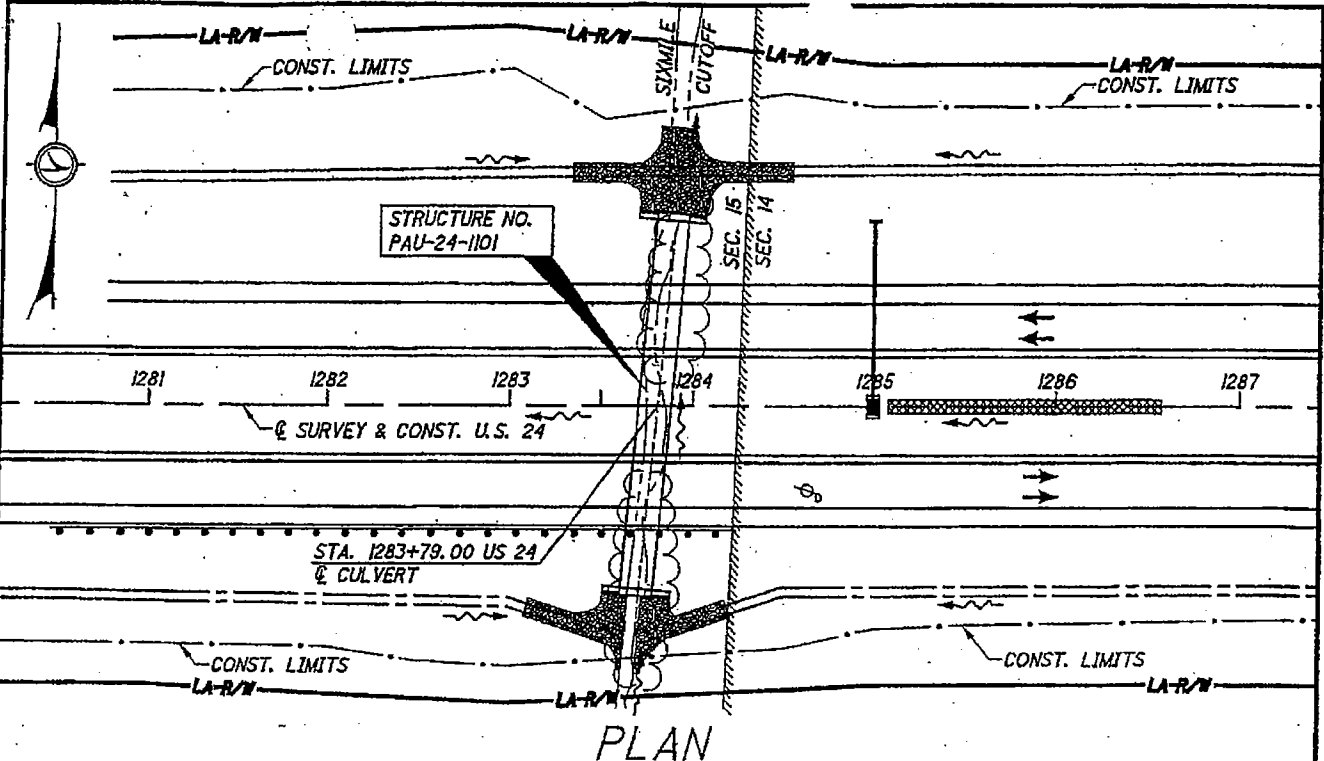
**IMPACT AT OUTFALL 28/OH-80
 FRANK MARTIN DITCH**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

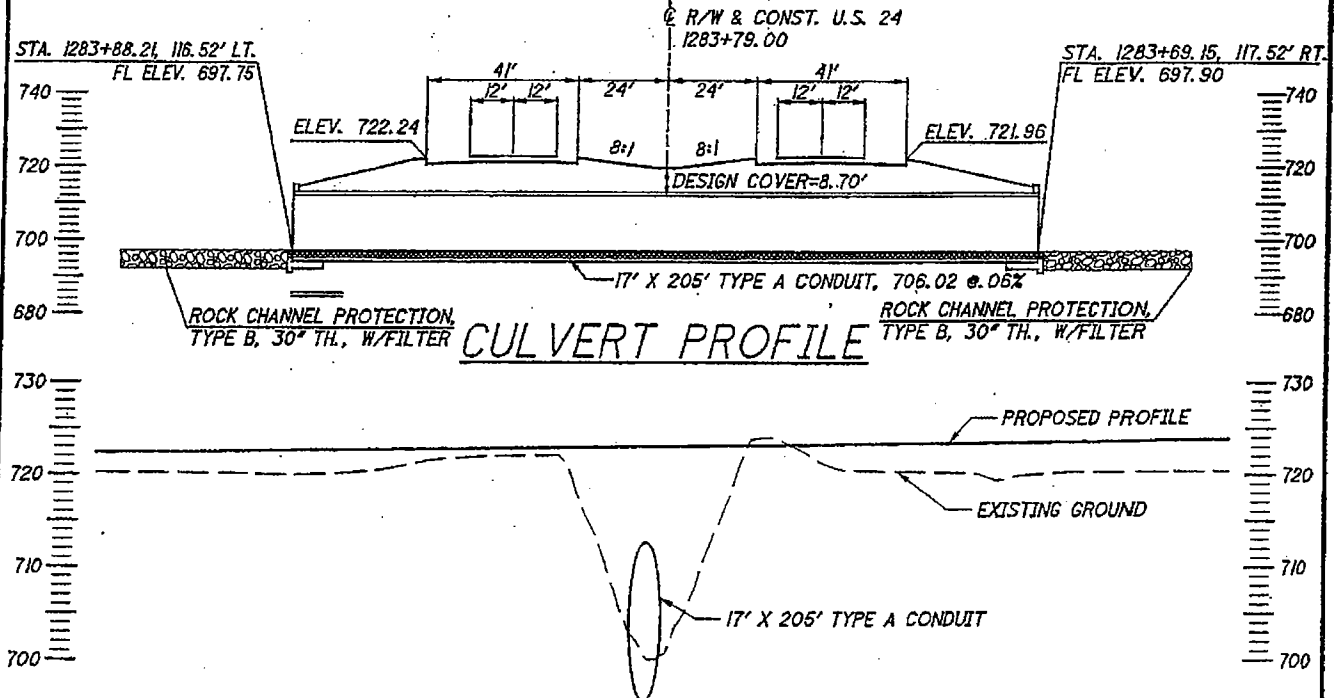
U.S. Army Corps of
 Engineers 404 Permit
 and OSPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004

Figure 36



PLAN



CULVERT PROFILE

CROSS-SECTION

APPROXIMATE PLAN SCALE: 1" = 100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1" = 50'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1" = 100'



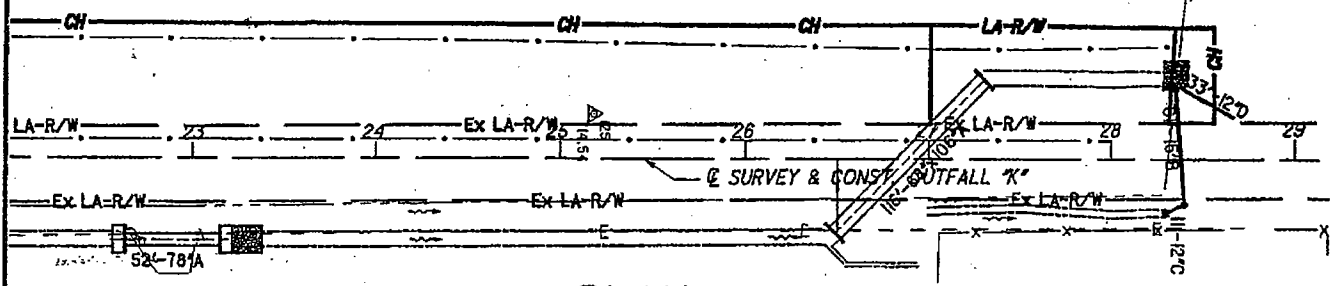
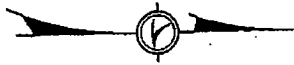
**IMPACTS AT
 STREAM CROSSING 25/ OH-84
 SIXMILE CUTOFF**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

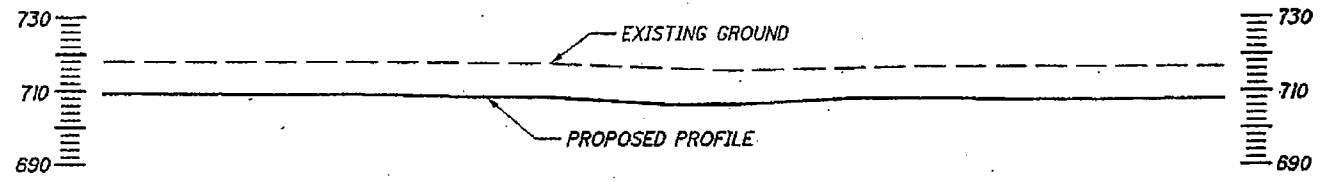
U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004

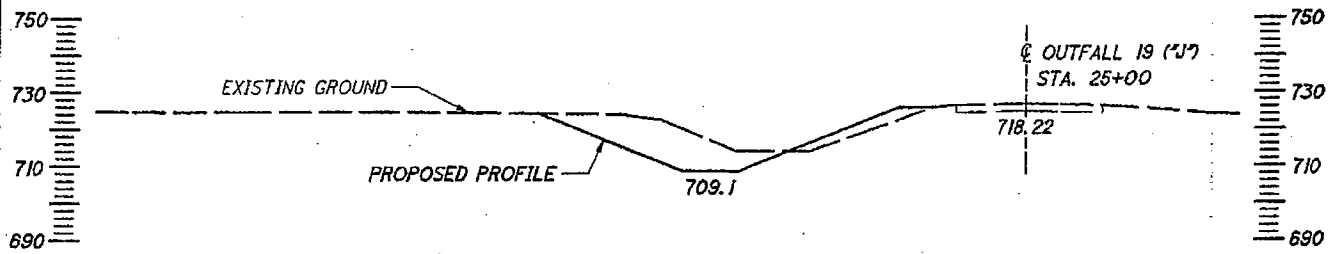
Figure 37



PLAN



CULVERT PROFILE



CROSS-SECTION

APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=20'

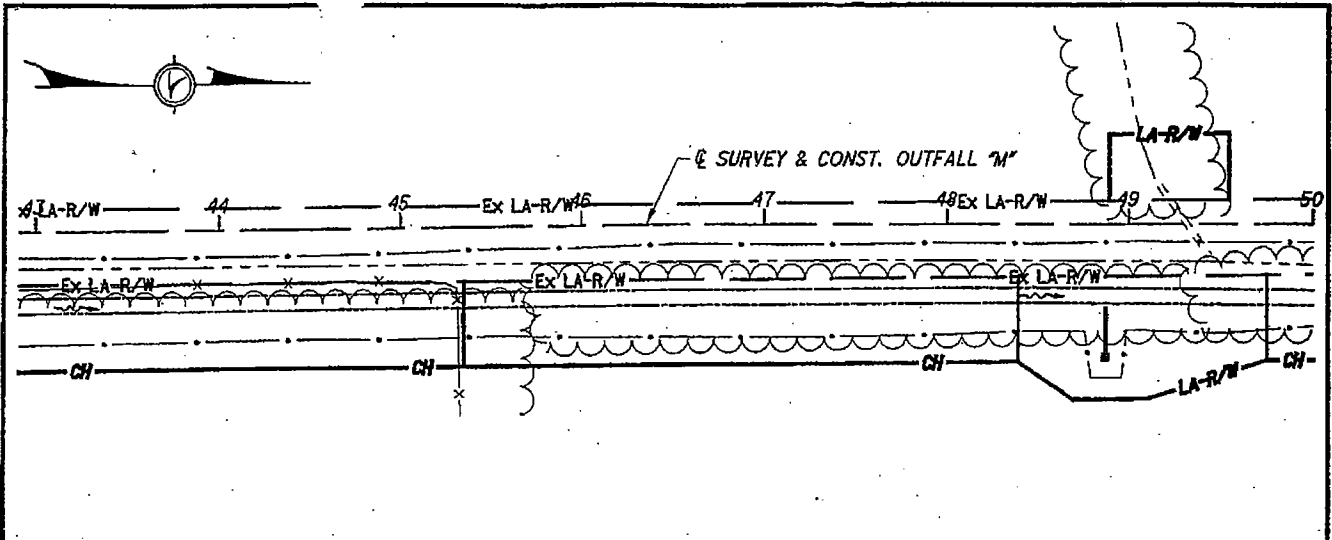


**IMPACT AT
 OUTFALL 19
 UNNAMED TRIBUTARY**
 OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

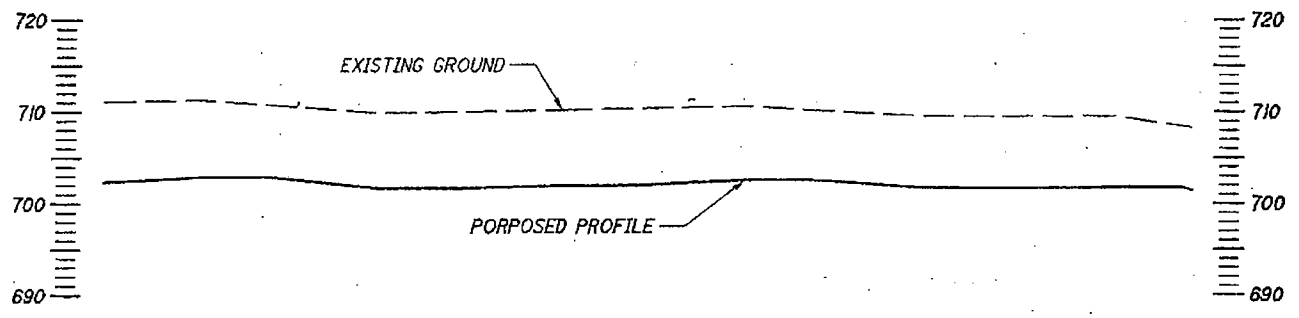
U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004

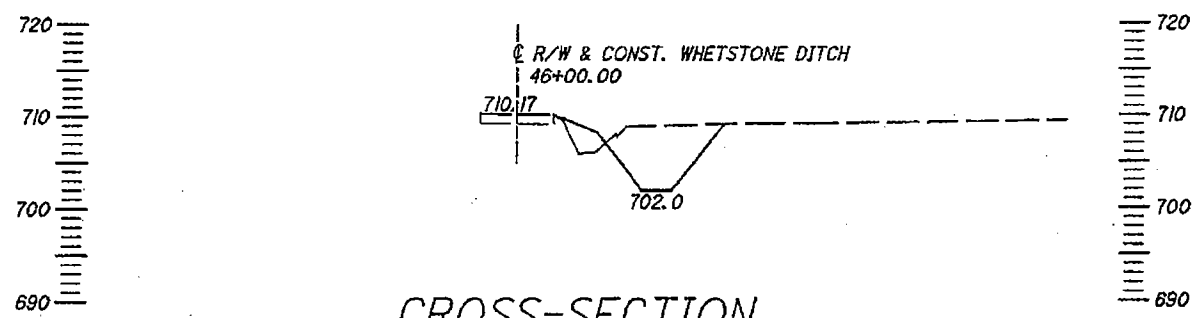
Figure 38



PLAN



CULVERT PROFILE



CROSS-SECTION

APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=20'



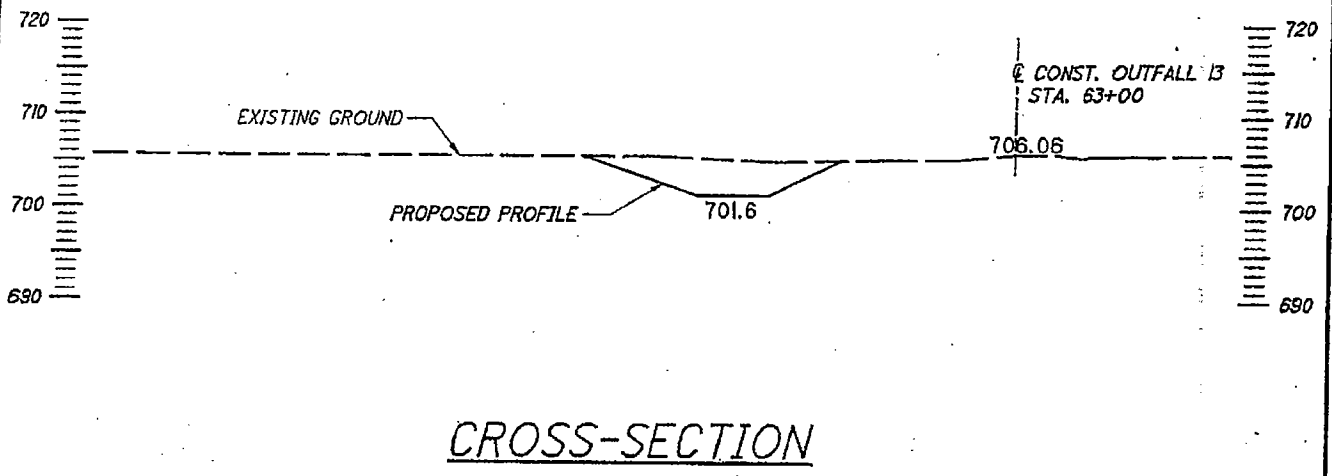
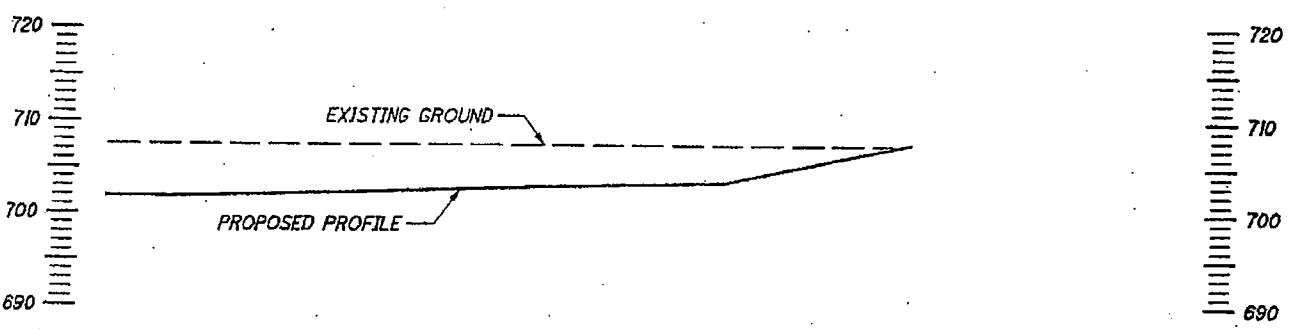
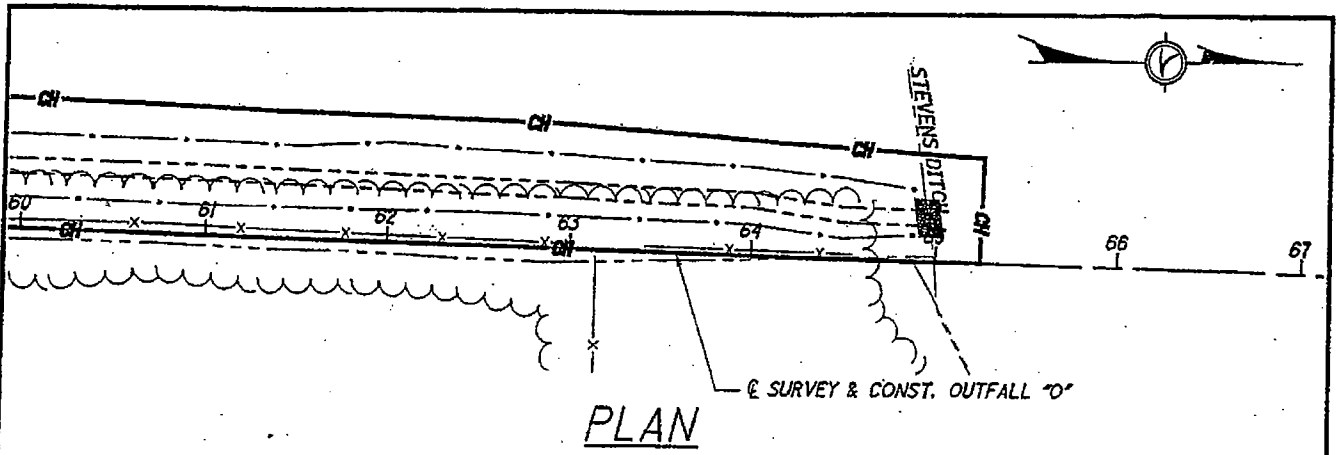
**IMPACT AT
 OUTFALL 15**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004

Figure 39



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=20'



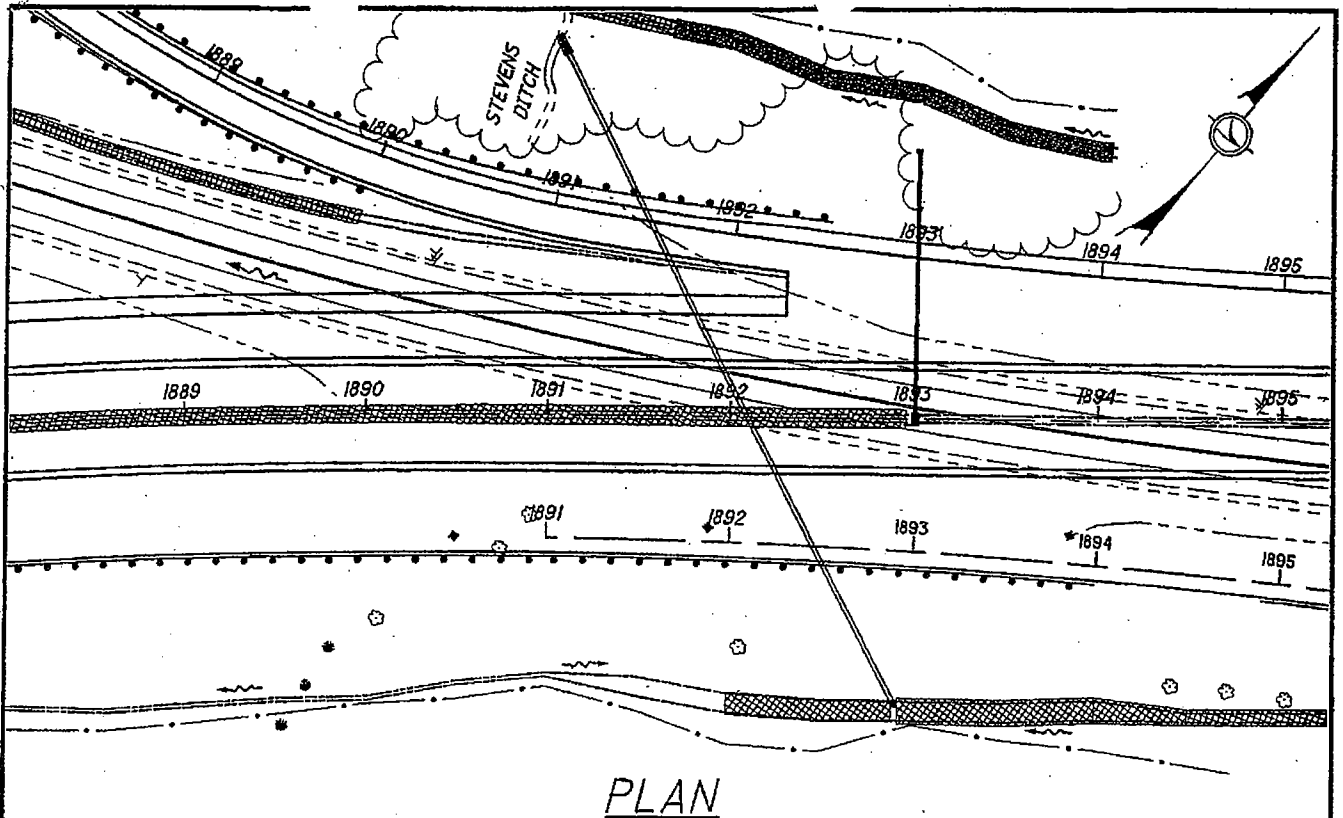
**IMPACT AT
 OUTFALL 13
 STEVEN'S DITCH**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004

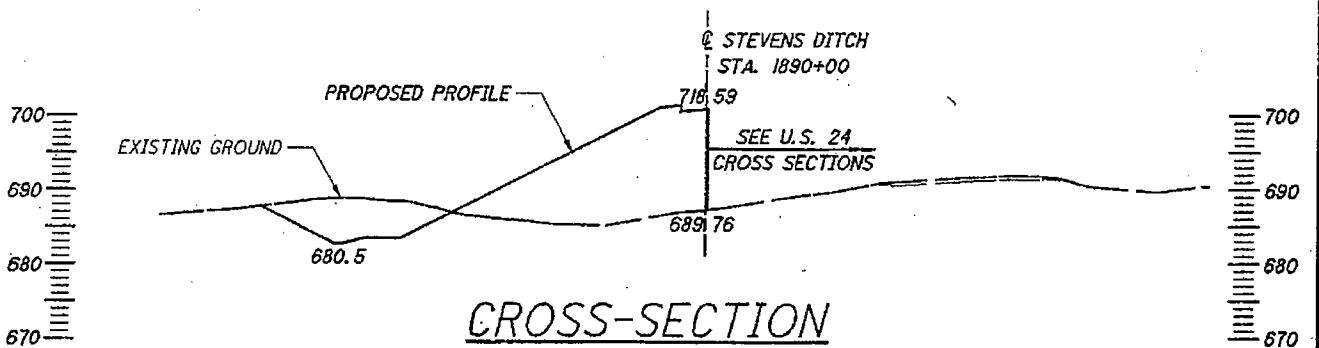
Figure 40



PLAN



CULVERT PROFILE



CROSS-SECTION

APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=50'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=50'

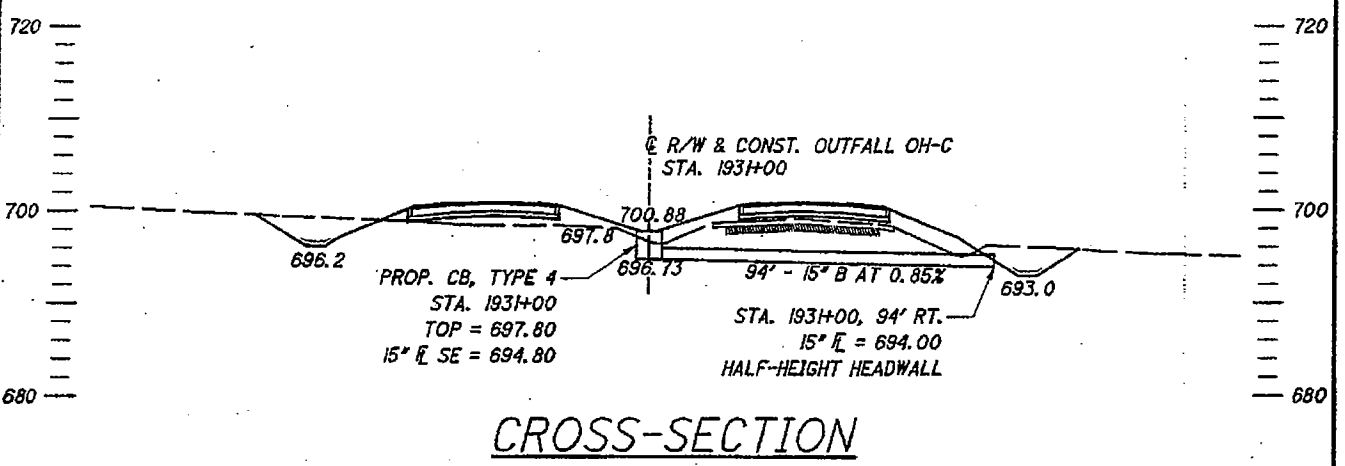
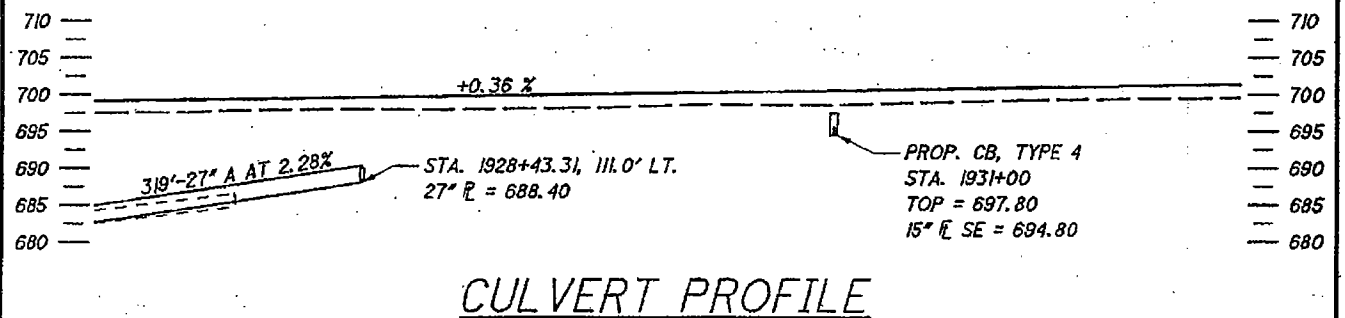
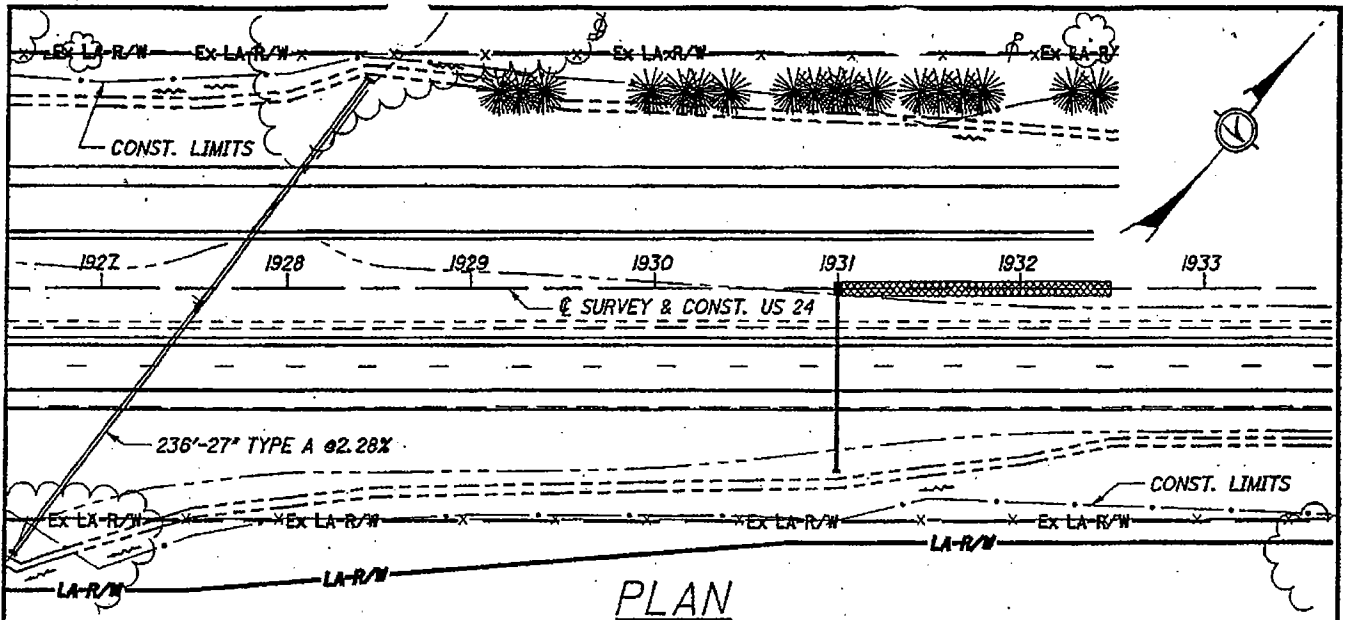


**IMPACT AT
 OH-37
 STEVENS DITCH**
 OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
 Water Quality
 Certification
 Application.

Date: 10-19-2004

Figure 41



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"= 50'



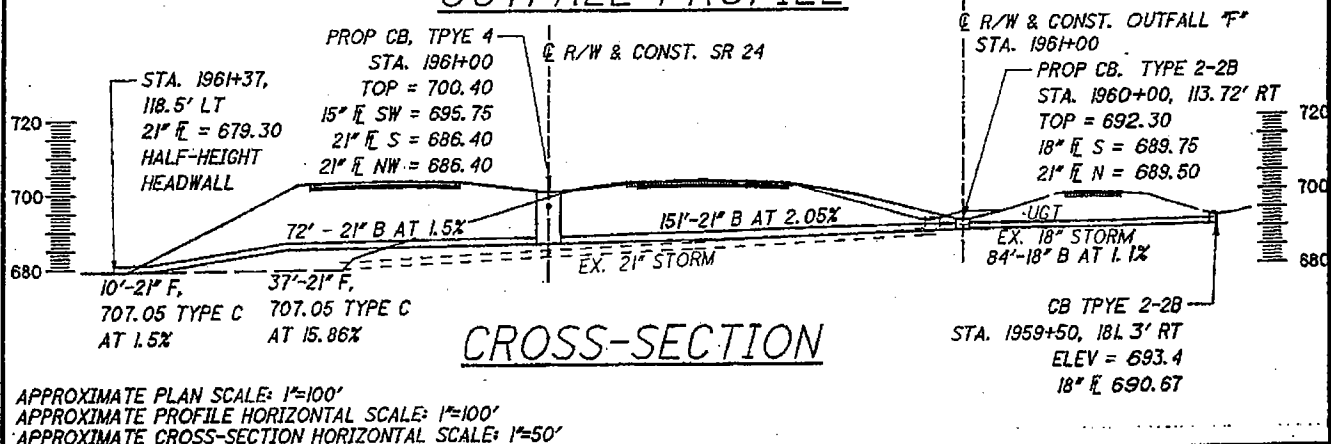
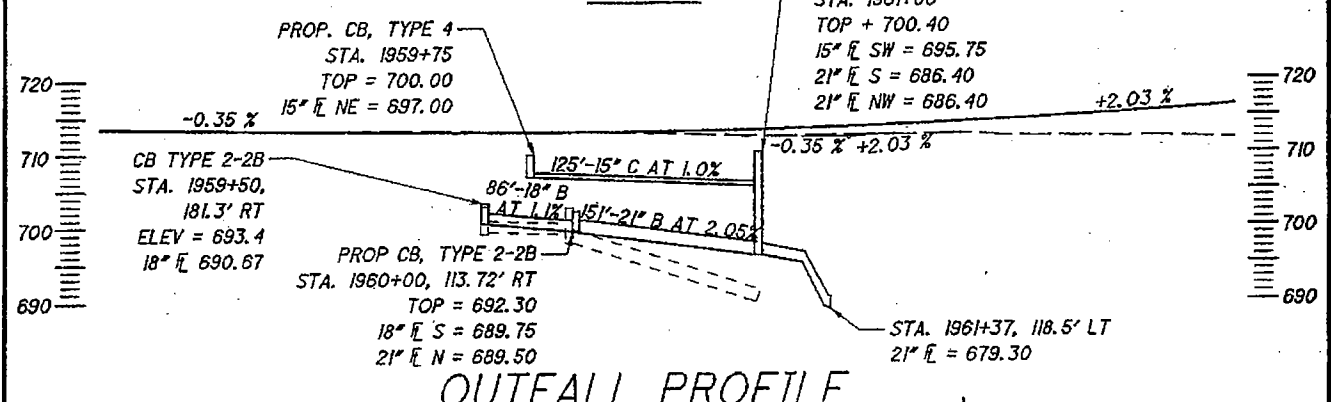
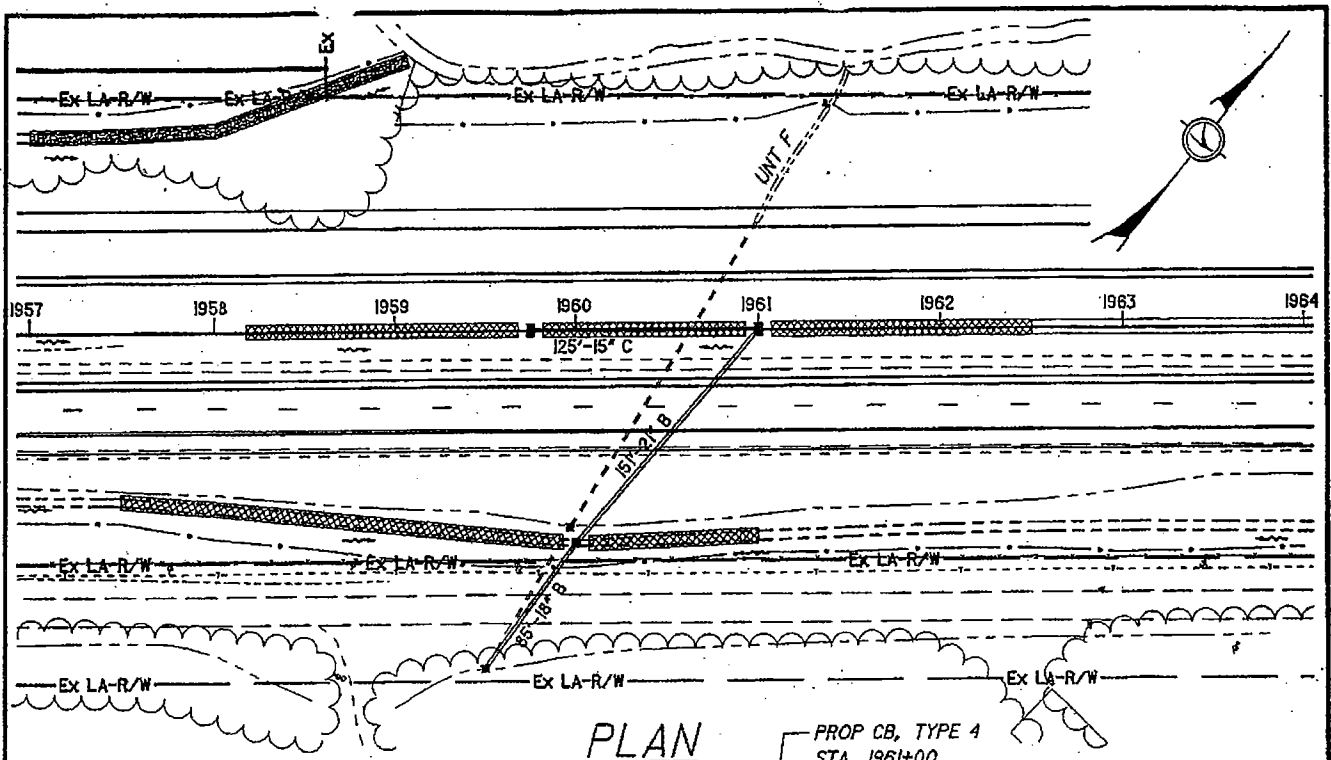
IMPACTS TO STREAM CROSSING AREA OH-C

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application

Date: 10-19-2004

Figure 42



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=50'

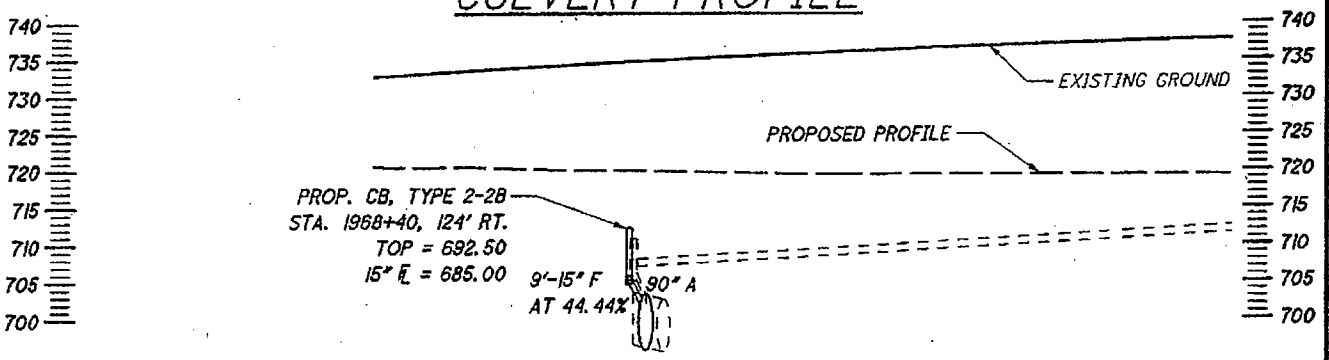
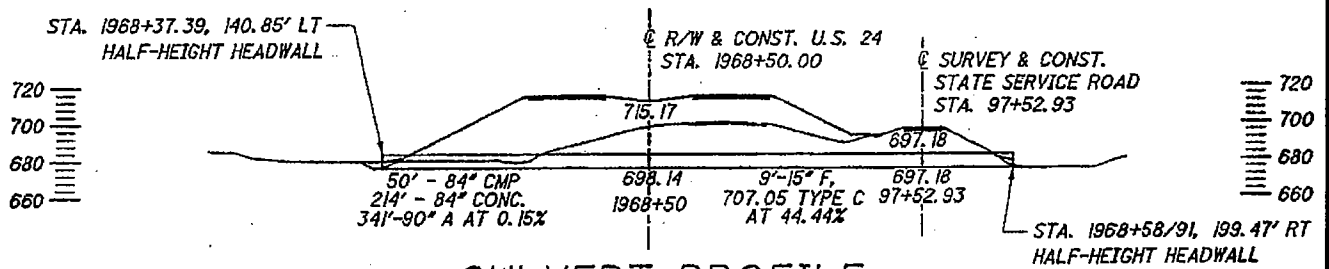
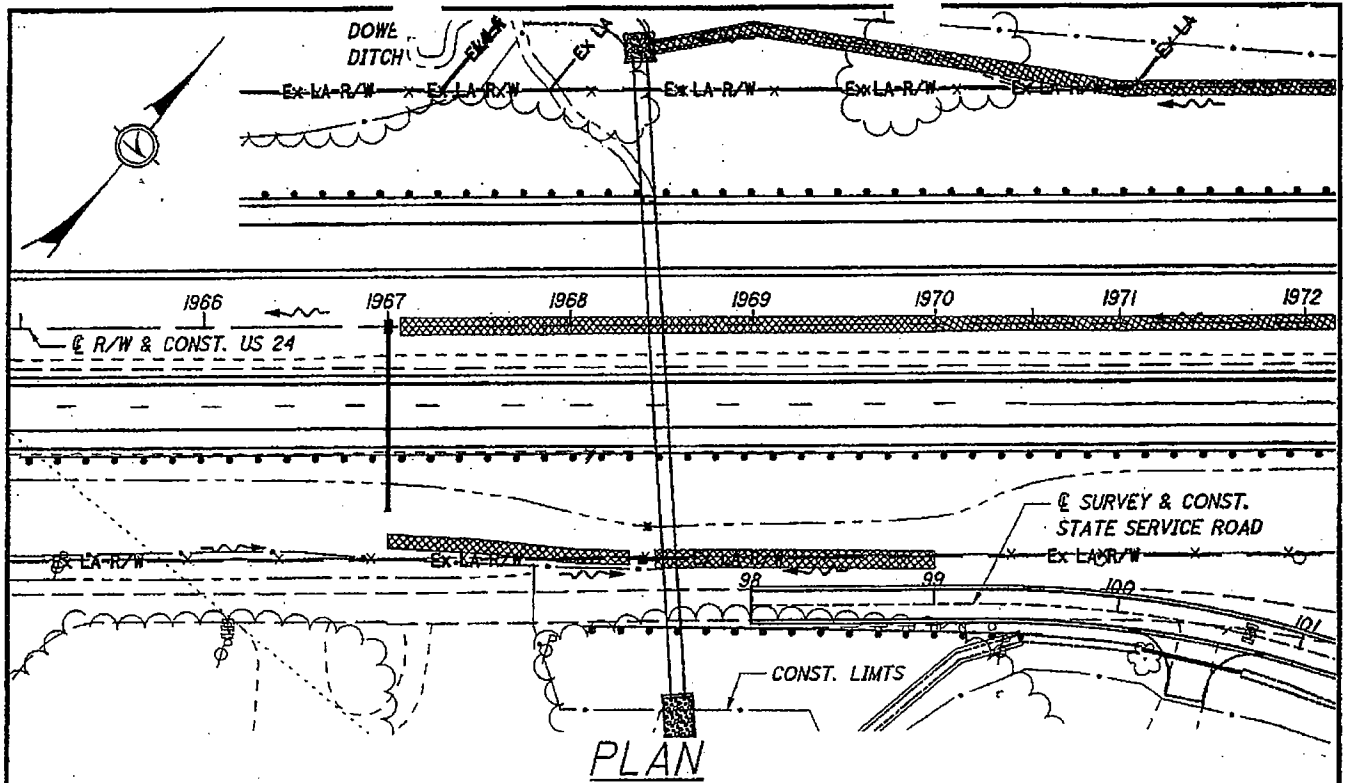


IMPACTS TO STREAM CROSSING AREA OH-F

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application

Date: 10-19-2004
 Figure 43



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=50'



**IMPACT AT STREAM
 CROSSING AREA 39
 DOWE DITCH**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004

Figure 44

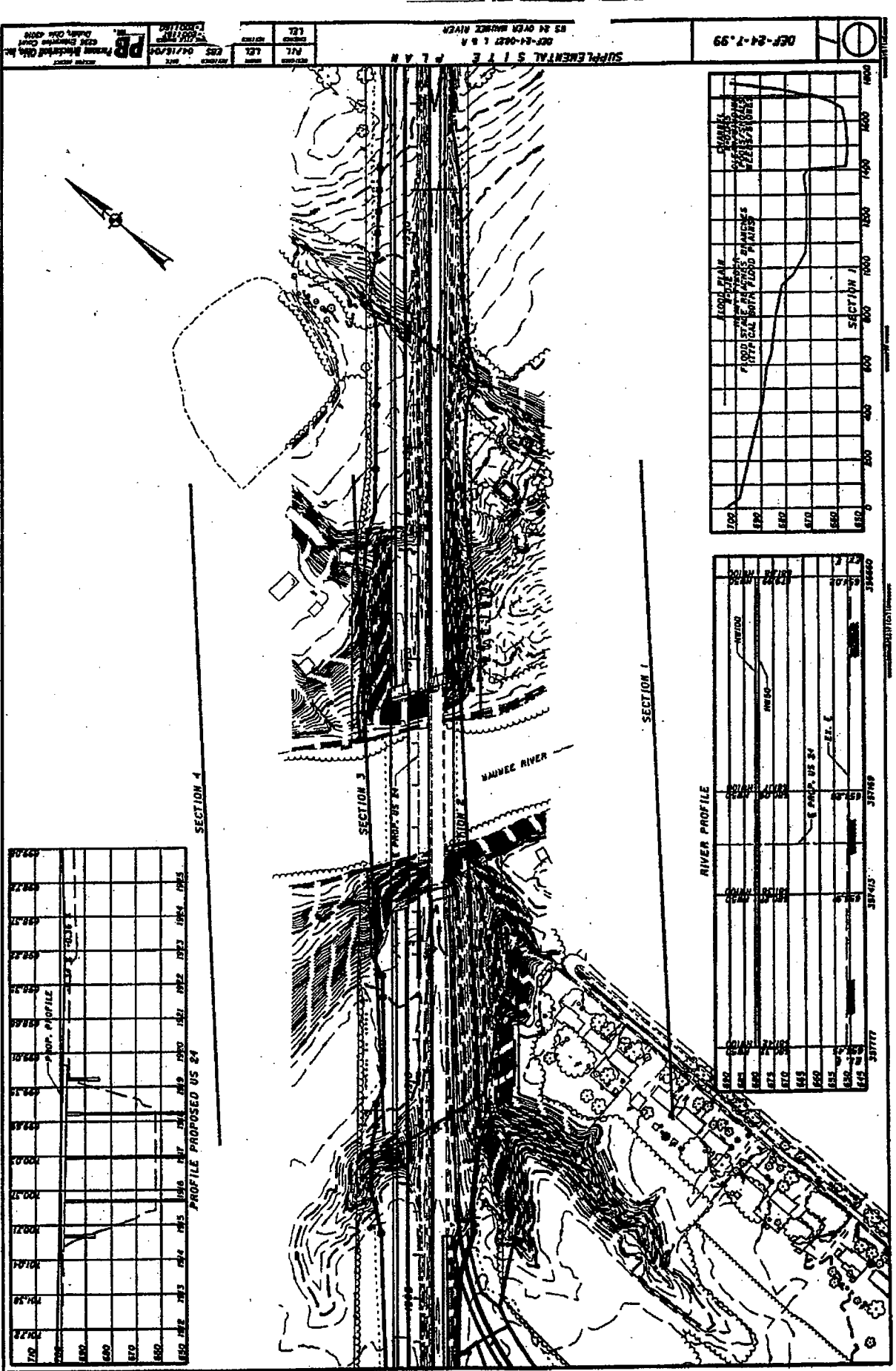
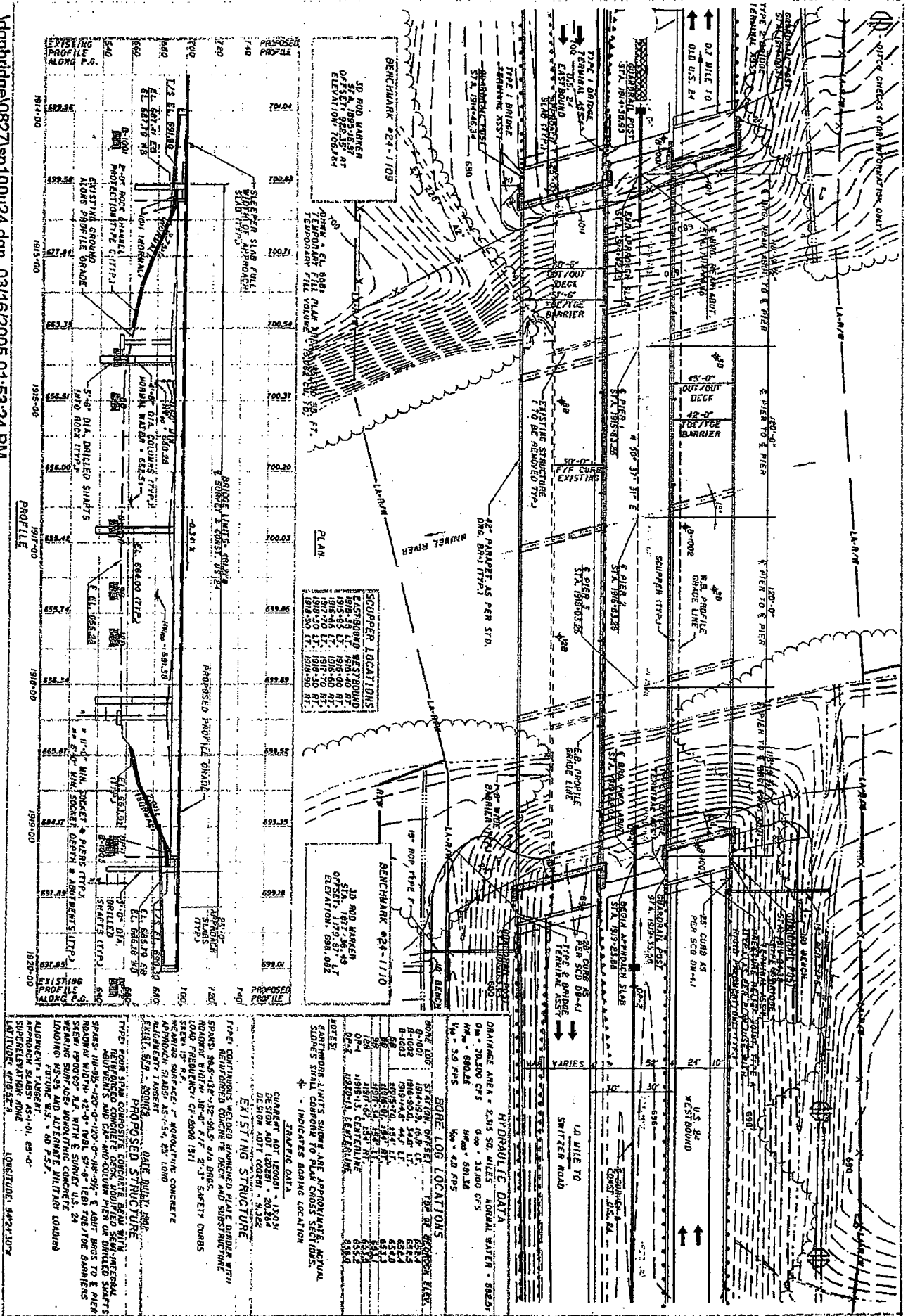


Figure 45

Figure 46

\\dgnbridge\0827\sp100\24.dgn 03/16/2005 01:53:24 PM



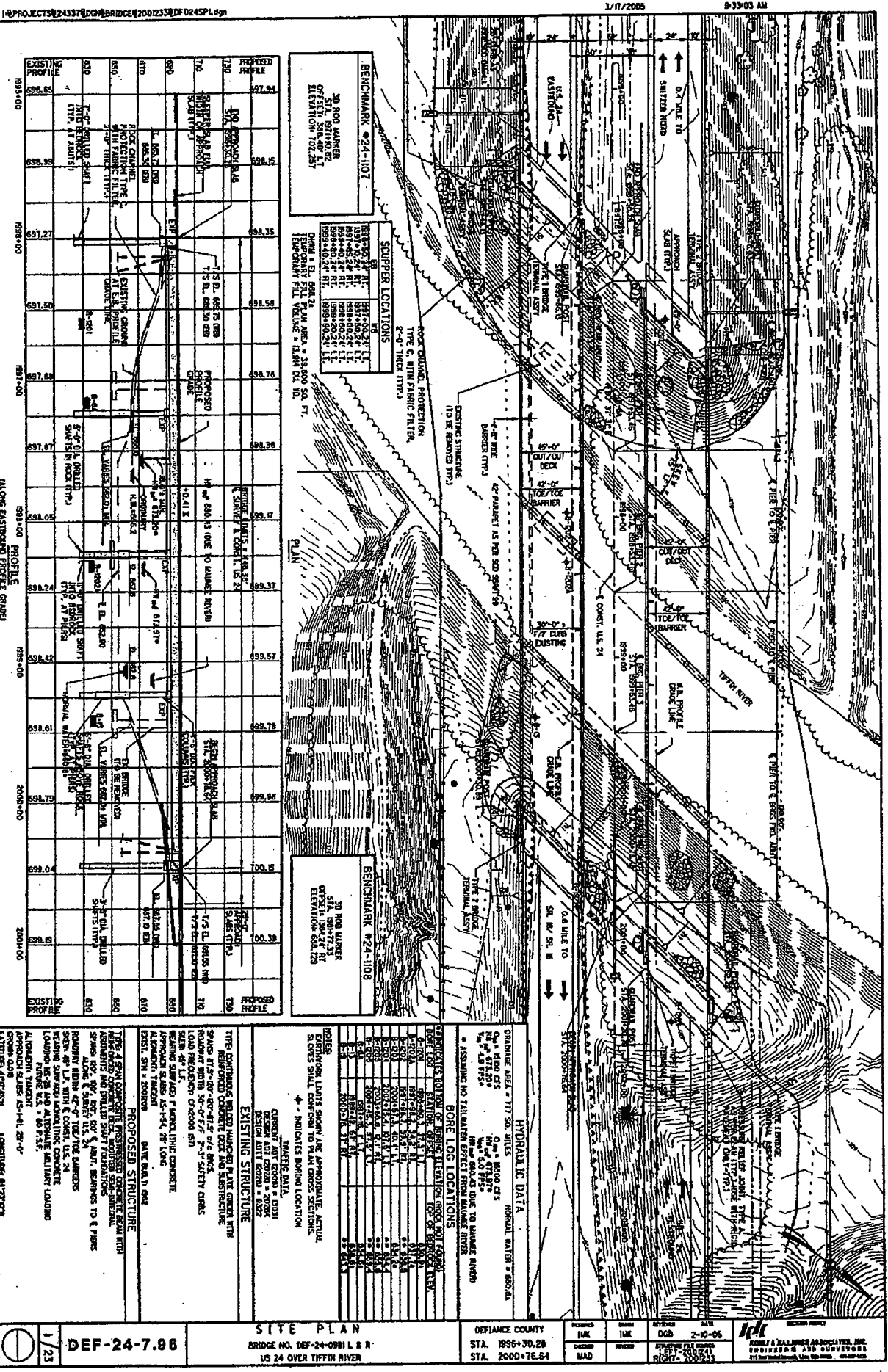


Figure 47

BORING LOG LOCATIONS	
STATION	DEPTH (FEET)
1956+30.28	10.0
1956+30.28	20.0
1956+30.28	30.0
1956+30.28	40.0
1956+30.28	50.0
1956+30.28	60.0
1956+30.28	70.0
1956+30.28	80.0
1956+30.28	90.0
1956+30.28	100.0
1956+30.28	110.0
1956+30.28	120.0
1956+30.28	130.0
1956+30.28	140.0
1956+30.28	150.0
1956+30.28	160.0
1956+30.28	170.0
1956+30.28	180.0
1956+30.28	190.0
1956+30.28	200.0
1956+30.28	210.0
1956+30.28	220.0
1956+30.28	230.0
1956+30.28	240.0
1956+30.28	250.0
1956+30.28	260.0
1956+30.28	270.0
1956+30.28	280.0
1956+30.28	290.0
1956+30.28	300.0
1956+30.28	310.0
1956+30.28	320.0
1956+30.28	330.0
1956+30.28	340.0
1956+30.28	350.0
1956+30.28	360.0
1956+30.28	370.0
1956+30.28	380.0
1956+30.28	390.0
1956+30.28	400.0
1956+30.28	410.0
1956+30.28	420.0
1956+30.28	430.0
1956+30.28	440.0
1956+30.28	450.0
1956+30.28	460.0
1956+30.28	470.0
1956+30.28	480.0
1956+30.28	490.0
1956+30.28	500.0
1956+30.28	510.0
1956+30.28	520.0
1956+30.28	530.0
1956+30.28	540.0
1956+30.28	550.0
1956+30.28	560.0
1956+30.28	570.0
1956+30.28	580.0
1956+30.28	590.0
1956+30.28	600.0
1956+30.28	610.0
1956+30.28	620.0
1956+30.28	630.0
1956+30.28	640.0
1956+30.28	650.0
1956+30.28	660.0
1956+30.28	670.0
1956+30.28	680.0
1956+30.28	690.0
1956+30.28	700.0
1956+30.28	710.0
1956+30.28	720.0
1956+30.28	730.0
1956+30.28	740.0
1956+30.28	750.0
1956+30.28	760.0
1956+30.28	770.0
1956+30.28	780.0
1956+30.28	790.0
1956+30.28	800.0
1956+30.28	810.0
1956+30.28	820.0
1956+30.28	830.0
1956+30.28	840.0
1956+30.28	850.0
1956+30.28	860.0
1956+30.28	870.0
1956+30.28	880.0
1956+30.28	890.0
1956+30.28	900.0
1956+30.28	910.0
1956+30.28	920.0
1956+30.28	930.0
1956+30.28	940.0
1956+30.28	950.0
1956+30.28	960.0
1956+30.28	970.0
1956+30.28	980.0
1956+30.28	990.0
1956+30.28	1000.0
1956+30.28	1010.0
1956+30.28	1020.0
1956+30.28	1030.0
1956+30.28	1040.0
1956+30.28	1050.0
1956+30.28	1060.0
1956+30.28	1070.0
1956+30.28	1080.0
1956+30.28	1090.0
1956+30.28	1100.0
1956+30.28	1110.0
1956+30.28	1120.0
1956+30.28	1130.0
1956+30.28	1140.0
1956+30.28	1150.0
1956+30.28	1160.0
1956+30.28	1170.0
1956+30.28	1180.0
1956+30.28	1190.0
1956+30.28	1200.0
1956+30.28	1210.0
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1956+30.28	1230.0
1956+30.28	1240.0
1956+30.28	1250.0
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1956+30.28	1270.0
1956+30.28	1280.0
1956+30.28	1290.0
1956+30.28	1300.0
1956+30.28	1310.0
1956+30.28	1320.0
1956+30.28	1330.0
1956+30.28	1340.0
1956+30.28	1350.0
1956+30.28	1360.0
1956+30.28	1370.0
1956+30.28	1380.0
1956+30.28	1390.0
1956+30.28	1400.0
1956+30.28	1410.0
1956+30.28	1420.0
1956+30.28	1430.0
1956+30.28	1440.0
1956+30.28	1450.0
1956+30.28	1460.0
1956+30.28	1470.0
1956+30.28	1480.0
1956+30.28	1490.0
1956+30.28	1500.0
1956+30.28	1510.0
1956+30.28	1520.0
1956+30.28	1530.0
1956+30.28	1540.0
1956+30.28	1550.0
1956+30.28	1560.0
1956+30.28	1570.0
1956+30.28	1580.0
1956+30.28	1590.0
1956+30.28	1600.0
1956+30.28	1610.0
1956+30.28	1620.0
1956+30.28	1630.0
1956+30.28	1640.0
1956+30.28	1650.0
1956+30.28	1660.0
1956+30.28	1670.0
1956+30.28	1680.0
1956+30.28	1690.0
1956+30.28	1700.0
1956+30.28	1710.0
1956+30.28	1720.0
1956+30.28	1730.0
1956+30.28	1740.0
1956+30.28	1750.0
1956+30.28	1760.0
1956+30.28	1770.0
1956+30.28	1780.0
1956+30.28	1790.0
1956+30.28	1800.0
1956+30.28	1810.0
1956+30.28	1820.0
1956+30.28	1830.0
1956+30.28	1840.0
1956+30.28	1850.0
1956+30.28	1860.0
1956+30.28	1870.0
1956+30.28	1880.0
1956+30.28	1890.0
1956+30.28	1900.0
1956+30.28	1910.0
1956+30.28	1920.0
1956+30.28	1930.0
1956+30.28	1940.0
1956+30.28	1950.0
1956+30.28	1960.0
1956+30.28	1970.0
1956+30.28	1980.0
1956+30.28	1990.0
1956+30.28	2000.0
1956+30.28	2010.0
1956+30.28	2020.0
1956+30.28	2030.0
1956+30.28	2040.0
1956+30.28	2050.0
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1956+30.28	2080.0
1956+30.28	2090.0
1956+30.28	2100.0

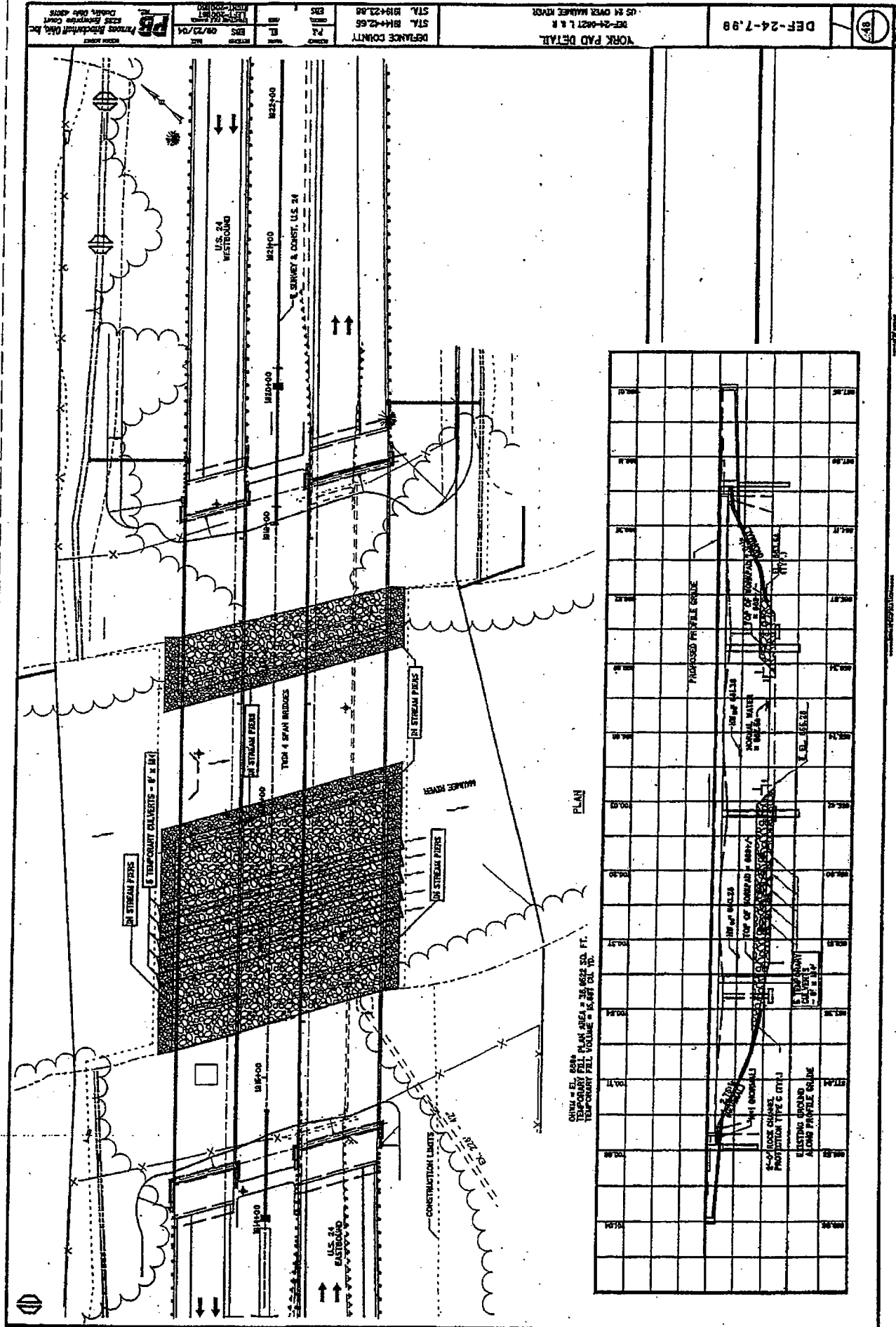
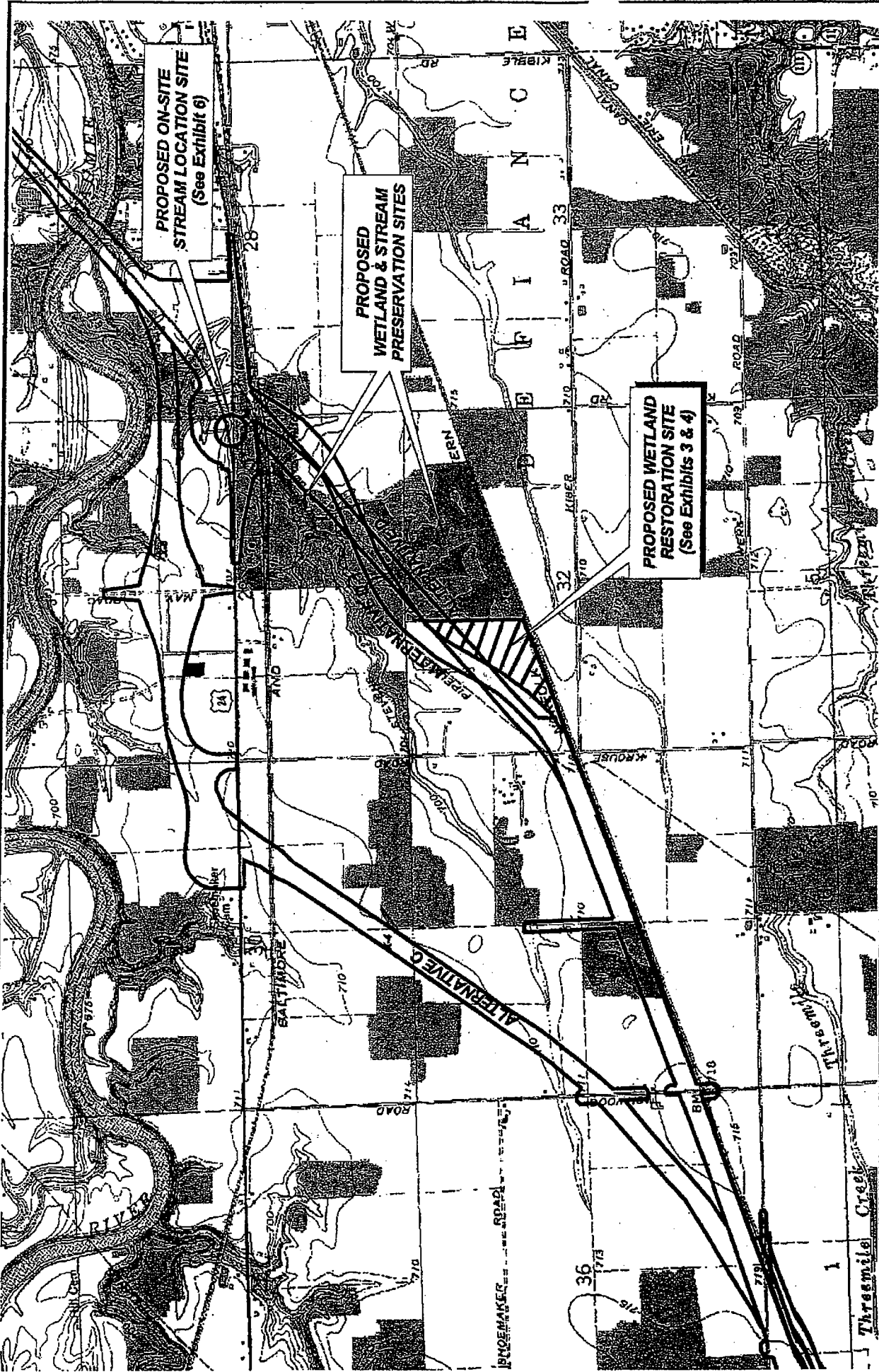


Figure 48

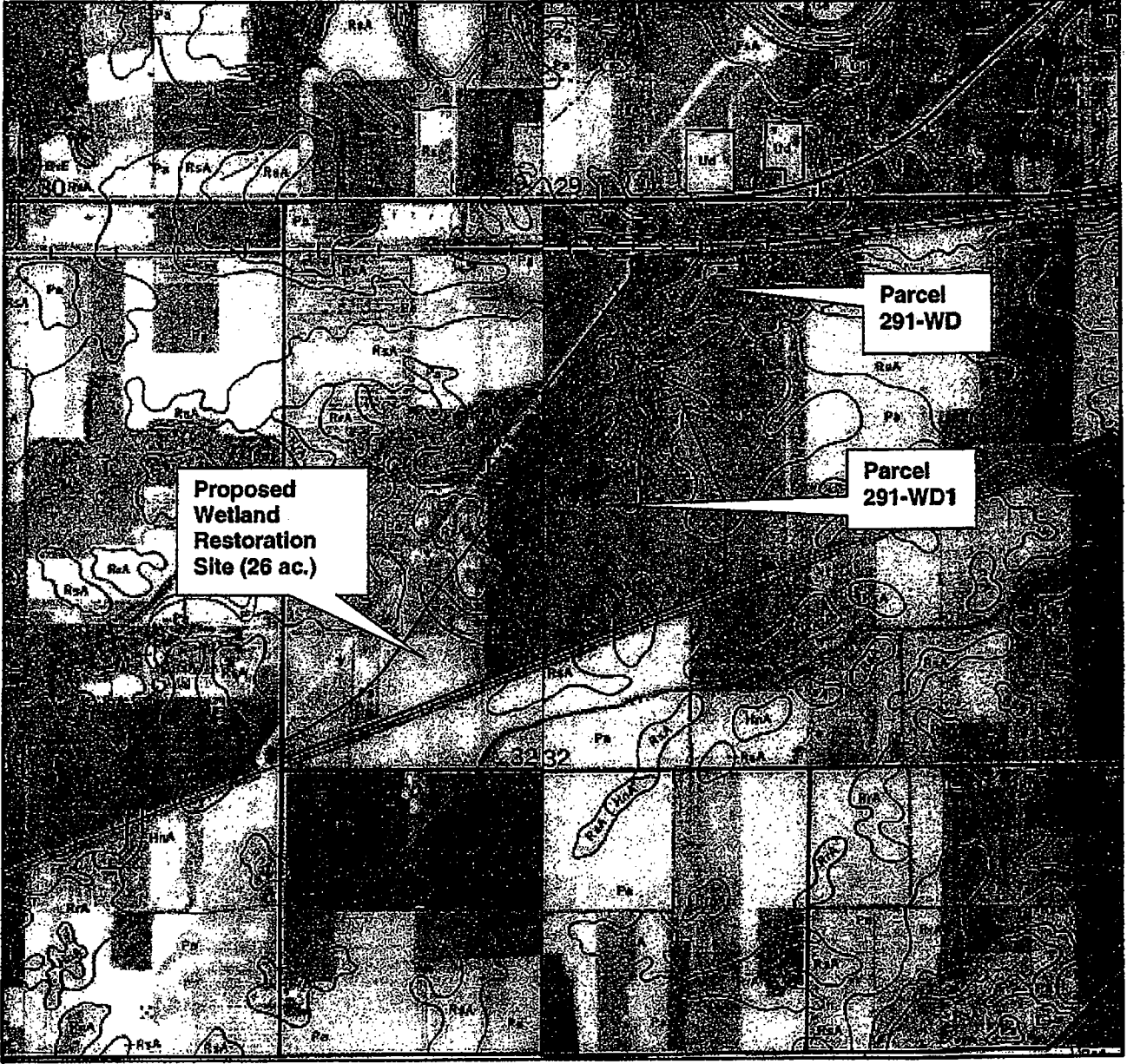
\\P201A1E3C January 2005\projects\env\p201a1\gis\usace\usace B&W.apr



Mannick & Smith
Civil Engineering, Surveying and Environmental Consulting
TOLEDO • MONROE • DETROIT

EXHIBIT 1
PROPOSED ON-SITE STREAM AND WETLAND MITIGATION
SITE LOCATIONS FOR PAU/DEF 24-0-00

1 : 24,000



Proposed
Wetland
Restoration
Site (26 ac.)

Parcel
291-WD

Parcel
291-WD1

LEGEND



Approximate
Parcel
Boundary

P201AIE3B
ary, 2005

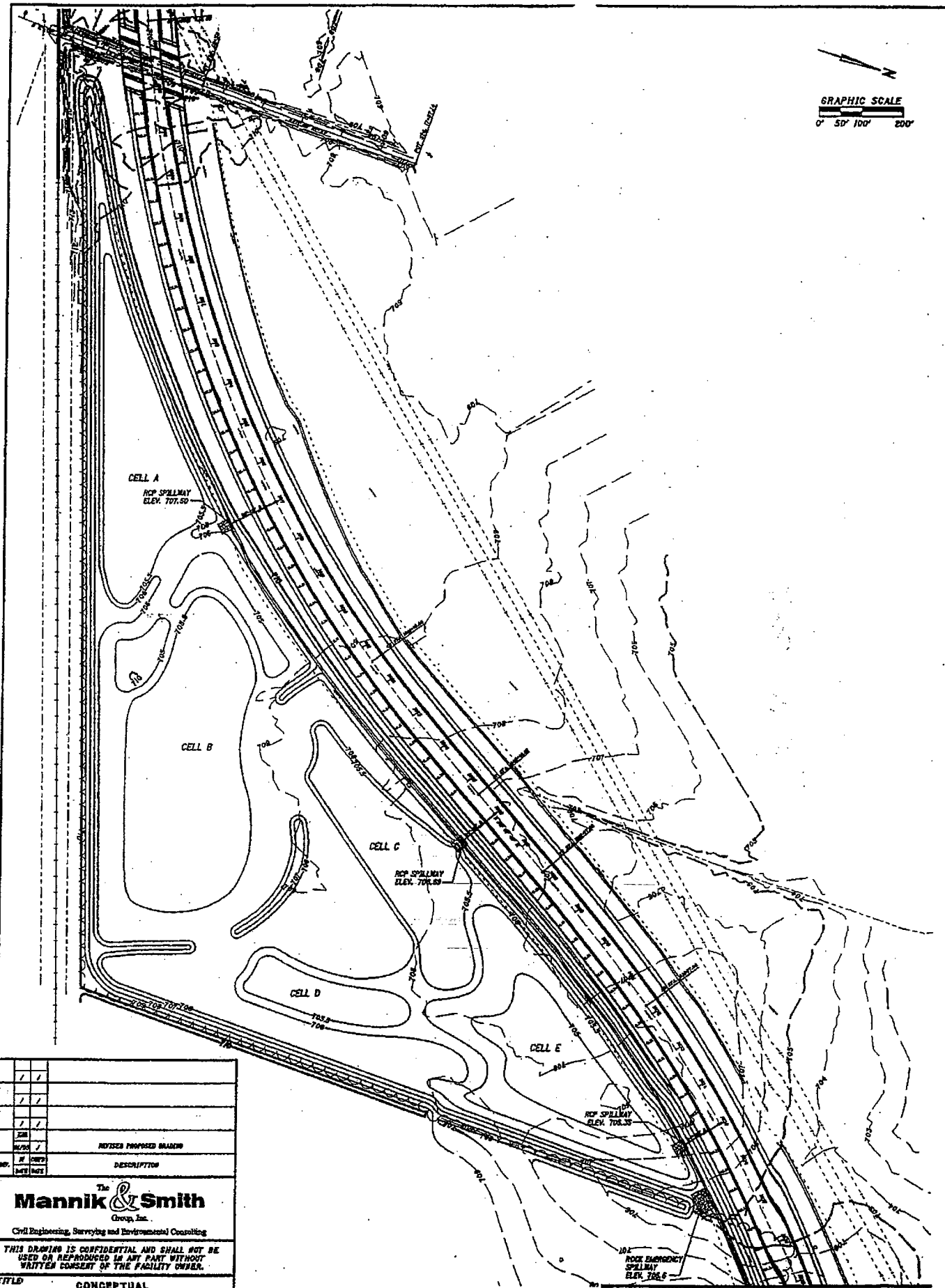
Mannik & Smith
The Group
1800 Indian Wood Circle
Maumee, Ohio 43537
(419) 891-2222
Fax: (419) 891-1995

Civil Engineering, Surveying and Environmental Consulting
TOLEDO ♦ MONROE ♦ DETROIT

Exhibit 2
Defiance County Soil Survey
Natural Resource Conservation Service
1984



GRAPHIC SCALE
0' 50' 100' 200'



NO.	DATE	REVISION

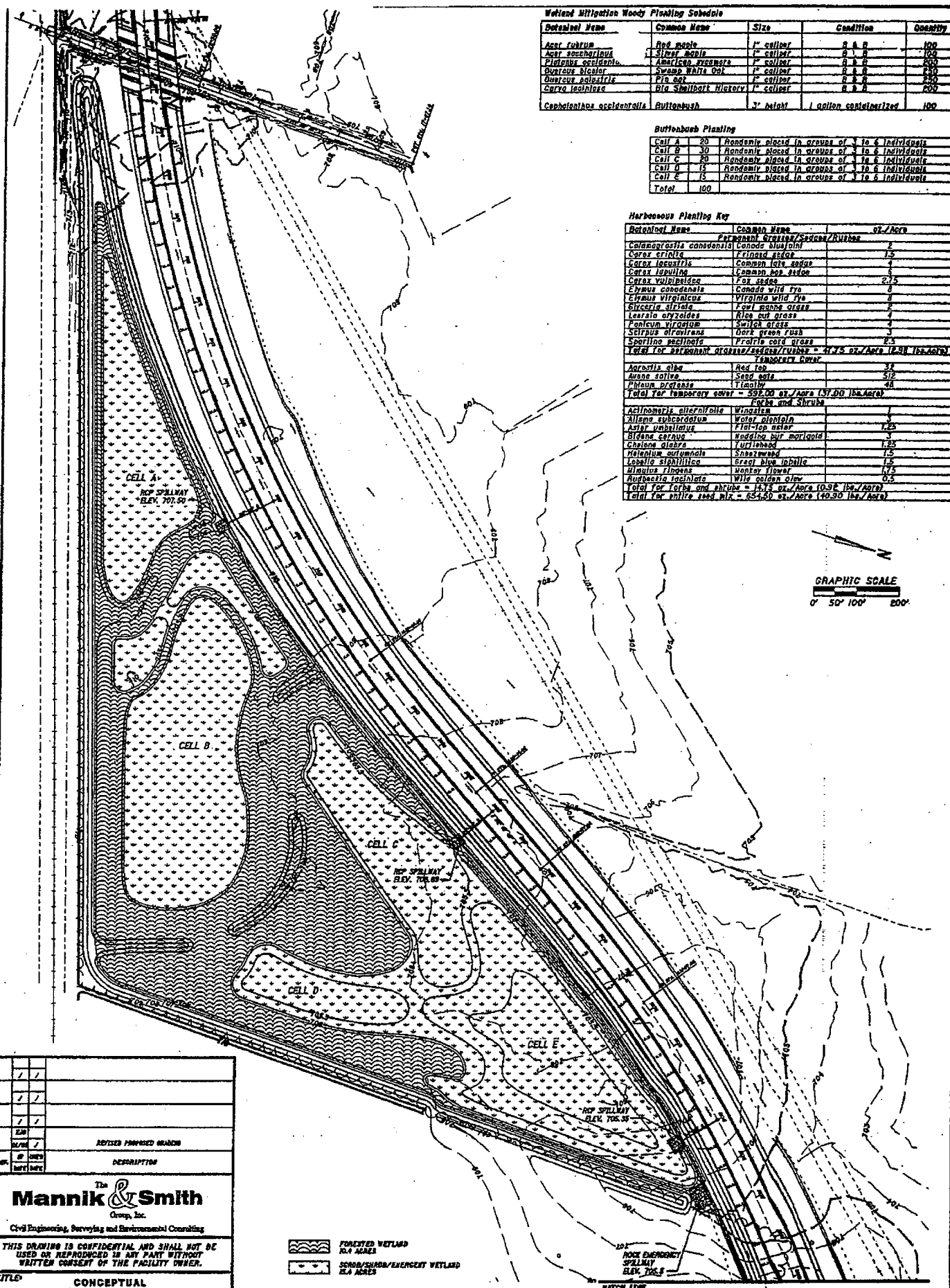
REVISED PROPOSED GRADING	DESCRIPTION

The Mannik & Smith Group, Inc.
Civil Engineering, Surveying and Environmental Consulting

THIS DRAWING IS CONFIDENTIAL AND SHALL NOT BE USED OR REPRODUCED IN ANY PART WITHOUT WRITTEN CONSENT OF THE FACILITY OWNER.

TITLE: CONCEPTUAL WETLANDS RESTORATION PLAN PROPOSED GRADING

DATE	DRAWN BY	CHECKED BY	APPROVED BY	SHEET NO.	TOTAL SHEETS
08/04				3	



Wetland Mitigation Woody Planting Schedule

Botanical Name	Common Name	Size	Condition	Quantity
<i>Asar tuberosum</i>	Red maple	1" caliper	B & B	100
<i>Asar fraxinifolium</i>	Silver maple	1" caliper	B & B	100
<i>Platanus occidentalis</i>	American sycamore	1" caliper	B & B	200
<i>Bursera bicolor</i>	Swamp White Oak	1" caliper	B & B	200
<i>Quercus palustris</i>	Pine oak	1" caliper	B & B	200
<i>Carya tobinia</i>	Bird Shellbark Hickory	1" caliper	B & B	200
<i>Cephalanthus occidentalis</i>	Burrheadbush	3" caliper	1 gallon containerized	100

Burrheadbush Planting

Cell A	20	Randomly placed in groups of 3 to 4 individuals
Cell B	30	Randomly placed in groups of 3 to 4 individuals
Cell C	20	Randomly placed in groups of 3 to 4 individuals
Cell D	15	Randomly placed in groups of 3 to 4 individuals
Cell E	15	Randomly placed in groups of 3 to 4 individuals
Total	100	

Herbaceous Planting Key

Botanical Name	Common Name	qt./acre
<i>Calamagrostis canadensis</i>	Canada bluegrass	2
<i>Carex crinita</i>	Feathered sedge	1.5
<i>Carex lasiocarpa</i>	Common tall sedge	1
<i>Carex lasiocarpa</i>	Common box sedge	1
<i>Carex vulpinoidea</i>	Fox sedge	2.75
<i>Elymus canadensis</i>	Canada wild rye	0
<i>Elymus virginicus</i>	Virginia wild rye	2
<i>Eleocharis acicularis</i>	Twice-flowered spike	2
<i>Lespedeza caryocarpa</i>	Rice cut grass	1
<i>Panicum virgatum</i>	Switch grass	1
<i>Scirpus atrovirens</i>	Dark green rush	3
<i>Spartina patens</i>	Typha cord grass	2.5
Total for permanent grasses/sedges/rushes = 17.75 qt./Acre (17.75 lbs./Acre)		
Temporary Cover		
<i>Agrostis alba</i>	Red top	33
<i>Avena sativa</i>	Seed oats	512
<i>Pharus distans</i>	Timothy	48
Total for temporary cover = 592.00 qt./Acre (57.00 lbs./Acre)		
Forbs and Shrubs		
<i>Actinomyia alternifolia</i>	Wingsum	1
<i>Alisma subcordatum</i>	Water plantain	1
<i>Asar umbellatus</i>	Water hellebore	1.25
<i>Bifans caruus</i>	Woolly bur marigold	3
<i>Chamaecladon</i>	Turtlehead	1.25
<i>Halenium autumnale</i>	Sweetwood	1.5
<i>Lonicera spicata</i>	Great blue lobelia	1.5
<i>Miracalis liliiflora</i>	Monkey flower	1.75
<i>Rudbeckia hirtella</i>	Wild golden glow	0.5
Total for forbs and shrubs = 14.75 qt./Acre (14.75 lbs./Acre)		
Total for white seed mix = 634.00 qt./Acre (619.00 lbs./Acre)		



NO.	DATE	REVISED DRAWING NUMBER	DESCRIPTION

The Mannik & Smith Group, Inc.
 Civil Engineering, Surveying and Environmental Consulting

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TITLE: CONCEPTUAL WETLANDS RESTORATION PLAN PROPOSED PLANTING

DATE	BY	CHECKED	DATE	BY	DATE	BY

- FORESTED WETLAND 8.0 ACRES
- SOBB/SWAMP/EMERGENT WETLAND 8.0 ACRES

NATCH LINE

GENERAL NOTES

1. CONTRACTOR SHALL PROVIDE SPECIFIED SEED, SHRUBS AND TREES THAT COMPLY WITH ALL RECOMMENDATIONS AND REQUIREMENTS OF ANSI Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK". PLANT MATERIAL SHALL BE HEALTHY, VIGOROUS STOCK GROWN WITH GOOD HORTICULTURAL PRACTICE AND INSTALLED IN ACCORDANCE WITH METHODS ESTABLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
2. THE SUBMITTING BIDDERS SHALL BE AND HAVE BEEN ACTIVELY AND DIRECTLY ENGAGED IN NATIVE SEED INSTALLATION FOR A PERIOD OF AT LEAST TWO YEARS. PROVIDE PROOF OF THREE OR MORE SUCCESSFUL WETLAND SEEDING AND WETLAND TREE INSTALLATIONS.

SPECIFICATIONS

1. SITE PREPARATION

- A) PRIOR TO CLEARING AND GRUBBING, WETLAND CONSULTANT AND CONTRACTOR SHALL WALK AND FLAG ALL ACCESS POINTS FOR CONSTRUCTION EQUIPMENT AND AREAS WHERE EQUIPMENT IS PROHIBITED
- B) CONTRACTOR SHALL CLEAR AND GRUB DESIGNATED WETLAND MITIGATION AREA PRIOR TO PLANTING.
- C) AFTER CLEARING, GRUBBING AND THE REMOVAL OF ALL DEBRIS FROM THE MITIGATION SITE HAS BEEN COMPLETED AND APPROVED BY THE WETLAND CONSULTANT, THE CONTRACTOR SHALL REMOVE THE TOP 12" OF TOPSOIL FROM THE SITE. THE CONTRACTOR SHALL STOCKPILE AND COMPLETELY COVER THE TOPSOIL IN AN UPLAND LOCATION ON SITE UNTIL TOPSOIL CAN BE RE-APPLIED TO EXCAVATED SUBGRADE.
- D) AFTER TOPSOIL HAS BEEN REMOVED, CONTRACTOR SHALL EXCAVATE WETLAND MITIGATION SITE TO 12" BELOW PROPOSED WETLAND ELEVATIONS. EXCAVATED MATERIALS SHALL BE STOCKPILED ON SITE IN AN UPLAND LOCATION DESIGNATED BY THE WETLAND CONSULTANT. LOW GROUND PRESSURE CONSTRUCTION EQUIPMENT SHALL BE USED TO MINIMIZE COMPACTION OF SUBGRADE.
- E) CONTRACTOR SHALL DISK SUBGRADE IN WETLAND MITIGATION AREA PRIOR TO REPLACEMENT OF TOPSOIL.
- F) USING LOW GROUND PRESSURE EQUIPMENT, CONTRACTOR SHALL PLACE 12" OF TOPSOIL THAT WAS PREVIOUSLY REMOVED ONTO THE WETLAND MITIGATION SITE.

2. SEEDING

- A) STAKE LIMITS OF SEEDING.
- B) APPROVAL OF WETLAND CONSULTANT MUST BE OBTAINED FOR SEED BED PREPARATION AND STAKING.
- C) INSTALL WETLAND SEEDS BETWEEN THE DATES OF OCTOBER 1 TO MARCH 15, AS CONDITIONS PERMIT. SEEDING SHALL NOT OCCUR WHEN THE GROUND IS FROZEN, INUNDATED OR COVERED WITH SNOW. IF SEEDING IS TO TAKE PLACE AFTER THE GROUND THAWS THE CONTRACTOR SHALL PROVIDE PROOF IN WRITING THAT THE SEED MIX HAS BEEN COLD STRATIFIED. IN THE EVENT THE SEED MIX HAS NOT BEEN COLD STRATIFIED THE CONTRACTOR WILL ARRANGE TO KEEP THE SEED UNDER REFRIGERATION FOR AT LEAST 3 MONTHS PRIOR TO BEING SOWN.
- D) UNIFORMLY DRILL SEED MIXES TO A DEPTH OF 1/8" TO 1/4" OVER THE SPECIFIED AREAS AT THE SPECIFIED RATES. UPON COMPLETION OF SEEDING, SEEDED AREA SHALL BE CULTI-PAKED.
- E) IMMEDIATELY FOLLOWING SEEDING, APPLY STRAW MULCH AT THE RATE OF 15 TONS PER ACRE OVER ALL SEEDED AREAS.
- F) WARRANTY SHALL BE: WETLAND SEED MIX 95 % COVER OF SEEDED AREAS AT THE END OF THE FIRST GROWING SEASON.

3. WOODY PLANTINGS

- A) COMPLETE ALL WOODY PLANTINGS BETWEEN MARCH 1 - MAY 15 OR OCTOBER 15 - DECEMBER 15, OR AS DIRECTED BY THE PLANT SUPPLIER. TIMING OF WOODY PLANTING TO BE APPROVED IN WRITING BY THE WETLAND CONSULTANT.
- B) PRIOR TO PLANTING, THE CONTRACTOR SHALL NOTIFY THE WETLAND CONSULTANT TO ASSIST IN THE LAYOUT OF ALL WOODY PLANTS AND TO APPROVE THE CONDITION OF WOODY VEGETATION.
- C) TREES AND SHRUBS SHOULD BE PLANTED UPON ARRIVAL TO THE MITIGATION SITE. IF CONDITIONS DO NOT PERMIT INSTALLATION OF THE WOODY VEGETATION AT THE TIME OF ARRIVAL, STORE IN A COOL MOIST ENVIRONMENT. IF TREES AND SHRUBS WILL NOT BE READY TO PLANT WITHIN A WEEK, ARRANGEMENTS SHOULD BE MADE BY THE CONTRACTOR FOR THE PROPER CARE AND STORAGE OF THE WOODY VEGETATION.
- D) ALL WOODY VEGETATION TO BE PLANTED AS SHOWN BELOW.
 1. SHALLOW, BROAD PLANTING HOLE: THE HOLE SHOULD BE DUG TO THE DEPTH OF THE ROOT BALL, AND 2 TIMES THE DIAMETER OF THE BALL. PLACE THE TREE INTO THIS HOLE BY HOLDING THE BALL, NOT THE TRUNK.
 2. POSITION THE TREE: BALANCE THE TREE, MAKING SURE THAT IT IS STRAIGHT AND AT THE CORRECT HEIGHT (TREE SHOULD BE PLANTED AT THE SAME OR SLIGHTLY ABOVE THE SAME DEPTH THAT IT WAS GROWING AT THE NURSERY).
 3. REMOVE MATERIALS: REMOVE THE TOP PORTION OF WIRE BASKET OR PEEL BACK THE TOP PORTION OF THE NATURAL BURLAP. IF THERE IS ANY PLASTIC STRING OR PLASTIC BURLAP, REMOVE NOW OR YOUR TREE WILL DIE.
 4. FILL HOLE: FILL THE HOLE WITH ABOUT 1/3 OF THE SOIL THAT YOU DUG TO MAKE THE HOLE AND GENTLY PACK AROUND THE ROOT BALL. CONTINUE TO FILL THE REST OF THE HOLE, WHILE ADDING WATER TO REMOVE AIR POCKETS. DO NOT ADD FERTILIZER FOR THE FIRST YEAR.
 5. PRUNE: AT THIS TIME, PRUNE ONLY DEAD OR INJURED BRANCHES, DO NOT USE TREE WOUND PAINT.
 6. TREE WRAP: REMOVE ANY TREE WRAP THAT WAS USED FOR SHIPPING THE TREE.
 7. STAKING: PROPERLY PLACED AND PLANTED TREES RARELY NEED TO BE STAKED. IF STAKING IS NECESSARY, MAKE ABSOLUTELY CERTAIN THAT THE STAKES ARE REMOVED AT THE END OF THE FIRST YEAR.
 8. MULCH: PLACE A 3-4 INCH LAYER OF MULCH IN A 3-4 FOOT DIAMETER CIRCLE UNDER THE CROWN OF THE TREE. PULL MULCH AWAY FROM TRUNK SO THAT HEAT AND MOISTURE ARE NOT TRAPPED.
 9. WATERING: MAKE SURE THAT THE NEWLY PLANTED TREE GETS A TOTAL OF AN INCH OF WATER EVERY WEEK THE FIRST YEAR.

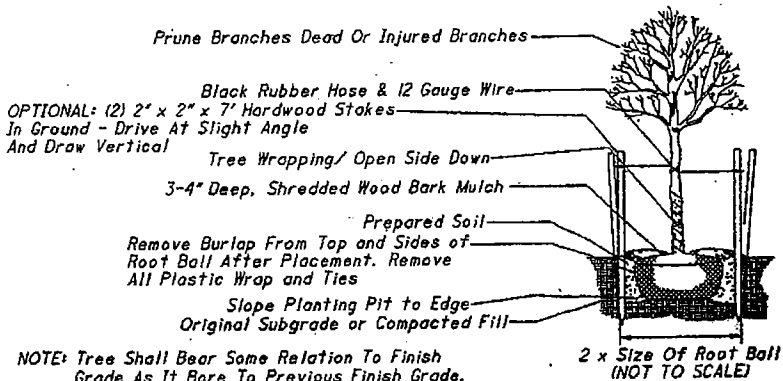
E) WARRANTY SHALL BE:

1. AT THE END OF THE FIRST GROWING SEASON, A 95 PERCENT SURVIVAL RATE FOR EACH SPECIES MUST BE PROVIDED. REPLACE ALL PLANTS IN ACCORDANCE WITH SPECIFICATIONS.
2. CONTRACTOR SHALL BEGIN PLANTING MAINTENANCE IMMEDIATELY AFTER EACH PLANT IS INSTALLED AND SHALL CONTINUE AS REQUIRED UNTIL END OF THE WARRANTY PERIOD. MAINTENANCE SHALL INCLUDE WATERING AND CULTIVATION.

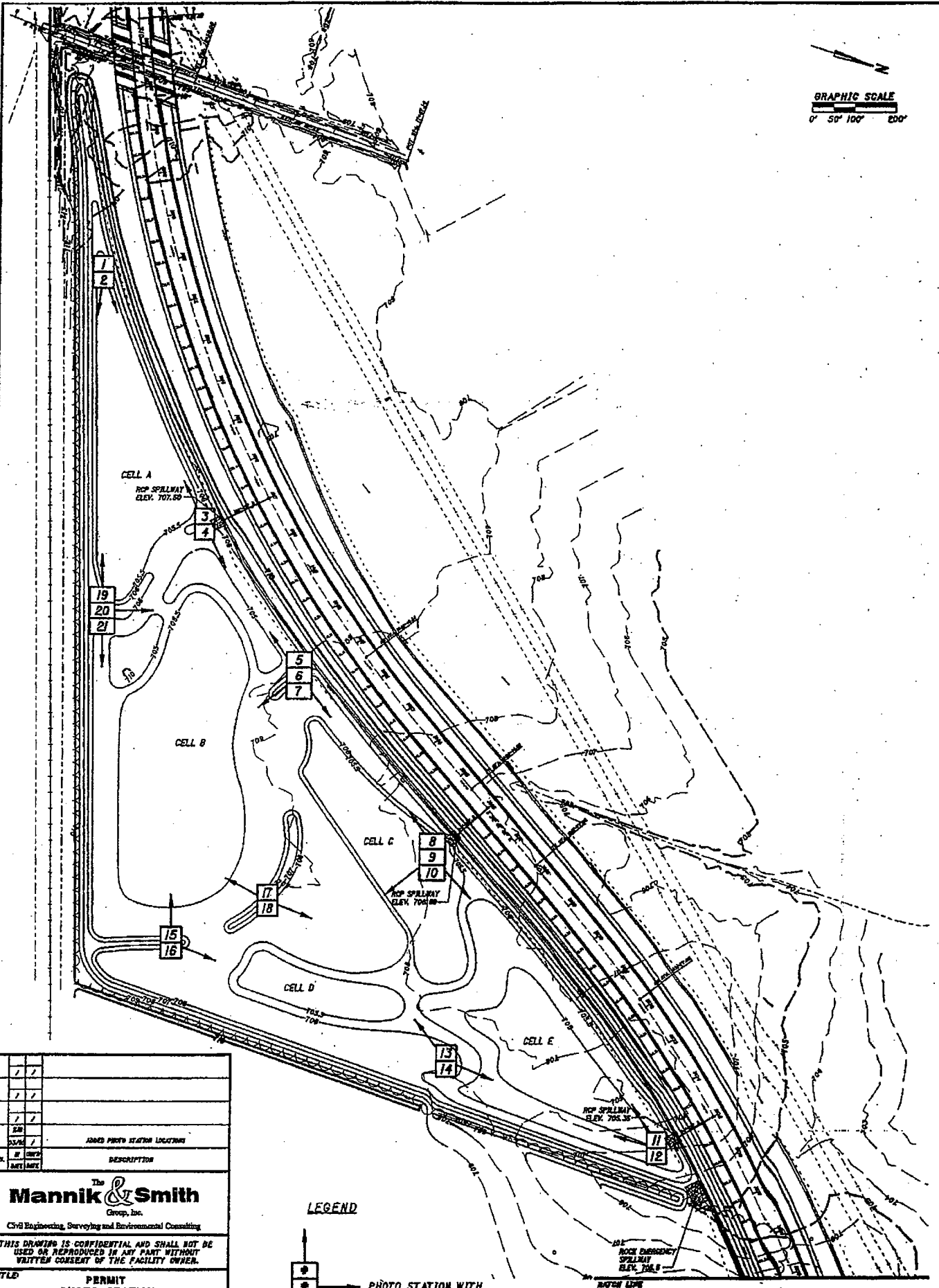
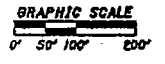
4. SUBMITTALS

- A) SEED MIXES: INCLUDE SPECIES, RATE OF APPLICATION, SOURCE (SUPPLIER) AND YEAR EACH SPECIES WAS COLLECTED.
- B) DECIDUOUS TREES AND ROOTED CUTTINGS: PROVIDE SOURCE OF EACH WOODY PLANT.

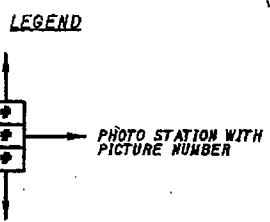
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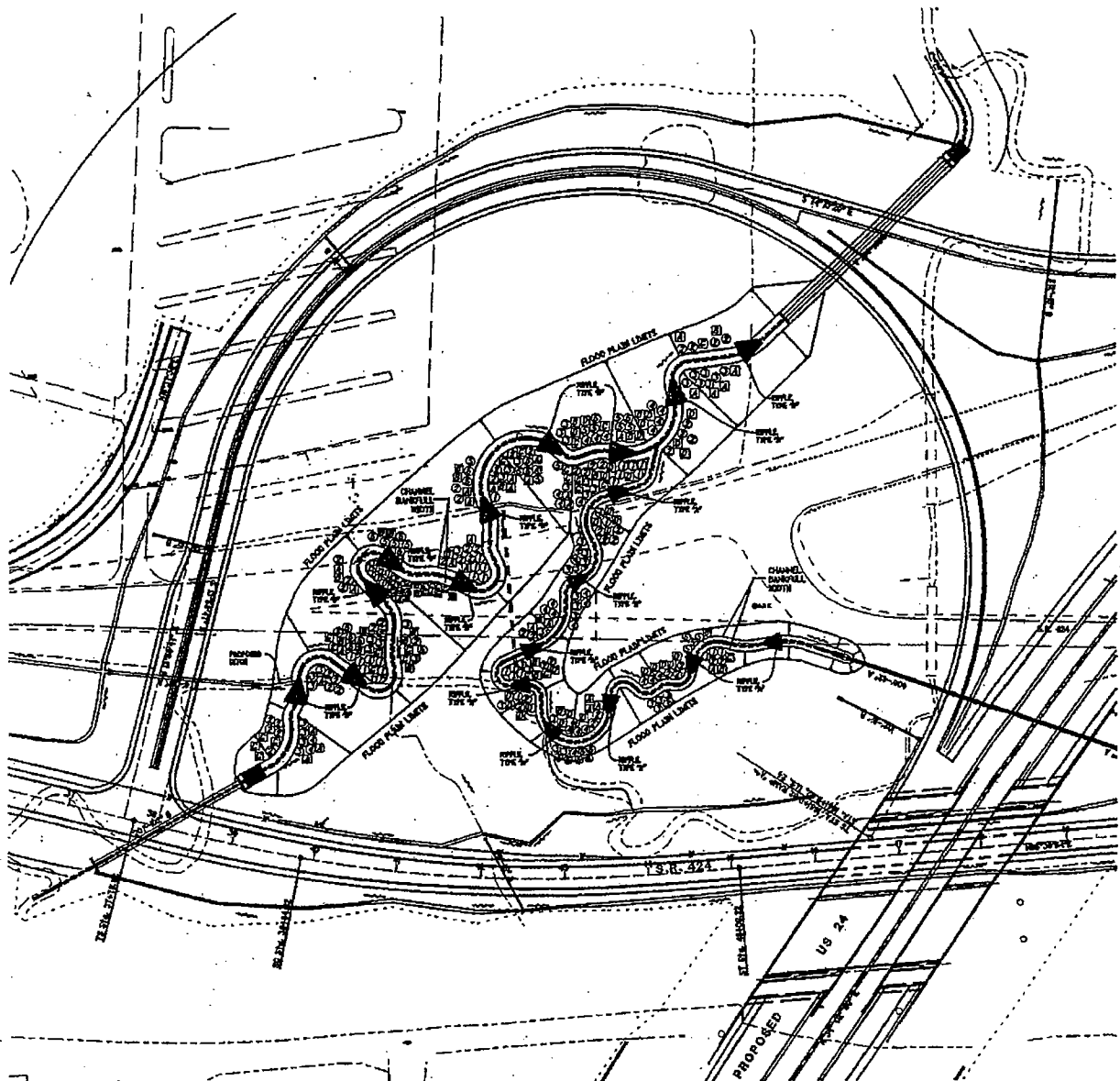


TREE PLANTING DETAIL



7	7	
7	7	
7	7	
DATE	7/7/77	ADDED PHOTO STATION LOCATIONS
NO.	2	DESCRIPTION
DATE	7/7/77	
The Mannik & Smith Group, Inc. Civil Engineering, Surveying and Environmental Consulting		
THIS DRAWING IS CONFIDENTIAL AND SHALL NOT BE USED OR REPRODUCED IN ANY PART WITHOUT WRITTEN CONSENT OF THE FACILITY OWNER.		
TITLE PERMIT PHOTO STATION LOCATIONS		
DESIGNED BY	DATE	DRAWN BY
CHECKED BY	DATE	SCALE
APPROVED BY	DATE	PROJECT NO.
		5





FOR RIFFLE DETAILS
SEE SHEET —

Relocated Ditch Riparian Planting Schedule

KEY	BOTANICAL NAME/COMMON NAME	SIZE	CONDITION	QUANTITY
1	<i>Acer rubrum</i> /Red maple	1" caliper	S.S.S.	25
2	<i>Fraxinus americana</i> /American Fraxinus	1" caliper	S.S.S.	20
3	<i>Salix nigra</i> /Black willow	1" caliper	S.S.S.	25
4	<i>Cornus pauciflora</i> /Fl. dog	1" caliper	S.S.S.	30
5	<i>Opuntia</i> seedlings/Red-tailed hawk	3" height	1 gallon containerized	40
6	<i>Cornus alternifolia</i> /Red-ster dogwood	3" height	1 gallon containerized	55
7	<i>Sambucus racemosa</i> /Elderberry	3" height	1 gallon containerized	85
8	<i>Viburnum lentago</i> /Honeyberry	3" height	1 gallon containerized	30
9	<i>Cornus masana</i> /Silky dogwood	3" height	1 gallon containerized	35
	See Drawing Sheet No. Ohio 875, R. 340		Plant along slopes	-



ON-SITE STREAM RELOCATIONS MITIGATION LANDSCAPING PLAN

OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24
PAU/DEF-24-0.00 PID 18904

U.S. Army Corps of
Engineers 404 Permit
and OEPA Section 401
Water Quality
Certification
Application

Date: 1-21-05

Exhibit 6



State of Ohio Environmental Protection Agency

2006 FEB -6 PM 12:47 MAILING ADDRESS: P.O. Box 1049 Columbus, OH 43216-1049

STREET ADDRESS:

Lazarus Government Center
122 S. Front Street
Columbus, Ohio 43215

TELE: (614) 644-3020 FAX: (614) 644-3184
www.epa.state.oh.us

February 2, 2006

Certified Mail

Ohio Department of Transportation
Mr. Gordon Proctor
c/o Timothy M. Hill, Administrator, Office of Environmental Services
1980 West Broad Street
Columbus, Ohio 43223

OHIO E.P.A.
FEB -2 2006
OFFICE OF ENVIRONMENTAL SERVICES JOURNAL

Re: Paulding County / Crane, Emerald, Carryall and Harrison Townships
Defiance County / Delaware and Defiance Townships
Grant of Section 401 Water Quality Certification (Minimal Degradation
Alternative) and Individual Isolated Wetland Permit (Level Two)
Project to construct a 26-mile, four-lane expressway on a new alignment for US
Route 24
ACOE Public Notice No. 200500745 / Ohio EPA ID No. 052318
ODOT ID Code: PAU/DEF-24-0.00/00, PID 18904 (Section 401)
PAU/DEF 0.00/0.00, PID 18904 (IWL2)

Ladies and Gentlemen:

The Director of Ohio Environmental Protection Agency hereby authorizes the above
referenced project under the following authority.

Section 401 Water Quality Certification

Pursuant to Section 401 of the Federal Water Pollution Control Act, Public Law 95-217, the
Director of Ohio Environmental Protection Agency hereby certifies that the above-
referenced project will comply with the applicable provisions of Sections 301, 302, 303,
306, and 307 of the Federal Water Pollution Control Act.

Ohio Isolated Wetland Permit

Pursuant to Ohio Revised Code Chapter 6111 and Ohio Administrative Code Chapter
3745-1, and other applicable provisions of state law, the Director of Ohio Environmental
Protection Agency hereby concludes that the above-referenced project will comply with the
applicable provisions of Sections 6111.03 and 6111.04 of the Ohio Revised Code.

This authorization is specifically limited to a Section 401 Water Quality Certification and
Individual Ohio Isolated Wetland Permit (Level Two) with respect to water pollution and
does not relieve the applicant of further Certifications or Permits as may be necessary
under the law. I have determined that a lowering of water quality in the Maumee River
(HUC 04100005) and Tiffin River (HUC 04100006) watersheds as authorized by this
Section 401 Water Quality Certification and Ohio Individual Isolated Wetlands Permit is
necessary. I have made this determination based upon the consideration of all public
comments, and including the technical, social, and economic considerations concerning
this application and its impact on waters of the state.

Bob Taft, Governor
Bruce Johnson, Lieutenant Governor
Joseph P. Koncelik, Director

I certify this to be a true and accurate copy of the
official document as filed in the records of the Ohio
Environmental Protection Agency.
Date 2-2-06

February 2, 2006

Page 2

I. On-Site Water Resources and Impacts

1. Isolated Wetlands (Table 1)

Wetland ID	Wetland Location		ORAM Score*	Cat	Wetland Type F ¹ , NF ² , PEM ³ , PSS ⁴ , PFO ⁵	Total Size (acres)	Total Size Impacted (acres)	Impact Type	% Avoided
	Lat	Long							
L-8(a)	39° 30' 15.69187"	84° 40' 26.98528"	38.5	M 2	PF	0.24	0.24	F	0.00%
L-8(B)	39° 30' 17.00183"	84° 40' 24.24425"	38.5	M 2	PF	0.31	0.19	F	38.71%
NO-15	39° 33' 10.94966"	84° 31' 59.29308"	43.5	2	PF	4.49	0.36	F	91.99%
W-4(B)	39° 34' 58.21186"	84° 26' 25.79830"	55.5	2	PEM	0.09	0.09	F	0.00%
W-4(C)	39° 34' 58.48097"	84° 26' 23.64476"	55.5	2	PEM	0.01	0.01	F	0.00%
W-4(D)	39° 35' 01.02466"	84° 26' 20.46376"	55.5	2	PSS	1.11	0.19	F	82.88%
W-4(E)	39° 35' 00.62930"	84° 26' 18.36666"	55.5	2	PSS	0.20	0.20	F	0.00%
W-4(G)	39° 34' 01.64632"	84° 26' 14.36612"	55.5	2	PSS	0.05	0.04	F	20.00%
W-4(H)	39° 34' 02.05977"	84° 26' 09.65328"	55.5	2	PSS	0.35	0.35	F	0.00%
Wetland 1	39° 37' 39.79542"	84° 20' 01.60561"	44.5	M 2	PF	0.44	0.15	F	65.91%
Wetland 2	39° 37' 41.94422"	84° 20' 01.57385"	42	M 2	PSS	0.37	0.10	F	72.97%
Wetland 3	39° 37' 49.68990"	84° 19' 36.31085"	25	1	PEM	0.02	0.02	F	0.00%
Wetland 4	39° 37' 48.74176"	84° 19' 46.79879"	45.5	2	PSS	0.18	0.08	F	55.56%
TOTALS						7.86	2.02		

* As provided by Applicant

¹ Forest, ² Non-Forest, ³ Palustrine Emergent Marsh, ⁴ Palustrine Shrub-Shrub, ⁵ Palustrine Forested, M = Modified, F = Fill material

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2. Jurisdictional Wetlands (Table 2)

Wetland ID	Wetland Location (USGS Coordinate, Ohio NAD 1983)		ORAM Score [*]	Cat	Wetland Type F ¹ , NF ² , PEM ³ , PSS ⁴ , PFO ⁵	Total Size (acres)	Total Size Impacted (acres)	Impact Type	% Avoided
	Lat.	Long							
L-6	39° 31' 50.68335°	84° 37' 43.04215°	41	M 2	PF	1.24	0.29	E, F	76.61%
RC-10	39° 34' 05.06306°	84° 29' 37.53364°	37.5	M 2	PSS	2.13	0.40	E, F	81.22%
Wetland 8	39° 34' 23.38090°	84° 28' 24.57351°	48.5	2	PF	0.89	0.34	E, F	61.80%
W-4(A)	39° 34' 57.66847°	84° 26' 32.11511°	55.5	2	PF	1.41	0.47	E, F	66.67%
W-4(F)	39° 35' 01.92052°	84° 26' 15.35120°	55.5	2	PEM	0.25	0.15	E, F	40.00%
W-4(I)	39° 35' 06.45487°	84° 26' 01.286331°	55.5	2	PEM	10.87	7.00	E, F	35.60%
OH-6	39° 35' 26.02112°	84° 25' 39.73628°	55.5	2	PF	91.39	0.52	E	99.43%
RC-5	39° 35' 03.09812°	84° 26' 03.37888°	55.5	2	PSS	3.24	0.90	E, F	72.22%
RC-2	39° 35' 26.02112°	84° 24' 14.69760°	46	2	PSS	1.06	0.13	E	87.74%
RC-4	39° 35' 38.67385°	84° 24' 06.57464°	46	2	PF	17.23	5.90	E	65.76%
RC-1	39° 35' 52.27062°	84° 23' 00.20596°	73.5	3	PSS	2.72	0.16	I	94.12%
R-1(A)	39° 36' 11.39181°	84° 22' 47.54161°	73.5	3	PF	64.27	2.83	E, F	95.60%
R-1(B)	39° 36' 30.92338°	84° 22' 13.17855°	45	2	PF	0.96	0.13	E, F	86.46%
R-1(C)	39° 36' 31.25599°	84° 22' 18.64509°	39.5	M 2	PF	0.05	0.04	F	20.00%
R-1(F)	39° 36' 32.45121°	84° 22' 13.25456°	14	1	PSS	0.15	0.09	E, F	40.00%
R-1(G)	39° 36' 34.97971°	84° 21' 59.08990°	32	M 2	PEM	0.56	0.56	E, F	0.00%
S-4	39° 35' 45.19596°	84° 22' 10.84988°	73	3	PF	19.75	0.12	E, F	99.39%
TOTALS						218.17	20.03		

* As provided by applicant

¹ Forest

² Non-Forest

³ Palustrine Emergent Marsh

⁴ Palustrine Shrub-Shrub

⁵ Palustrine Forested

M = Modified

E = Excavated, F = Filled, I = Indirect Impact (treated as direct impact)

3. Jurisdictional Streams (Table 3)

Stream ID	(USGS Coordinate, Ohio NAD 1983) Stream Location		QHEI/HHEI Score* Use Designation	Total Length (LF)	Total Length Impact (LF)	Impact Type	% Avoided
	Lat	Long					
44, North Creek	39° 29' 46.35135°	84° 42' 37.00260°	23.75-27.0 WWH	26,000	25	O	99.90%
42, North Creek	39° 30' 04.95290°	84° 41' 12.36098°	23.75-27.0 WWH	19,000	25	O	99.87%
41, North Creek	39° 30' 06.35748°	84° 40' 48.20705°	23.75-27.0 WWH	17,000	209	C	98.77%
OH-58, North Creek	39° 30' 16.08888°	84° 40' 31.97637°	23.75-27.0 WWH	15,250	659	F	95.68%
OH-58a, North Creek	39° 30' 23.12669°	84° 40' 21.55798°	23.75-27.0 WWH	14,250	250	C, F	98.25%
60, North Creek	39° 30' 25.37181°	84° 39' 56.81857°	23.75-27.0 WWH	12,000	414	C, F	96.55%
35, North Creek	39° 30' 42.68109°	84° 39' 09.81857°	23.75-27.0 WWH	6,250	25	O	99.60%
30/OH-64, Zuber Cutoff	39° 31' 06.48339°	84° 36' 06.23181°	54.75	2,900	323	C, F	88.86%
32, North Creek	39° 31' 47.78943°	84° 37' 51.52513°	23.75-27.0	1,250	149	C, F	88.08%
28/OH-80 Sixmile Cutoff	39° 32' 46.95222°	84° 33' 31.50305°	32.0	18,000	20	O	99.89%
25/OH-84 Sixmile Cutoff	39° 32' 46.59363°	84° 33' 36.99617°	32	15,600	295	C, F	98.10%
19, UNT	39° 34' 16.11256°	84° 30' 11.37696°	54.2 QHEI 33 HHEI	6,800	25	O	99.63%
15, UNT W of Ashwood	39° 35' 56.83221°	84° 25' 40.39192°	55.25	8,000	998	F	87.53%
13, Steven's Ditch	39° 35' 52.29279°	84° 23' 59.73069°	42 WWH	13,125	25	O	99.81%
OH-37, Steven's Ditch	39° 36' 35.06897°	84° 22' 23.85328°	60.5 WWH	4,500	3,542	C, R	21.29%
Maumee River	39° 36' 58.10582°	84° 21' 40.41298°	55.25 SRW/WWH	0.0 (2,315 SQ FT)	225	B	-
OH-C, UNT	39° 37' 06.28093°	84° 21' 29.97017°	No Data	1,500	130	C	91.33%
OH-F, UNT	39° 37' 21.86171°	84° 21' 05.94942°	27.0 HHEI	4,125	165	C	96.00%
OH-39, Dowe Ditch	39° 37' 31.47133°	84° 20' 48.51124°	72 WWH	2,850	215	C	92.46%
Tiffin River	39° 37' 51.30474°	84° 20' 20.76761°	52.75 WWH	7,500	225	B	97.00%
TOTALS				195,900.00	7,944		95.72

* Total distance to receiving stream, O = Outfall, C = Culvert, F = Other type of fill material, B = Bridge, R = Relocated

II. General Conditions

1. All water resources and their buffers which are to be avoided shall be clearly indicated on site drawings and demarcated in the field with suitable materials, prior to site disturbance. These materials shall remain in place and be maintained throughout the construction process. The water resources also shall be protected with suitable materials, including silt fencing, if appropriate, prior to site disturbance. These materials shall remain in place and be maintained throughout the construction process.
2. Best Management Practices (BMPs) must be employed throughout the course of this project to avoid the creation of unnecessary turbidity which may degrade water quality or adversely affect aquatic life outside of the project area.
3. Temporary fill shall consist of suitable non-erodible material or shall be stabilized to prevent erosion.
4. Materials used in this project for fill or bank protection shall consist of suitable material free from toxic contaminants in other than trace quantities. Broken asphalt is specifically excluded from use as bank protection.
5. BMPs shall be taken during construction to minimize erosion.
6. BMPs shall be taken upon completion of this project, to ensure bank stability. This may include, but is not limited, to bank seeding.
7. Procedures shall be developed and implemented to eliminate the possibility of spills and to control dust that may enter the waterway by runoff or point discharge.
8. Unpermitted impacts to surface water resources and/or their buffers occurring as a result of this project will be reported within 24 hours of occurrence to Ohio EPA for further evaluation.
9. In temporary impact areas where trees have been removed to facilitate construction, they shall be replaced with appropriate native tree species.

10. Stormwater basins on the site which have Extended Detention or Permanent Pool water quality features shall meet the design specifications in Ohio EPA Permit OHC000002. Stormwater basins on site which have water quality features (Forebay, Aquatic Benches and Wetlands, Optimum Flow Length, Reverse Flow Pipe, Optimum Pool Depth, Shading and Buffer Plants, and Runoff Reuse) shall meet the design specifications contained in the Ohio Department of Natural Resources Rainwater and Land Development document, second edition, 1996, or successor document.
11. Stormwater management measures shall be inspected immediately after each rainfall and at least daily during periods of prolonged rainfall. Specifications for any necessary repairs and removal of sediment deposition shall be developed as needed in the Stormwater Pollution Prevention Plan for the site.
12. Other permits may be required by Ohio EPA. For information concerning application procedures, contact the Ohio EPA District Office at the following address:

Northwest District office
347 North Dunbridge Road
Bowling Green, Ohio 43402

III. Mitigation

A. Description of Required Wetland Mitigation

The Permittee shall compensate for the impacts to 2.02 acres of isolated wetlands and 20.03 acres of jurisdictional wetlands by using restoration, preservation, and vegetated buffer habitat. Wetland mitigation shall consist of the following:

1. **Plummer Property:** The Plummer Property is located south of the existing US24/SR 424 intersection, east of Krouse Road, and north of the Maumee & Western Railroad, in Defiance County, Ohio. It consists of two parcels: Parcel 291-WD and Parcel 291-WD1. Parcel 291-WD contains

33 acres of mature woodland, 7.6 acres of forested Category 3 wetland, 4,328 linear feet of undisturbed streams (Steven's Ditch and unnamed tributary) and nine acres of agricultural land. Parcel 291-WD1 is located immediately south of 291-WD. It is 121 acres and contains 92 acres of mature deciduous woodland, including 53 acres of forested Category 3 wetlands, and 29 acres of agricultural land. Overall, the Plummer Property will preserve 61 acres of forested Category 3 wetlands (53 acres of forested Category 3 wetlands in Parcel 291-WD and eight acres in Parcel 291-WD1) and 72 acres of mature, forested upland buffer habitat, and restore approximately 26 acres of wetlands (Table 4).

2. **Wetland Preservation:** The following minimum wetland mitigation (preservation) is required for the project:

Wetland Type	Category	Impacts (Acres)	On-Site Mitigation Ratio ^a	Required Preservation (Acres) ^b	Required Restoration (Acres) ^{c,e}	Required Buffer Habitat (Acres) ^d
Forested	3	2.95	2.0:1	5.9	2.95	--
Forested	2	8.63	1.5:1	8.63	8.63	--
Non-forested	3	0.16	1.5:1	0.16	0.16	--
Non-forested	2	10.20	1:1	10.20	10.20	--
Non-forested	1	0.11	1:1	0.11	0.11	--
TOTALS	--	22.05	--	25.00	22.05	10.501
Remaining Balance For Pooled Mitigation (Acres)				36.0 (61 - 25)	3.95 (26 - 22.05)	61.499 (72 - 10.501)

^a 0.5 units deducted from mitigation ratio for using buffer habitat

^b Preservation determined by: $P = [(LMR - 1) \times 2] \times N$, where P = Preservation, LMR = Left side of on-site mitigation ratio, N = Impacts (acres)

^c Restoration (acres) = Impacts (acres)

^d Buffer mitigation (acres) for Category 3 wetlands based on 100' buffer and assumption that buffer and wetland conform to square geometry

^e Final acres restored will be identified from "as-built" and reported in 1st year monitoring report

3. **Wetland Restoration:** Wetland restoration shall consist of a minimum of 22.05 acres. Restoration shall consist of regrading the existing agricultural field located to the west of Parcel 291-WD1 to capture and hold surface water on the parcel, creation of depressional areas, and construction of berms along the perimeter of the site to ensure adequate water is retained to support diverse wetland habitat. An outflow structure will be installed in an earthen berm at the northern corner of the property to regulate water levels in the wetland. Additional work shall include planting of native plant species.
4. **Conditions Of Use Of Plummer Property:** All wetland mitigation shall be used exclusively for ODOT projects. On a case-by-case basis and with Ohio EPA's approval, the Plummer mitigation area shall be used exclusively by ODOT as a pooled wetland mitigation area (Table 4) for future ODOT projects requiring wetland mitigation occurring within the same watershed as the project impacts or, an adjacent watershed, with justification. The Permittee shall provide Ohio EPA a copy of the Plummer pooled wetland mitigation credit balance sheet showing the amount of credits deducted from the Plummer wetland mitigation area. A balance sheet will be submitted to Ohio EPA when utilized for compensation of unavoidable wetland impacts associated with ODOT projects. When compensation is required on future ODOT projects, the balance sheet shall contain an updated list of all ODOT projects using mitigation credit from the mitigation site. It shall include the project name (or ODOT ID#), location of the project, amount of credit(s) deducted, per project, and remaining mitigation balance.
5. **Conservation Easement:** The Plummer Property (Pooled Wetland Mitigation Area), Parcels 291-WD and 291-WD1, including buffer habitat and mitigation streams, shall be placed in a conservation easement and maintained and managed in perpetuity. Within one year from the date this certificate is issued, the Permittee shall submit to Ohio EPA a copy of a purchase agreement, or equivalent documentation, as demonstration that it has secured a conservation easement.
6. **Reporting Unusual Incidents or Disturbances in the Wetland Mitigation Area:** The Permittee is responsible for completing and submitting an incident report to Ohio EPA, reporting any unusual

disturbances or changes in the wetland mitigation area, such as chemical spills and residues, vandalism, wildlife mortality, trash, fill material, and litter, upon witness of the disturbance or event. The Permittee must contact Ohio EPA for consultation upon witness of hazardous or significant events. The Permittee shall assess the level of disturbance and take the necessary action to minimize or correct the problem.

8. Monitoring and Reporting Requirements For Wetland Restoration Area:

a. **Timing of Required Mitigation:** The wetland mitigation monitoring period shall commence within one year from completion of the wetland mitigation project. The monitoring period shall continue through a five-year monitoring period, except as provided for in Part III, D and F, below.

b. **Monitoring Reports:** Annual reports containing the data listed in the appropriate subsections below shall be submitted to Ohio EPA for each of five consecutive years following completion of mitigation construction. The first annual report is due to Ohio EPA by December 31 of the first full year following completion of mitigation construction. All subsequent reports shall be submitted by December 31st of each of the subsequent monitoring years. The monitoring and annual report requirements of this section shall be combined with the stream monitoring and annual report requirements of Section III B (below) and submitted to Ohio EPA as one consolidated report.

The Permittee may include any additional information that it believes relevant for Ohio EPA's consideration.

c. **As-built Drawings:** At a minimum, the first, third, and fifth year annual reports shall contain current drawings no larger than 11" by 17" of the mitigation area.

d. **Photographs:** A representative observation point shall be selected in each plant community type in the distinct mitigation area. This shall be a point which best represents the characteristics of the entire plant community. The observation points shall be marked on the base map.

The Permittee shall take photographs from these points annually for five years. Each color photo point shall be photo documented from the same position and angle during August of each monitoring year.

- e. **Physical Measurements** - A plan sheet displaying the wetland's "as-built" topography (1 foot contours) will be provided.
- f. **Sample Location Points** - Following completion of construction of the mitigation wetland and prior to the first monitoring event, ODOT (OES) wetland monitoring staff will establish the appropriate number of sample location points for monitoring.
- g. **Vegetation Monitoring:** The location and name of each plant community type within the mitigation area and buffer area shall be marked on a scaled drawing or scaled aerial photograph (base map) and named. The dominant plant species shall be visually determined in each vegetation layer of each community type, and the scientific names of these species shall be included in the report. Dominant species are those species which have the greatest relative basal area (woody overstory), greatest height (woody overstory), greatest percentage of aerial coverage (herbaceous understory), and /or greatest number of stems (woody vines).
- h. **Vegetation Index of Biotic Integrity (VIBI):** The Permittee shall assess the mitigation wetlands to obtain a VIBI score according to methods approved by Ohio EPA (<http://www.epa.state.oh.us/dsw/401/401.html>) during the growing season of the fifth year after completion of construction of the mitigation wetlands.
- i. **Wetland Delineation:** The Permittee shall conduct delineation of the restored mitigation wetlands during the growing season of the fifth year after completion of construction of the mitigation wetlands using the United States Army Corps of Engineers 1987 Wetland Delineation Manual (or successor document).

B. Description of Required Stream Mitigation

The Permittee shall complete the mitigation as proposed in its Section 401 application dated June 3, 2005. The Permittee shall provide compensation for the estimated 7,944 linear feet of impacts to jurisdictional streams in the project area. Compensation shall consist of 2,025 linear feet of stream restoration, 4,328 linear feet of preservation at the Plummer Property and 5991.49 linear feet of streams placed in a conservation easement on the Maumee River (Smith Parcel). Total mitigation shall be 12,344.49 linear feet. ODOT shall use the estimated 3,950.49 linear feet of stream mitigation from the Plummer Property remaining after unavoidable impacts associated with this project are compensated for as pooled stream mitigation credits for future ODOT projects occurring within the Maumee River (HUC 04100005) and Tiffin River (HUC 04100006) watersheds, or an adjacent watershed, with consultation with and approval from Ohio EPA.

1. **Relocated Stream Sections** - The Permittee shall restore, on-site, a minimum of 2,025 linear feet of the relocated section of Stevens Ditch, a perennial stream designated WWH by Ohio EPA. The stream shall be restored using natural channel design features, including a two-stage channel, construction of gradual sloping stream benches (10:1 to 24:1), construction of riffle habitat along several locations of the relocated stream channel, use of erosion protection along the outer banks at meanders, and planting of native trees, shrubs, and seeding along the constructed channel banks and benches.
2. **Preservation of Streams at Plummer Property** - The Permittee shall preserve an estimated 4,328 linear feet of streams at the Plummer Property which includes 3,268 feet of Steven's Ditch and 1,060 linear feet of an unnamed tributary. The Plummer Property is described in Section III, A1. The stream preservation site shall be protected in perpetuity.
3. **Stream Conservation Easements** - The Permittee shall place 5991.49 linear feet of streams in a conservation easement at the Smith Parcel located along the Maumee River corridor (east bank) in Paulding County, Ohio. The total area of the easement is approximately 33.243 acres and consists of wooded riparian corridor and agricultural land. The minimum

width of the easement shall be 100 feet from the edge of the stream into the property. The majority of the easement will be 400 feet wide from the edge of the river into the property. Within one year from the date this certificate is issued, the Permittee shall submit to Ohio EPA a copy of a purchase agreement, or equivalent documentation, as demonstration that it has secured a conservation easement for the Smith parcel. The Permittee shall inform Ohio EPA of the name, address (office), telephone number of the entity responsible for maintaining the conservation easement. This also shall include the name and telephone number of a person who Ohio EPA may contact to obtain information on the easement or permission to gain access to the site.

4. **Timing of Stream Mitigation:** The stream mitigation monitoring period on the relocated stream section shall commence the first full year following completion of mitigation construction and shall continue through a five-year monitoring period, except as provided for in Parts D and F, below.
5. **Monitoring and Reporting Requirements**
 - a. **Monitoring Reports:** Annual reports containing the data listed in the appropriate subsections below shall be submitted to Ohio EPA for each of five consecutive years following completion of mitigation construction. The first annual report is due to Ohio EPA by December 31 of the first full year following completion of mitigation construction. All subsequent reports shall be submitted by December 31st of each of the subsequent monitoring years. The Permittee may include any additional information that it believes relevant for Ohio EPA's consideration. The monitoring and annual report requirements of this section shall be combined with the wetland monitoring and annual report requirements of Section III A (above) and submitted to Ohio EPA as one consolidated report.
 - b. **As-built Drawings:** At a minimum, the first year annual report shall contain current drawings no larger than 11" by 17" of each of the mitigation streams.
 - c. **Water Chemistry Monitoring:** Basic water quality parameters (pH, Specific Conductivity, Total Dissolved Solids, Dissolved Oxygen, and Temperature) will be measured in select stream locations using calibrated field meters during the May and August monitoring visits.

- d. **Vegetation Monitoring:** The location and name of each plant community type within the stream mitigation area, including the riparian area, shall be marked on a scaled drawing or scaled aerial photograph (base map) and named.

A representative observation point shall be selected in each plant community type in each distinct mitigation area. This shall be a point which best represents the characteristics of the entire plant community. The observation points shall be marked on the base map. The dominant plant species shall be visually determined in each vegetation layer of each community type, and the scientific names of these species shall be included in the report. Dominant species are those species which have the greatest relative basal area (woody overstory), greatest height (woody overstory), greatest percentage of aerial coverage (herbaceous understory), and/or greatest number of stems (woody vines).

Invasive Plant Species - The vegetation monitoring requirement of this section shall include information on invasive plant species encroachment and establishment in the stream mitigation and surrounding buffer areas. A diagram depicting the name (scientific) and location of each invasive plant species and its relative abundance shall be included in the monitoring report

- e. **Erosion Inspection:** The Permittee shall visually inspect the revegetated floodplain and channel bank in the project area for signs of erosion or instability.
- f. **Headwater Habitat Evaluation Index HHEI or Qualitative Habitat Evaluation Index QHEI (As Appropriate)** - Scores using the most current version of that document available at the time the assessment is performed, shall be completed during years one, three and five.
- g. **Physical Measurements** - A plan view, longitudinal profile, and at least one cross-section through a pool area and another through a riffle area is required for each mitigated stream.
- h. **Reporting Unusual Incidents or Disturbances in the Relocated Stream Mitigation Area**

During the monitoring period, the Permittee is responsible for completing and submitting an incident report to Ohio EPA, reporting any unusual disturbances or changes in the relocated mitigated stream areas, such as chemical spills and residues, vandalism, wildlife mortality, trash, fill material, and litter, upon witness of the disturbance or event. The Permittee must contact Ohio EPA for consultation upon witness of hazardous or significant events. The Permittee shall assess the level of disturbance and take the necessary action to minimize or correct the problem.

C. 3rd Year Site Visit For Stream Mitigation Area

The Permittee shall arrange a mitigation meeting and mitigation site visit with Ohio EPA during the growing season after the third year report has been submitted. The purpose of this inspection is to determine if the relocated stream mitigation project has been constructed in accordance with the agreement between the Permittee and Ohio EPA. If necessary, Ohio EPA may make recommendations to improve the streams. The Permittee is responsible for undertaking any reasonable modifications identified by Ohio EPA.

D. Reduction of Wetland and Stream Monitoring Period

Ohio EPA may reduce the number of years for which monitoring is required for the restored wetlands and relocated stream (Steven's Ditch) based on the effectiveness of the mitigation.

E. Performance Criteria For Wetland and Stream Restoration Areas

1. **Wetland:** Within five (5) years after completion of construction of the project, the restored wetlands shall become established to a point of 80% cover with native vegetation and have a trajectory toward obtaining Category 3 status.
2. **Streams:** Within five (5) years after completion of construction of the project, the relocated stream section of Steven's Ditch shall obtain WWH status, based on QHEI assessment. The native vegetation along the shores or riparian area of the stream shall have become established to a point of 80% cover.

F. Contingency Plan

Except for Part D (above), if the mitigation areas of the restored wetlands and relocated stream sections are not performing as proposed by the end of the fifth year of post construction monitoring, the monitoring period may be extended, or the Permittee may be required to revise the existing mitigation or seek out new or additional mitigation areas.

G. Notifications To Ohio EPA

All notifications, correspondence, and reports regarding this certification shall reference the following information:

Permittee: Ohio Department of Transportation (ODOT)
Project: US 24 Road Improvement/Relocation Project:
PAU/DEF-24-0.00/00, PID 18904
PAU/DEF 0.00/0.00, PID 18904
Ohio EPA ID#: 052318

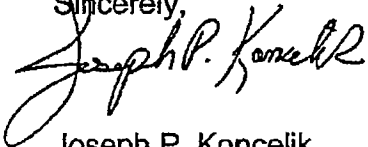
and shall be sent to: Ohio EPA, Division of Surface Water, 401
Unit Lazarus Government Center
122 South Front Street
P.O. Box 1049
Columbus, Ohio 43216-1049

February 2, 2006

Page 16

You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code by any person who was a party to this proceeding. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. It must be filed with the Environmental Review Appeals Commission within thirty (30) days after the notice of the Director's action. A copy of the appeal must be served on the Director of the Ohio Environmental Protection Agency and the Environmental Enforcement Section of the Office of the Attorney General within three (3) days of the filing with the Commission. An appeal may be filed with the Environmental Review Appeals Commission, 309 South Fourth Street, Room 222, Columbus, Ohio 43215.

Sincerely,



Joseph P. Koncelik
Director

cc: Elizabeth Stone, U.S. Army Corps of Engineers, Buffalo District
Wayne Gorski, U.S. EPA, Region 5
Megan Seymour, U.S. Fish & Wildlife Service
William Cody, Asst. Administrator, OES/ODOT
Mike Pettegrew, Supervisor, Waterway Permits Unit, OES/ODOT
Don Rostofer, OES/ODOT
Randy Sanders, ODNR
Rahel Babb, Ohio EPA/NWDO



OHIO DEPARTMENT OF TRANSPORTATION
CENTRAL OFFICE, P.O. BOX 899, COLUMBUS, OHIO 43216-0899
OFFICE OF ENVIRONMENTAL SERVICES

June 10, 2005

U.S. Army Corps of Engineers
Huntington District
520 Eighth Street
Huntington, WV 25701

Attention: Ms. Kimberly Courts-Brown

Re: Defiance and Paulding Counties, Ohio
PAU/DEF-24-0.00/0.00 (PID 18904)
401/404 Permit Applications

Dear Ms. Court-Brown:

Enclosed for your review is a 404/401 Permit Applications and supporting environmental documentation for the above proposed project. This project involves the construction of 26 miles of four-lane expressway on new alignment for US 24. The project starts at the Ohio/Indiana line and extends to State Route 18, in Defiance, Ohio. Culvert and embankment work will occur within jurisdictional waters of the U.S. The location of aquatic resource impacts have an Ohio EPA aquatic life use designation of Warmwater Habitat (WWH) and Primary Headwater classified streams. The alignment will also impact a small portion of the Maumee State Scenic River, Category 1 & 2 wetlands a small portion of two Category 3 wetlands.

An estimated 15,505 cubic yards of rock channel protection, gravel, sand and concrete fill will be permanently located below the OHWM elevation of eleven regulated streams at twenty locations. Approximately 10,900 cubic yards of permanent earthen fills will occur in jurisdictional wetlands. The aerial extent of impacts to waters of the U.S. for permanent fill will be 20.03 acres to jurisdictional wetlands and 1.43 acres (7,944 linear feet) to jurisdictional streams.

Mitigation for the stream impacts will be accomplished by using natural channel design techniques on 2,025 of relocated streams, preservation of 4,328 linear feet of stream on-site and 4,932 linear feet of streams off-site. The wetland impacts will be mitigated on-site through the development of a 26 acre wetland adjacent to an existing Category 3 wetland. In-stream work will be avoided to the extent possible between March 1st through June 15th

ODOT is seeking the USACE's approval to build the "Minimal Degradation Alternative" as described in Block 10 "Anti-degradation Rule" of the Section 401 Water Quality Certification Application. No work in jurisdictional waters will occur before this activity is authorized. Should any question arise, please contact Don Rostofer at (614)-387-3057 or email: donald.rostofer@dot.state.oh.us.

Sincerely,

Timothy M. Hill, Administrator
Office of Environmental Services

TMH:WRC:MAP:DER
Enclosure(s)

c: Randy Bournique (OEPA), Clark Nash (D-2), Mark Epstein (SHPG), File, Permits File, Reading File



**Section 404 Application for
Department of Army Permit**

And

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

**PAU/DEF-24-0.00/0.00
PID No. 18904
US 24 Ohio/Indiana Line to
Defiance, Ohio**

Prepared for:
Ohio Department of Transportation
1930 West Broad Street
Columbus, Ohio 43223

By: The Mannik & Smith Group, Inc.
1800 Indian Wood Circle
Maumee, Ohio 43537
John Kusnier, Jr. and Jason Earley
Phone: (419) 891-2222
Fax: (419) 891-1595

June 3, 2005

TABLE OF CONTENTS

SECTIONS

- SECTION 1 APPLICATION FOR DEPARTMENT OF THE ARMY 404 PERMIT
- ATTACHMENT A – ADDITIONAL INFORMATION 404 PERMIT
- SECTION 2 APPLICATION FOR OHIO EPA SECTION 401 WATER QUALITY CERTIFICATION
- ATTACHMENT B – ADDITIONAL INFORMATION 401 WQC

APPENDICES

APPENDIX A - FIGURES

- SITE LOCATION MAPS (FIGURES 1A-1H)
- TYPICAL SECTION FOR PREFERRED AND MINIMAL DEGRADATION ALTERNATIVE (FIGURE 2)
- EXHIBITS OF WETLAND IMPACTS (FIGURES 3-26)
- EXHIBITS OF STREAM IMPACTS (FIGURES 27-44)
- EXHIBITS OF MAUMEE AND TIFFIN RIVER BRIDGE CROSSINGS (FIGURES 45-47)
- BRIDGE CROSSING WORK PAD DETAIL (FIGURE 48)

APPENDIX B - WETLAND AND STREAM IMPACT TABLES

- TABLE A – STREAMS AFFECTED BY THE PROPOSED PROJECT
- TABLE B – WETLANDS AFFECTED BY THE PROPOSED PROJECT
- TABLE C – NATURE OF IMPACTS FOR WETLANDS AND STREAMS FOR THE PROPOSED PROJECT
- TABLE D – SUMMARY OF IMPACTS BY ALTERNATIVE
- TABLE E – STREAM MITIGATION FOR THE PROPOSED PROJECT
- TABLE F- WETLAND MITIGATION FOR THE PROPOSED PROJECT

APPENDIX C - CONCEPTUAL WETLAND AND STREAM MITIGATION PLAN

APPENDIX D - LOCAL GOVERNMENT AGENCY, CONSERVATION GROUPS, AND PARK DISTRICTS CONTACTED TO IDENTIFY POTENTIAL LOCAL WATERSHED ASSISTANCE PROJECTS

APPENDIX E - AGENCY COORDINATION LETTERS

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT
(33 CFR 325)

OMB APPROVAL NO. 0710-003
Expires October 1996

Public reporting burden for this collection of information is estimated to average 5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10: 1413, Section 404. Principal Purpose: These laws require authorizing activities in, or affecting, navigable waters of the United States, the discharge or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Routine Uses: Information provided on this form will be used in evaluating the application for a permit. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED
--------------------	----------------------	------------------	-------------------------------

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME Gordon Proctor, Director	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required) Michael Pettegrew, Supervisor, Waterway Permit Unit
6. APPLICANT'S ADDRESS Ohio Department of Transportation 1980 West Broad Street Columbus, Ohio 43223	9. AGENT'S ADDRESS Ohio Department of Transportation Office of Environmental Services, Third Floor 1980 West Broad Street Columbus, Ohio 43223
7. APPLICANT'S PHONE NOS. W/AREA CODE a. Residence b. Business: Michael Pettegrew (614) 466-7102	10. AGENT'S PHONE NOS. W/AREA CODE a. Residence b. Business: Michael Pettegrew (614) 466-7102

STATEMENT OF AUTHORIZATION

I hereby authorize, Michael Pettegrew to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

Gordon Proctor
APPLICANT'S SIGNATURE

6/10/05
DATE

NAME, LOCATION, AND DESCRIPTION OR PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions) PAU/DEF 0.00/0.00 PID #18904	
13. NAME OF WATERBODY, IF KNOWN (if applicable) See Tables 1 and 2 in Attachment A.	14. PROJECT STREET ADDRESS (if applicable) N/A
15. LOCATION OF PROJECT <u>Paulding and Defiance</u> COUNTY <u>OH</u> STATE	
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) Section, Township, Range, Lat/Lon, and/or Accessors's Parcel Number, for example.	

Additional location information for all jurisdictional wetland and stream impacts are detailed in Tables 3 and 4 in Attachment A. Graphical representation of each location can be found in Appendix A: Figures 1A-1H.

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

A total of 20.03 acres of non-isolated wetlands (Appendix A, Figures 3-26) will be filled during the construction of the Minimal Degradation Alternative. Approximately 1.43 acres of jurisdictional stream channel will also be filled, through relocation, enclosure in culverts or bridging (Appendix A, Figures 27-44). Individual impacts to wetlands and streams are detailed in Tables 8 and 9 (Attachment A).

23. Is Any Portion of the Work Already Complete? Yes ___ No X IF YES, DESCRIBE THE COMPLETED WORK

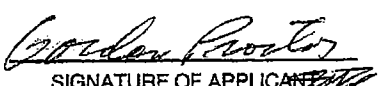
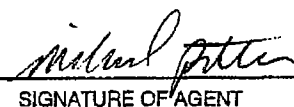
24. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

See Table 10 in Attachment A.

25. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
Ohio EPA	Isolated Wetland Permit				
Ohio EPA	401 Water Quality Certification				
Ohio EPA	NPDES				
USDOT-FHWA	FEIS				
USFWS	Draft BA of Federally Listed Species for the Ohio DOT US 24 New Haven, IN to Defiance, OH (ALL [Indiana]/PAU/DEF [Ohio]-24-0.00 (PID 18904)				

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

 SIGNATURE OF APPLICANT _____ DATE 6/10/05 SIGNATURE OF AGENT _____ DATE 6/10/05

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 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

ATTACHMENT A

ATTACHMENT A
US ARMY CORPS OF ENGINEERS SECTION 404 PERMIT
US 24 RELOCATION PROJECT

13. NAME OF WATERBODY, IF KNOWN:

Impacted, non-isolated wetlands and jurisdictional stream channels are presented in Tables 1 and 2 below. Locations of all jurisdictional wetlands and streams are presented in Appendix A; Figures 1a-1h. The project is located in Paulding and Defiance Counties, Ohio within the Maumee River (HUC-04100005) and Tiffin River (HUC-04100006) watersheds. Wetland and stream impacts will occur in Crane, Emerald, Carryall and Harrison Townships in Paulding County and Delaware and Defiance Townships in Defiance County (Appendix A, Figures 3-44).

TABLE 1
Identification of Jurisdictional Wetlands

Wetland ID	Wetland Location	County
L-6	South of Maumee & Western Railroad, West of T-69	Paulding
RC-10	South of Maumee & Western Railroad, East of C-115	Paulding
Wetland 8	North of C-232 and East of T-129	Paulding
RC-5	North of Maumee & Western Railroad, West of Whetstone Rd.	Paulding
W-4 (A)	North of Maumee & Western Railroad, South of County Line Rd., East of T-239	Paulding
W-4 (F)	North of Maumee & Western Railroad, south of County Line Rd., East of T-239	Paulding
W-4 (I)	North of Maumee & Western Railroad, south of County Line Rd., East of T-239	Paulding
OH-6	North of Defiance Paulding County Line Road and East of Whetstone	Defiance
RC-2	North of Maumee & Western Railroad, West of Krouse Rd.	Defiance
R-4	North of Maumee & Western Railroad, East of Ashwood Rd.	Defiance
RC-1	North of Maumee & Western Railroad, East of Krouse Rd.	Defiance
R-1 (A)	South of US 24/SR 424, East of Krouse Rd.	Defiance
R-1 (B)	South of US 24/SR 424, East of Krouse Rd.	Defiance
R-1 (C)	South of US 24/SR 424, East of Krouse Rd.	Defiance
R-1 (F)	South of US 24/SR 424, East of Krouse Rd.	Defiance
R-1 (G)	South of US 24/SR 424, East of Krouse Rd.	Defiance
S-4	North of US 24/SR 424	Defiance

TABLE 2
Identification of Jurisdictional Stream Channels

Stream ID	Stream Name and Location	County
44	North Creek at Collins Rd.	Paulding
42	North Creek, East of Shafer Rd and West of SR-49	Paulding
41/ OH-58b	North Creek, at SR-49	Paulding
OH-58	North Creek, East of SR-49 and West of T-43	Paulding
OH-58a	North Creek at T-43	Paulding
OH-60	North Creek, South of C-176 and North of T-162	Paulding
35	North Creek, East of T-51 and West of T-61	Paulding
32	North Creek at T-61	Paulding
30/OH-64	Zuber Cutoff, South of Maumee & Western Railroad, West of T-69	Paulding
28/OH-80	Six-Mile Cutoff, West of T-83 and East of C-87	Paulding
25/OH-84	Six-Mile Cutoff at T-97	Paulding
19 UNT*	UNT*, Maumee River at C-115	Paulding
15 UNT* W of Ashwood	UNT* East Whetstone Rd.	Defiance
13	Stevens Ditch, East of Ashwood Rd. and West of Krouse Rd.	Defiance
OH-37	Stevens Ditch, South of US 24 and North of Railroad	Defiance
Maumee River	US 24 at Maumee River	Defiance
OH-C UNT*	UNT*, North of US 24 and North of Maumee River	Defiance
OH-F UNT*	UNT*, North of US 24	Defiance
OH-39	Dowe Ditch, South US 24 and West of Tiffin River	Defiance
Tiffin River	Tiffin River at US 24	Defiance

*UNT: Unnamed Tributary

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) Section, Township, Range, Lat./Lon., and/or Accessors's Parcel Number, for example.

TABLE 3
Additional Wetland Location Information

Wetland ID	Section	Township/Range	Township	Coordinates (Ohio North NAD 1983)	
				Easting	Northing
L-6	19	T3N R2E	Crane	1368168.68	564599.91
RC-10	8	T3N R3E	Emerald	1406497.75	577324.46
Wetland 8	4	T3N R3E	Emerald	1412250.13	579051.87
RC-5	2	T3N R3E	Emerald	1423389.27	582830.22
W-4 (A)	2	T3N R3E	Emerald	1421128.26	582329.28
W-4 (F)	2	T3N R3E	Emerald	1422449.63	582731.20
W-4 (I)	2	T3N R3E	Emerald	1423560.33	583166.26
OH-6	36	T3N R4E	Delaware	1425289.30	585109.41
RC-2	31	T3N R4E	Defiance	1431957.92	585592.64
R-4	31	T3N R4E	Defiance	1432607.44	586234.66
RC-1	32	T3N R4E	Defiance	1437830.16	587501.17
R-1 (A)	32 & 29	T3N R4E	Defiance	1438861.50	589414.74
R-1 (B)	28	T3N R4E	Defiance	1441591.35	591334.64
R-1(C)	29	T3N R4E	Defiance	1441164.32	591377.14
R-1 (F)	28 & 29	T3N R4E	Defiance	1441588.60	591489.31
R-1 (G)	28 & 29	T3N R4E	Defiance	1442702.18	591721.35
S-4	28	T3N R4E	Defiance	1441803.45	592774.63

TABLE 5
Summary of Proposed Intersection Designs for Minimal Degradation Alternative

Road	Proposed Intersection Design
State Line Road	Grade-separated crossing with State Line Road passing over Preferred Alternative
T-150	Closed
C-11	Grade-separated crossing with Preferred Alternative passing over C-11
C-21	At-grade intersection
T-29	Closed
C-33	Closed
State Route 49	Interchange
C-43	Grade-separated crossing with C-43 passing over Preferred Alternative
T-51	Closed to the north, connected to C-176 w/at-grade intersection to the south
C-176	Grade-separated crossing with C-176 passing over Preferred Alternative
C-180	Closed
T-61	Closed
T-69	Closed
T-83	At-grade intersection
C-206	Relocated to at-grade intersection with C-87
C-87	At-grade intersection
C-105/T-105	Grade-separated crossing with Preferred Alternative passing over C-105/T-105
C-216	Closed
US 127	Interchange
C-224	Closed
C-115	At-grade intersection
C-123	Closed
C-232	At-grade intersection
T-129	At-grade intersection with C-232
C-133	At-grade intersection
T-139	Closed
C-143 (Whetstone Road)	At-grade intersection
Powers Road (C-29)	Closed to the west, connect to C-143 w/at-grade intersection to east
Ashwood Road (T-144)	Closed
Krouse Road (C-146)	Grade-separated crossing with Krouse Road passing under Preferred Alternative
SR 424/Existing US 24	Interchange
Switzer Rd./W. High St.	Grade-separated crossing with US 24 passing over Switzer Rd./W. High St.

The existing bridge over the Maumee River consists of a four-span, continuous welded haunched plate girder with reinforced concrete deck and substructure. Spans are 96.5 ft., 132 ft., 132 ft. and 96.5 ft. from center to center of bearings. This structure will be replaced with two four-span composite concrete beams with reinforced concrete decks, modified semi-integral abutments and drilled shaft foundations (Appendix A; Figures 45 & 46). Spans will be 118 ft. 9.5 in, 120 ft., 120 ft. and 118 ft. 9.5 in from centerline of abutment bearings to centerline of piers. Each bridge deck will also contain six pairs of scuppers.

The existing bridge over the Tiffin River also consists of a continuous welded haunched plate girder with reinforced concrete deck and substructure. The bridge currently contains four spans of 87.5 ft., 120 ft., 120 ft. and 87.5 ft. from center to center of bearings. This structure will be replaced by two, four-span composite pre-stressed concrete beams with reinforced concrete deck, modified semi-integral abutments and drilled shaft foundations (Appendix A; Figure 47). Spans will be 120 ft., 100 ft., 100 ft. and 120 ft. from centerline of abutment bearings to centerline of piers. Each bridge deck will contain six pairs of scuppers.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The segment of US 24 between the Indiana/Ohio border and Defiance, Ohio is a two-lane road that suffers from congestion and safety related issues as a result of inadequate capacity to accommodate current traffic demand. The facility does not meet current design criteria for travel lane widths, provision of shoulders, roadway curvature, sight distance and travel speed. These characteristics contribute to increasing travel time delays and a declining level of service along the roadway.

Deteriorating levels of service are due primarily to an increased volume of users, roadway location and existing design. Much of US 24 in the study area is a two-lane rural, winding arterial roadway that follows the Maumee River. Frequent driveway cuts or access points for local residences, businesses and other local roadway crossings are common. In some areas, development is directly adjacent to the roadway.

The roadway has narrow, often discontinuous shoulders and numerous no-passing zones. The frequency of no-passing zones severely limits the flow of traffic and the capacity of the roadway. Approximately 45 percent of the overall traffic on US 24 consist of trucks and along some roadway segments, truck traffic is more than half of the total traffic. This high volume of trucks often results in platoons of three or more trucks, making passing difficult and dangerous.

The purpose of this project is to:

- Improve traffic flow and level of service.
- Reduce travel times between project termini.
- Improve roadway safety.
- Enhance the regional transportation network.
- Accommodate future economic growth in the region to enhance the competitiveness of local and regional businesses.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards.

**TABLE 6
Wetland Fill Volumes**

Wetland ID	Fill Volume (Cubic Yards)
L-6	1,568
RC-10	234
Wetland 8	392
W-4(A)	459
W-4(F)	136
W-4(I)	4,771
OH-6	0*
RC-5	12
RC-2	0*
R-4	0*
RC-1	0*
R-1(A)	2,474
R-1(B)	60
R-1(C)	65
R-1(F)	103
R-1(G)	558
S-4	9
Total Fill Volume	10,841

*Proposed wetland impacts consist of excavation.

TABLE 7
Jurisdiction Stream Impact Volumes

Stream ID	Fill Volume (Cubic Yards)
44 North Creek	0*
42 North Creek	0*
41 North Creek	694
OH-58 North Creek	3,055
OH-58a North Creek	932
OH-60 North Creek	1,642
35 North Creek	0*
32 North Creek	939
30/OH-64 Zuber Cutoff	2,855
28/OH-80 Sixmile Cutoff	0*
25/OH-84 Sixmile Cutoff	3,276
19 UNT*	0*
15 UNT* W of Ashwood	93
13 Stevens Ditch	0*
OH-37 Stevens Ditch	412
Maumee River	780
OH-C UNT*	102
OH-F UNT*	36
OH-39 Dowe Ditch	212
Tiffin River	477
Total Fill Volume	15,505

* Proposed stream impacts consist of excavation
UNT: Unnamed Tributary

22. **Surface Area in Acres of Wetlands or Other Waters Filled** (see instructions)

TABLE 8
Surface Area of Impacted Wetlands

Wetland ID	ORAM Category	ORAM Score	Impacted Area (Acres)
L-6	Modified 2	41	0.29
RC-10	Modified 2	37.5	0.40
Wetland 8	2	48.5	0.34
W-4(A)	2	55.5	0.47
W-4(F)	2	55.5	0.15
W-4(I)	2	55.5	7.00
OH-6	2	55.5	0.52
RC-5	2	55.5	0.90
RC-2	2	46	0.13
R-4	2	46	5.90
RC-1	3	73.5	0.16
R-1(A)	3	73.5	2.83
R-1(B)	2	45	0.13
R-1(C)	Modified 2	39.5	0.04
R-1(F)	1	14	0.09
R-1(G)	Modified 2	32	0.56
S-4	3	73	0.12
Total Impact Area			20.03

TABLE 9
Surface Area of Fill Material for Impacted
Jurisdictional Stream Channels

Stream ID	Filled Area (Acres)
44 North Creek	0*
42 North Creek	0*
41 North Creek	0.005
OH-58 North Creek	0.005
OH-58a North Creek	0.004
OH-60 North Creek	0.005
35 North Creek	0*
32 North Creek	0.008
30/OH-64 Zuber Cutoff	0.010
28/OH-80 Sixmile Cutoff	0*
25/OH-84 Sixmile Cutoff	0.012
19 UNT*	0*
15 UNT* W of Ashwood	0.032
13 Stevens Ditch	0*
OH-37 Stevens Ditch	0.912
Maumee River	0.178
OH-C UNT*	0.059
OH-F UNT*	0.019
OH-39 Dowe Ditch	0.114
Tiffin River	0.070
Total Impact Area	1.430

*Linear impact from construction of outfall structure
 UNT: Unnamed Tributary

24. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

Table 10 provides a summary of adjacent property owners.

TABLE 10
Adjacent Property Owners

Ref ID	Ownership First Name(s)	Last Name	Mailing Address	City	State	Zip	Auditor Number
143 LL	Dwight S. Sr.	Doctor	12582 Road 1	Antwerp	OH	45813	1806-006-00
144	Dwight S. Jr.	Doctor	16339 Road 63	Antwerp	OH	45813	1806-007-00, 1807-002-01
145	William F. and Helen M.	Wetli	202 Woodland	Antwerp	OH	45813	1806-019-00
146	Wayne E. Huss & Cathy Jo Jacquay		6545 Road 162	Antwerp	OH	45813	1806-018-00
147	Dwight S. Jr.	Doctor	16339 Road 63	Antwerp	OH	45813	18-06-002-00
148	Wayne R. and Carolyn A. Carr	Trustees	12459 Road 11	Antwerp	OH	45813	18-06-001-00
149	Kevin D.	Carr	P.O. Box 321, 407 W. Canal	Antwerp	OH	48513	18-06-001-01
150	Max A. & Hope E.	Smith	P. O. Box 107	Antwerp	OH	48513	11-32-026-00, 18-05-002-00
151	RMW Ventures, LLC	Lease Hold Interest Maunee and Western Railway	205 N Capitol Ave. Stc. A	Corydon	IN	47112	1108P84005, 1308P86106, 1508P84009, 1808P84012
152	Ray & Dorothy C.	Jeffery	P. O. Box 291	Antwerp	OH	45813	11-32-025-00, 18-05-001-00
153	Wayne G. & Marian E.	Shubert	2386 Road 144	Antwerp	OH	45813	11-32-032-00, 11-32-020-00
155	Howard E. & Lois I.	Young	P. O. Box 242	Payne	OH	45880	11-33-030-01
157	Lincoln National Bank & Trust Co. of Fort Wayne, Trustee	c/o Harvest Farm Management, Inc.	11475 Road 144	Paulding	OH	45879-	11-33-031-00
158	Sally R. Skillen & Carolyn R. Langdon	c/o Harvest Farm Management, Inc.	11475 Road 144	Paulding	OH	45879	11-33-032-00, 11-34-002-00, 12-34-119-00
159	Leonard L. & Betty J.	Wilks	P. O. Box 282	Antwerp	OH	45813	12-19-035-00, 11-34-010-00
160	David E. & Marjorie A.	Yenser	6291 Bobalink Rd.	Payne	OH	45880	11-34-007-00, 11-34-008-00, 12-19-036-00, 11-34-009-00, 12-19-001-00, 12-19-030-00, 12-19-005-00
161	Joseph H. & Barbara E.	Barker	13257 Road 43	Antwerp	OH	45813	11-34-012-00, 11-34-011-02
162* TT	Joseph B.	Barker	PO Box 304	Antwerp	OH	45813	11-34-011-00
163	The Advisory Board, Northwestern Ohio Church of the Nazarene		P. O. Box 574	Antwerp	OH	45813	11-34-011-01
164* LL	Daniel P.	Marlin	13381 Road 43	Antwerp	OH	45813	11-34-015-01
165 LL	Thomas E., L.E Patricia J., L. E.	Marlin, et al.	209 W. Woodcox	Antwerp	OH	45813	11-34-015-00
166	Beverly B.	Stout	P.O. Box 61	Antwerp	OH	45813	12-14-001-00
167	Joseph H. & Barbara E.	Barker	13257 Road 43	Antwerp	OH	45813	11-35-006-00
168	Joseph B. & Jodi M.	Barker	P. O. Box 304	Antwerp	OH	45813	11-35-007-00
169* LL	Daniel L. & Elizabeth R.	Smalley	13338 Road 43	Antwerp	OH	45813	11-35-007-02
170	Paul E. Daeger & Kevin Cramer	c/o Kevin Cramer	843 Johnson Rd.	Paulding	OH	45879	11-35-007-01
171	Stephen T. & Shelley L.	Marlin	5131 Road 162	Antwerp	OH	45813	11-35-008-01
172 LL	Village of Antwerp		P. O. Box 1046	Antwerp	OH	45813	11-35-005-00
173 LL	Keith L. & Susan	Wiesehan	12282 Road 21	Antwerp	OH	45813	11-35-004-12
174	Vaughn E. & Kathleen R.	Franklin	P.O. Box 19	Antwerp	OH	45813	12-07-017-00
175	James P. & Joan	Sidenbender	154 Coco Palm Dr.	Venice	FL	34292	11-35-001-00
176	Patricia Sue & Frank S.	Sukup, Trustee	P. O. Box 67	Pt. Jennings	FL	45844	11-35-003-00

TABLE 10 (Continued)
Adjacent Property Owners

Ref ID	Ownership First Name(s)	Last Name	Mailing Address	City	State	Zip	Auditor Number
177	William & Cheryl	Fish	5744 Road 176	Antwerp	OH	45813	11-35-002-00
178	Douglas L. & Margie D.	Stevenson	5848 Road 176	Antwerp	OH	45813	11-35-001-01
179	Ted Koenn & Sons, Inc.		11995 Road 224	Cecil	OH	45821	11-36-002-00
180	James M.	Hertel	528 West River	Antwerp	OH	45813	11-25-006-00
181	Francis H. & Mabel C.	Koenn, Trustee(s)	1098 North Williams St.	Paulding	OH	45879	11-26-029-00
182	V. and R. Koenn, Corp.		11243 Road 230	Cecil	OH	45821	11-25-005-00
183	Steven D. & Linda L.	Schrenk	11753 Rd. 33	Antwerp	OH	45813	11-25-010-01
184	B & Y Limited, LLC.		4633 Road 94	Payne	OH	45880	11-34-017-01, 12-17-020-02
186	Todd D. Zuercher & Patricia Smith	c/o Todd D. Zuercher	9439 Emerson Rd.	Apple Creek	OH	44606	12-14-002-00
187	Ted Koenn & Sons, Inc.		11995 Road 224	Cecil	OH	45821	11-25-004-00
188	Richard B.	Schroeder, Jr.	PO BOX 1084	Antwerp	OH	45813	11-25-004-06
189* LL	Jonathan Q.	Rister	14953 Road 61	Antwerp	OH	45813	11-25-004-01, 11-24-016-00
190LL	Lori J.	Jackson	10382 Road 8	Mark Center	OH	43536	14-19-028-00
191* LL	Jerry R.	Colley	14978 Road 61	Antwerp	OH	45813	14-30-011-04
193	Keith L. & Susan R.	Weishan	12282 Road 21	Antwerp	OH	45813	18-04-006-00
194*	Donn B. & Donald C.	English	6395 Road 180	Antwerp	OH	45813	14-19-013-00
195	Francis H. & Mabel C.	Koenn, Trustee(s)	1098 North Williams St.	Paulding	OH	45879	14-19-014-00
199	RMW Ventures, LLC		205 N. Capitol Ave, Ste A	Corydon	IN	47112	14-08P-840-08
200	Olen G.	McMichael	15205 Road 61	Antwerp	OH	45813	14-20-024-00, 14-20-011-00, 14-19-007-00
201 AA	Alnr. Michelle	Miller	1885 N. McCullough St.	Lima	OH	45801	14-19-030-00
202	Dinah	Collins	15015 Road 69	Antwerp	OH	45813	14-19-008-00
204	Paul F. & Margret M.	Klender, Trustee(s)	15700 Road 83	Antwerp	OH	45813	14-20-012-00
205	Ronnie L.	Kadesch	11701 Road 71	Paulding	OH	45879	14-20-025-00
207	James	Mortoff	13101 State Route 49	Antwerp	OH	45813	11-34A-006-01, 11-34A-007-01
208	Carl W. & Charlotte A.	Gallup	15661 Road 83	Antwerp	OH	45813	14-20-023-00
209	Paul F. & Margret M.	Klender, Trustee(s)	15700 Road 83	Antwerp	OH	45813	14-21-004-00
210	Robert P. Phillips	c/o Brenda Snyder	120 W. Edgerton St.	Hicksville	OH	43526- 1330	14-21-003-00, 14-16-008-00
211	Francis H. & Mabel C.	Koenn, Trustee(s)	1098 North Williams St.	Paulding	OH	45879	14-21-001-00
212	David, Sr., & Sharon	Bidlack	9652 Road 206	Cecil	OH	45821	14-21-002-00
213	Pamela D. Bricker, Rebecca Anne Riley & Mary Kathryn Woodbridge		11719 Trails End	Fort Wayne	IN	46845	14-16-009-00
214	Lois & Doris	Bruckart	9915 Road 206	Cecil	OH	45821	14-16-010-00
215	David L. & Dorothy J. Gilbert & Debra J. Zimmerman	c/o Robert Gilbert	3332 Brook Valley Pl	Fort Wayne	IN	46815	14-15-009-00
216	John P.	Zielke	10017 Road 206	Cecil	OH	45821	14-15-009-01
217	Kenneth W. & Mary M.	Musselman	15868 Road 87	Cecil	OH	45821	13-22-005-00, 13-22-006-02
218	John C. & Gertie May Coon Stuart & Nellie M. Bauer		10372 Road 206	Cecil	OH	45821	14-15-010-00, 13-22-003-00
219	Paulding Co. Area Foundation, Inc.		10526 Road 24	Haviland	OH	45851	13-15-013-00
221	V. & R. Koenn Corp. an Ohio Corp.		11243 Road 230	Cecil	OH	45821	15-08-006-00
222	Lisa A.	Koenn, Trustee	203 Scott Dr.	Bryan	OH	43506	15-08-007-00

TABLE 10 (Continued)
Adjacent Property Owners

Ref ID	Ownership Ffirst Name(s)	Last Name	Mailing Address	City	State	Zip	Auditor Number
223	Lisa A. Koenn & Bobby R. Boggs		PO Box 116	Cecil	OH	45821	15-01-011-00, 15-01-010-00
224	General Portland, Inc. (LaFarge Corp.)	Attn: Tax Dept.	PO Box 160	Paulding	OH	45879	15-08-025-01, 13-23-016-01, 13-26-009-01
228	V. & R. Koenn Corp., an Ohio Corp.		11243 Road, 230	Cecil	OH	45821	15-08-001-00
229	Kenneth E. & Maxine	Koegan	17011 Road 105	Cecil	OH	45821	15-08-015-01, 15-02-003-00, 15-02-013-00
230	Stuart	Glassey	205 Eric St., PO Box 123	Antwerp	OH	45813	1502-01200, 1501-02700, 1501-02800, 1501-02900, 1501-02300, 1501-02200, 1501-03000, 1501-03100, 1501-02000, 1501-03200
231	Diane Allensworth, Joan Pier & Forrest DeMuth		17227 Platter Parkway	New Haven	IN	46774	15-08-014-00
232	Francis H. & Mabel C.	Koenn, Trustee(s)	1098 North Williams St.	Paulding	OH	45879	13-13-009-00
233	Pamela D. Bricker, et al		11719 Trails End	Fort Wayne	IN	46845	13-13-010-00
234	R. I. Simpson & Sons Farms, Inc	c/o Robert Simpson	12147 Road 216	Cecil	OH	45821	13-13-008-00, 13-13-003-00, 13-12-005-00, 13-13-017-00
235	Robert I. & Mable I.	Simpson, Trustee(s)	16594 Road 127	Cecil	OH	45821	13-13-003-01
236	Robert I. & Mable I.	Simpson, Trustee(s)	16594 Road 127	Cecil	OH	45821	13-13-002-00
237	Robert A. & Sheryl A.	Mourcy	12905 Road 224	Cecil	OH	45821	13-13-001-00
239	Pamela D. Bricker, Rebecca Ann Riley & Mary Kathryn Woodbridge (Siblings)	c/o Pamela D. Bricker	11719 Trails End	Fort Wayne	IN	46845	13-13-001-01, 16-18-004-00
241	Donald	Woodring	309 S. Adrian St., Box 77	Lyons	OH	43533	13-12-007-00
243	Barry L. & Kay E.	Stoller	13145 Road 224	Cecil	OH	45821	16-07-011-02, 16-07-011-02, 16-07-013-00
244	Merle	Jeffery, Trustee	15117 Road 138	Paulding	OH	45879	16-07-011-00
245	Ricky L. & Pamela M.	Weippert	17225 Road 115	Cecil	OH	45821	16-07-021-00, 16-07-011-01, 16-07-004-03, 16-18-002-00, 16-18-002-01
246	Avery T., Sherri L., Herbert L. & Sandra K.	Zeller	13531 Road 232	Cecil	OH	45821	16-07-004-02
249	Randy L. and Michelle A.	Luderman	14716 Road 228	Cecil	OH	45821	16-08-006-00
250	Roger K. and Patricia L.	Eckart					16-08-005-01
251	Jeffrey L. & Glenda R.	Ferris	15464 Road 138	Paulding	OH	45879	16-08-004-00
252	R. Phillip Hancock, Frieda L. Ferris, Linda Miller & Louise C. Hancock		3219 61st St. East	Palmetto	FL	33561	16-08-003-00
253	Esther Mae & Jerry C.	Scoggins	PO Box 204	Pauline	SC	29374	16-08-002-04
254	Mary E. & Terry L.	Retcher	15471 Road 143	Cecil	OH	45821	16-08-002-03
255	Joann	Singer	9231 Kleinhenn Rd.	Defiance	OH	43512	16-08-002-00
256	Lelah K. & Edward E.	Jackson	PO Box 164	Hicksville	OH	43526	16-08-002-05
257	Dana J. and Leslie J.	Vogel	14982 Road 232	Cecil	OH	45821	16-08-002-01
258	Jane P.	Weippert, Trustee	17721 Road 123	Cecil	OH	45821	16-08-018-00
259	William J.	Weippert, Jr., Trustee	17722 Road 123	Cecil	OH	45821	16-09-002-00, 16-09-006-00

TABLE 10 (Continued)
Adjacent Property Owners

Ref ID	Ownership First Name(s)	Last Name	Mailing Address	City	State	Zip	Auditor Number
260	Cheryl F. Krugh, Charles F. Fishburn		397 Jefferson Dr.	Pittsburgh	PA	15228	16-04-005-00
261	June A.	Hurtig	16507 Road 115	Cecil	OH	45821	16-04-006-00
262	Thomas B. & Donna M.	Hurtig	9979 Road 162	Paulding	OH	45879	16-09-004-00
263	William J.	Weppert, Jr., Trustee	17722 Road 123	Cecil	OH	45821	16-03-008-00
264	Betty L. & Clayton W.	Rose, Jr.	5075 Thornhill Ln.	Dublin	OH	43017	16-04-010-00, 16-04-011-00
265	H. Lois	Thomas, Trustee	111 Mel Simon # 4	Toledo	OH	43612	16-04-008-00
266	Timothy E. Thourot & Angela M. Silvestri		1190 CR 22	Continental	OH	45831	16-04-008-01
267	Robert P.	Philpot	18242 Road 133	Cecil	OH	45821	16-03-006-00
268	Sherry A.	Svec	7509 Broughton Pike	Paulding	OH	45879	16-02-004-00, 16-03-015-00
269	Rebecca L. Zimmerman & Jeffrey Cereghin		18415 Road 139	Cecil	OH	45821	16-03-012-00
270	Clair L. & Rose M.	Paxton	17361 Road 202	Cecil	OH	45821	16-02-013-00
271	Nicholas R.	Follock	19403 SR 111	Defiance	OH	43512	16-02-006-00
272	Scott Hutchinson Properties, Inc.		1920 Baltimore	Defiance	OH	43512	16-02-002-00
273	Thomas & Louann	Collister	17504	Cecil	OH	45821	16-02-001-12
274	Anthony E. & Julie K.	Bush	17546 Road 8	Cecil	OH	45821	16-02-001-11
275	Gary L.	Mast, II	17588 Road 8	Cecil	OH	45821	16-02-001-08
276	Christine M.	Waxter	17620 Road 8	Cecil	OH	45821	16-02-001-07
277	Roger K. & Patricia L.	Eckart	P.O. Box 145	Tremont City	OH	45372	16-02-001-00
278	Robert D. & Barbara K.	Bell	17684 Road 8	Cecil	OH	45821	16-02-001-03
279	Janet L.	Thompson	17740 Road 8	Cecil	OH	48521	16-02-001-01
280	Anthony M.	Thompson	17754 Road 8	Cecil	OH	48521	16-02-001-06
281	Denise C.	Hillsman	17828 Road 8	Cecil	OH	48521	16-02-001-04
282	Joe	McKenzie	17910 Road 8	Cecil	OH	48521	16-02-001-02
283	Daniel & Rose	Freelich	17876 Road 8	Cecil	OH	48521	16-02-001-05
284	Marvin H. & Coleen C.	Taylor	18993 Road 143	Cecil	OH	48521	16-02-001-09
285	William J. & Audrey A.	Weppert, Sr.	17055 Road 123	Cecil	OH	48521	16-01-001-00
286	Samuel A.	Bok	11310 Krouse Rd	Defiance	OH	43512	B110031000200
288	Andrew M.	Shuinger	16158 Boster Rd	Ney	OH	43549	B110031000700
291	R & L Enterprises		21297 Kiser Rd	Defiance	OH	43512	B012111000700, B012111000800, B012111000900, B012111000100, B012111000500, B012111001000
309	The Real Estate and Improvement Company of Baltimore City		500 Water St.	Jacksonville	FL	32202	B012111002800, B012111001200
309A	Herrmiller Holdings, LLC		20390 US Route 4	Defiance	OH	43512	B012111001201, B012111001202
310	CSX Transportation, Inc.		500 Water St.	Jacksonville	FL	32202	B014900000401
312	Moats Enterprises, Inc.		Box 4566	Defiance	OH	43512	B012111001500
313	Sykematin Enterprises, LLC		1650 Baltimore	Defiance	OH	43512	B012111001301
314	C.C.S. Insurance Agency, Inc.		126 Chestnut	Wauseon	OH	43567	B012111001500, B012111001600
315	Richard F. & Marilyn	McCann	1918 Edgewood	Defiance	OH	43512	B110028001000, B110029001000
317	State of Ohio Department of Highway Safety		1885 N. McCullough St.	Lima	OH	45801	B012111001800
318	Michael L. & Gina A.	Cook	11620 Secor Rd.	Petersburg	MI	49270	B012180000500, B012180000501
320	State of Ohio District-1		1885 N. McCullough St	Lima	OH	45801	B012111002000

TABLE 10 (Continued)
Adjacent Property Owners

Ref ID	Ownership First Name(s)	Last Name	Mailing Address	City	State	Zip	Auditor Number
324	James H. & Betty L.	Bothmann	2144 Baltimore St.	Defiance	OH	43512	
326	John L. & Freda P.	Potter	12379 US 127	Sherwood	OH	43556	16-07-008-00, 16-07-008-01
327	Amy Sue & Daniel Duane, Sr.	Beatty	14916 Road 232	Cecil	OH	45821	16-08-002-02, 16-08-001-00
329	Dwight S.	Doctor, Sr.	12582 Road 1	Antwerp	OH	45813	18-06-002-02, 11-31-020-00
334	Richard S. & Darlene M.	Sabo	21726 Switzer Rd.	Defiance	OH	43512	1130021000400, 1130028000200, 1130021000800, 1130021001000
335	Rhonda	Lehman, Trustee	02970 Evansport Rd.	Defiance	OH	43512	1130028000301, 1130021001203
336 & 337	Not used						
338	Gail J.	Olson	P.O. Box 332	Defiance	OH	43512	1130021001202
339	Agnes	McDonald	1300 Heatherdowns	Defiance	OH	43512	1130021000905
340	William S. & Janice A.	Duerf, Jr.	1905 State Service Rd.	Defiance	OH	43512	1130021000600
341-343	Not Used						
344	Orville F. & Julianne	Smith	9800 Haller St.	Defiance	OH	43512	1130022001000
345	Not used						
346	Nelson L.	Smith	1601 State Service Rd.	Defiance	OH	43512	1130022000303
347-349	Not Used						
350	James L., Betty A., Robert, Michael, Diane & Steven	Haller	22300 Switzer Rd.	Defiance	OH	43512	1130022000302, 1130022000600
351	The Toledo Edison Co., an Ohio Corporation	c/o First Energy Tax Dept.	76 South Main St.	Akron	OH	44308	1130022003101
352	Herbert G. & Chaley N.	Strickland	22160 Switzer Rd.	Defiance	OH	43512	1130022001100, 1130022001200, 1130022001300
353	Marvin E. & Maxine V. Hire	Tuierhoff	22140 Switzer Rd.	Defiance	OH	43512	1130022001400, 1130022001500
353A	Terry L.	Poulson	22120 Switzer Rd.	Defiance	OH	43512	1130022003000
354	Orville F. & Julianne	Smith	9800 Haller St.	Defiance	OH	43512	1130022002500, 1060022000300
355	Koester-Monnin Investments, LLC		136 Fox Run Dr.	Defiance	OH	43512	1060022000200
356	Koester-Monnin Investments, LLC		136 Fox Run Dr.	Defiance	OH	43512	1060022A00200, 1060022A00300, 1060022A00700, 1060022A00699, 1060022A00600, 1060022A00100
357	The Celanis Group, Inc.		PO Box 10079	Maumee	OH	43537	1060022A00400
358	Crescent Realty Corporation		188 Fox Run Dr.	Defiance	OH	43512	1060022A00599, 1060022A00500
359	City of Defiance		324 Perry St.	Defiance	OH	43512	1060023000500
360	James E. & Judy L. Moon	c/o Irene F. Ingle	1355 West High St.	Defiance	OH	43512	1130022000201
360A	James E. & Judy L.	Moon	1329 West High St.	Defiance	OH	43512	1130022000200
361	Olson Enterprise Park, Ltd.		P.O. Box 332	Defiance	OH	43512	1020111000501, 1060023000400
362	Alva V. & Melinda L.	Tuohy	1320 West High St.	Defiance	OH	43512	1020111000100
363	David W. & Kimberly L.	Boggs	1314 West High St.	Defiance	OH	43512	1020111000201
364	Defiance Hospital, Inc.		1206 Ralston Ave.	Defiance	OH	43512	1060023000100, 1020118000600
365	Ruben Jr. & Thersa	Santos	1298 West High St.	Defiance	OH	43512	1060023000400, 1020111000400, 1020111000300, 1020111000200
366	Douglas E. & Joanne	Parker	1299 West High St.	Defiance	OH	43512	1060022000400
367	Charles E. & Nancy	Latchaw	2523 Cobblestone Ln.	Kendallville	IN	46755	1130023000101
369	James L. & Sandra E.	Morris	799 Richland St.	Defiance	OH	43512	16-02-002-00

TABLE 10 (Continued)
Adjacent Property Owners

Ref ID	Ownership First Name(s)	Last Name	Mailing Address	City	State	Zip	Auditor Number
373	Sherry A.	Smallwood	PO Box 188	Bowling Green	OH	43402	11-25-010-00
374	Randy L. & Cynthia K.	Bell	14131 Road 61	Antwerp	OH	45813	11-25-010-02, 11-25-009-00
375	Dorothy M. Rager	C/O Dennis Rager	14530 Road 61	Antwerp	OH	45813	14-30-007-00
375A	Ben L. & Kelly J.	Rager	14738 Road 61	Antwerp	OH	45813	14-30-007-01
376	Alyn L. Bickhard et al		306 E. Woodcox	Antwerp	OH	45813	14-30-008-00, 14-31-006-00
377	Terr L.	Thomas	13507 Road 61	Antwerp	OH	45813	11-36-001-01
378	Gary & Sheila	Justinger	4398 Glenburg Rd.	Defiance	OH	43512	16-02-009-00
380	Bentley Enterprises, an Ohio Limited Partnership		1480 Ralston Ave.	Defiance	OH	43512	1130014000800, 1130014000900, 1130015002902, 1130015003000, 1130015003001, 1130015003005
381	Michael	Cook	13590 Center St.	Weston	OH	43569	1130014000700
382	Abraham & Margaret G.	Flores	1215 Ralston Ave.	Defiance	OH	43512	1020118000100
383	Clarence E. & Elizabeth L.	Bott	1213 Ralston Ave.	Defiance	OH	43512	1020118000200
384	Virginia Gutierrez-Parker	c/o Virginia Gutierrez	1211 Ralston Ave.	Defiance	OH	43512	1020118000300
385	John	Sensebaugh	1209 Ralston Ave.	Defiance	OH	43512	1020118000400
386	Belva, Charles E. & Joanne	Latchaw	1125 West High St.	Defiance	OH	43512	B013114000300, B013114000200, 1130022000100, 1130023000100
387	Norman J. & Annabelle	Kunze	1207 Ralston Ave.	Defiance	OH	43512	1020118000500
388	Ronald C. & Marilyn L.	Richard	1203 Ralston Ave.	Defiance	OH	43512	1020118000700
389	Robert E. & Esther L.	Fender	1201 Ralston Ave.	Defiance	OH	43512	1020118000800
390	Elizabeth A.	Sigg	1038 Valley Forge Dr.	Defiance	OH	43512	1020118A00102
391	William H. Zeller Investments LLC		1823 Switzer Rd.	Defiance	OH	43512	1020118A00101
392	Lankenan Properties I, Ltd.		608 2 First St.	Defiance	OH	43512	1020118A00100
393	Wooded Acres Investors, LLC		P.O. Box 115	Archbold	OH	43512	1020118A00200
394	Hilda C. Miller et al.	c/o Hilda C. Miller	629 Hopkins St.	Defiance	OH	43512	1020118001700
395	Margo Y. Brown	c/o Margo Y. Wisheart	1027 Ralston Ave.	Defiance	OH	43512	1020118001800
396	Derrow Properties, Inc.		8633 State Route 15	Defiance	OH	43512	1060023000200, 1060014003700, 1020118001900
397	Chad	Shock	8510 State Route 15	Defiance	OH	43512	1020118002000
398	Barry A. & Luann D.	Froelich	27622 Hoffman Rd.	Defiance	OH	43512	1020118002100
399	Charles E. Sheperd, George Knox & Geraldine Munson	c/o George Knox	1015 Ralston Ave.	Defiance	OH	43512	1020118002200
400	City of Defiance		324 Perry St.	Defiance	OH	43512	1020118002300
401	Ramona B.	Osborne/Wirick	P.O. Box 746	Defiance	OH	43512	1130014001700, 1130023000500
403	Olson Commercial Cold Storage, LTD.		P.O. Box 332	Defiance	OH	43512	1060023000501, 1020111000500, 1020111000502
404	Paul & Terry	Perdue	1200 West High St.	Defiance	OH	43512	B013114000500
405	William L. & Doris M.	Corday	1160 West High St.	Defiance	OH	43512	B013114000401
406	David C.	Delgado	1130 West High St.	Defiance	OH	43512	B013114000400
407	Byran Nursing Home, Inc.	395 Harding St. LLC c/o Harborside Healthcare	One Beacon St.	Boston	MA	2108	B013115005300, B013115005301
408	John K. and Judy M.	Mayes	1240 Fallen Timbers Dr.	Defiance	OH	43512	1020118A02300

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 EPA, 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 EPA 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 quadrangle) 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:
 Gordon Proctor, Director (614) 466-5198 (Office)
 Ohio Department of Transportation (614) 728-7368 (Fax)
 1980 West Broad Street, Columbus, Ohio 43223

3a. Signature of Applicant: *Gordon Proctor MPE* Date: *6/10/05*

4. Name, address and title of authorized agent: Telephone number during business hours:
 Michael A. Pettegrew, Supervisor, Waterway Permit Unit (614) 466-7102 (Office)
 Office of Environmental Services, Third Floor (614) 728-7368 (Fax)
 Ohio Department of Transportation
 1980 West Broad Street, Columbus, Ohio 43223

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: *Gordon Proctor MPE* Date: *6/10/05*

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 project is located in Paulding and Defiance Counties, Ohio within the Upper Maumee River (HUC 04100005) and Tiffin River (HUC 04100006) Watersheds. Wetland and stream impacts will occur in Crane, Emerald, Carryall and Harrison Townships in Paulding County and Delaware and Defiance Townships in Defiance County. The project area is shown in Appendix A, Figures 1A-1H. Tables 1 and 2 in Attachment B provide additional location information for non-isolated wetlands and jurisdictional stream channels that will be impacted as a result of this new highway alignment.
 Address: N/A
 Street, Road, Route, and Coordinates, or other descriptive location
 SEE ATTACHMENT B

Watershed	County	Township	City	State	Zip Code

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. Indicate the existing work on the drawings.

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.

Issuing Agency	Type of Approval	Identification No.	Date of Application	Date of Approval	Date of Denial
Army Corps of Eng	Section 404				
Ohio EPA	NPDES				
Ohio EPA	Isolated Wetland Permit				
USDOT-FHWA	FEIS				
USFWS	Draft BA of Federally Listed Species for the Ohio DOT US 24 New Haven, IN to Defiance, OH (ALL [Indiana]/PAU/DEF [Ohio]-24-0.00 (PID 18904)				

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

8a. Activity: Describe the Overall Activity:

The Ohio Department of Transportation (ODOT), the Indiana Department of Transportation, along with the Federal Highway Administration (FHWA) proposes to improve the operational characteristics of US 24 through a major transportation project. US 24 is a major east-west transportation corridor through the midwestern United States, linking Michigan and Colorado. The eastern portion of US 24 provides the most direct connection between northern Indiana and northwest Ohio, and provides direct access from Fort Wayne, Indiana and Toledo, Ohio. Currently US 24 suffers from several operational deficiencies, including decreased safety, increased congestion and a deteriorating level of service which are due primarily to its location, design and high volume of users.

A more detailed description of the overall activity is provided in Attachment B.

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

The Ohio Department of Transportation (ODOT), the Indiana Department of Transportation (INDOT), along with the Federal Highway Administration (FHWA) proposes to improve the operational characteristics of US 24 through a major transportation project. US 24 is a major east-west transportation corridor through the midwestern United States, linking Michigan and Colorado. The eastern portion of US 24 provides the most direct connection between northern Indiana and northwest Ohio, and provides direct access from Fort Wayne, Indiana and Toledo, Ohio. Currently US 24 suffers from several operational deficiencies, including decreased safety, increased congestion and a deteriorating level of service which are due primarily to its location, design and high volume of users.

A more detailed description of the purpose, need and intended use of the activity is provided in Attachment B.

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))

Eleven jurisdictional streams will be impacted at 20 locations. Impacts are a result of channel crossings (bridges or culverts), the relocation of existing features and the construction of drainage channel outfall structures. The total length of impacts along these jurisdictional channels is approximately 7,944 feet. These impacts will require approximately 15,505 cubic yards of fill and approximately 17,434 cubic yards of dredge material.

A total of 20.03 acres of non-isolated, jurisdictional wetlands will be impacted by approximately 10,841 cubic yards of clean fill material. A total of 15,852 cubic yards of dredge material will be excavated from these wetland areas. Filling and/or dredging of these areas is necessary in order to establish the proper elevations for the construction of the new alignment.

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.

Streams

Eleven individual streams to be impacted as a result of this project: North Creek; Zuber Cutoff; Sixmile Cutoff; Stevens Ditch; Maumee River; Dowe Ditch; Tiffin River; and four unnamed tributaries. All of the impacted jurisdictional streams eventually discharge into the Maumee (HUC 04100005) or Tiffin Rivers (HUC 04100006). Refer to Figures 27-44, located in Appendix A for the locations of these stream crossings. Table 4 contains a summary of individual stream impacts and Tables A, C and E in Appendix B provide further detail on impacts to jurisdictional streams.

Wetlands

Seventeen non-isolated, jurisdictional wetlands will be impacted as a result of this project (Table 5). Locations of impacts to wetlands are shown in Appendix A, Figures 1a-1h and 3-26. Details of these impacts are provided in Appendix B, Tables B and C. All of the non-isolated wetlands drain into tributaries that eventually drain into the Maumee River (Table 6).

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 3745-1-05(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.

Brandon Proctor
Signature of Applicant *MP*

6/10/05
Date

Michael Patten
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.

Attachment B

ATTACHMENT B

401 Permit Application for the Selected Alternative for US 24

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.

**Table 1
Location of Impacted Jurisdictional Streams**

Stream ID	Stream Name and Location	County	Township	Coordinates (Ohio State NAD 1983)	
				Easting	Northing
44	North Creek at Collins Rd.	Paulding	Harrison	1344836.12	552577.56
42	North Creek, East of Shafer Rd and West of SR-49	Paulding	Caryall	1351512.97	554297.55
41/OH-58b	North Creek at SR-49	Paulding	Caryall	1353410.63	554393.80
OH-58	North Creek, East of SR-49 and West of T-43	Paulding	Caryall	1354706.00	555347.42
OH-58a	North Creek at T-43	Paulding	Caryall	1355539.62	556039.61
OH-60	North Creek, South of C-176 and North of T-162	Paulding	Caryall	1357504.39	556219.62
35	North Creek, East of T-51 and West of T-61	Paulding	Caryall	1361207.79	557882.83
30/OH-64	Zuber Cutoff, South of Maumee & Western Railroad, West of T-69	Paulding	Crane	1367497.33	564322.87
32	North Creek at T-61	Paulding	Caryall/Crane	1366246.59	560172.07
28/OH-80	Six-Mile Cutoff, West of T-83 and East of C-87	Paulding	Crane	1378552.06	567825.34
25/OH-84	Six-Mile Cutoff at T-97	Paulding	Crane	1387569.85	569808.15
20	Six-Mile Creek, East of US-127 and South of T-208	Paulding	Emerald	1398144.89	568504.69
19	UNT*, Maumee River at C-115	Paulding	Emerald	1403873.12	578500.79
15/UNT W of Ashwood	UNT* at Whetstone Rd.	Defiance	Delaware	1425304.54	588227.19
13	Stevens Ditch, East of Ashwood Rd. and West of Krouse Rd.	Defiance	Delaware	1433172.04	587601.02
OH-37	Stevens Ditch, South of US 24 and North of Railroad	Defiance	Defiance	1440764.81	591771.30
Maumee River	US 24 at Maumee River	Defiance	Defiance	1444211.76	594031.34
OH-C UNT*	UNT*, North of US 24 and North of Maumee River	Defiance	Defiance	1445045.99	594851.59
OH-F UNT *	UNT*, North of US 24	Defiance	Defiance	1446957.34	596378.97
OH-39	Dowe Ditch, South US 24 and West of Tiffin River	Defiance	Defiance	1448341.39	597323.12
Tiffin River	Tiffin River at US 24	Defiance	Defiance	1450552.53	599285.11

*UNT: Unnamed Tributary

**Table 2
Location of Impacted Non-Isolated Wetlands**

Wetland ID	Location	County	Township	Coordinates (Ohio North AD 1983)	
				Easting	Northing
L-6	South of Maumee & Western Railroad, West of T-69	Paulding	Crane	1368168.68	564599.91
RC-10	South of Maumee & Western Railroad, East of C-115	Paulding	Emerald	1406497.75	577324.46
Wetland 8	North of C-232 and East of T-129	Paulding	Emerald	1412250.13	579051.87
RC-5	North of Maumee & Western Railroad, West of Whetstone Rd.	Paulding	Emerald	1423389.27	582830.22
W-4 (A)	North of Maumee & Western Railroad, South of County Line Rd., East of T-239	Paulding	Emerald	1421128.26	582329.28
W-4 (F)	North of Maumee & Western Railroad, south of County Line Rd., East of T-239	Paulding	Emerald	1422449.63	582731.20
W-4 (I)	North of Maumee & Western Railroad, south of County Line Rd., East of T-239	Paulding	Emerald	1423560.33	583166.26
OH-6	North of Defiance Paulding County Line Road and East of Whetstone	Defiance	Delaware	1425289.30	585109.41
RC-2	North of Maumee & Western Railroad, West of Krouse Rd.	Defiance	Defiance	1431957.92	585592.64
R-4	North of Maumee & Western Railroad, East of Ashwood Rd.	Defiance	Defiance	1432607.44	586234.66
RC-1	North of Maumee & Western Railroad, East of Krouse Rd.	Defiance	Defiance	1437830.16	587501.17
R-1 (A)	South of US 24/SR 424, East of Krouse Rd.	Defiance	Defiance	1438861.50	589414.74
R-1 (B)	South of US 24/SR 424, East of Krouse Rd.	Defiance	Defiance	1441591.35	591334.64
R-1 (C)	South of US 24/SR 424, East of Krouse Rd.	Defiance	Defiance	1441164.32	591377.14
R-1 (F)	South of US 24/SR 424, East of Krouse Rd.	Defiance	Defiance	1441588.60	591489.31
R-1 (G)	South of US 24/SR 424, East of Krouse Rd.	Defiance	Defiance	1442702.18	591721.35
S-4	North of US 24/SR 424	Defiance	Defiance	1441803.45	592774.63

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

8a. Activity: Describe the Overall Activity:

Highway Design: ODOT proposes to construct 26 miles of four-lane expressway on new alignment for US 24, from the Ohio/Indiana line to State Route 18, in Defiance, Ohio. The typical section for the Preferred Alternative includes the following:

1. four 12-foot wide travel lanes (two in each direction);
2. a 10-foot wide paved right side shoulder;
3. a 4-foot wide paved left side shoulder; and
4. a 60-foot wide grass median (Appendix A: Figure 2).

Overpasses will be constructed at two existing railroad crossings. Crossings over rivers, streams and crossroads will be constructed to the same width as the approach roadway, including pavement and shoulders. The existing bridges over the Maumee and Tiffin rivers, west of Defiance will be removed and replaced. The project will also include a number of intersection refinements, which are summarized in Table 3 below.

TABLE 3
Summary of Proposed Intersection Designs

Road	Proposed Intersection Design
State Line Road	Grade-separated crossing with State Line Road passing over Preferred Alternative
T-150	Closed
C-11	Grade-separated crossing with Preferred Alternative passing over C-11
C-21	At-grade intersection
T-29	Closed
C-33	Closed
State Route 49	Interchange
C-43	Grade-separated crossing with C-43 passing over Preferred Alternative
T-51	Closed to the north, connected to C-176 w/at-grade intersection to the south
C-176	Grade-separated crossing with C-176 passing over Preferred Alternative
C-180	Closed
T-61	Closed
T-69	Closed
T-83	At-grade intersection
C-206	Relocated to at-grade intersection with C-87
C-87	At-grade intersection
C-105/T-105	Grade-separated crossing with Preferred Alternative passing over C-105/T-105
C-216	Closed
US 127	Interchange
C-224	Closed
C-115	At-grade intersection
C-123	Closed
C-232	At-grade intersection
T-129	At-grade intersection with C-232
C-133	At-grade intersection
T-139	Closed
C-143 (Whetstone Road)	At-grade intersection
Powers Road (C-29)	Closed to the west, connect to C-143 w/at-grade intersection to east
Ashwood Road (T-144)	Closed
Krouse Road (C-146)	Grade-separated crossing with Krouse Road passing under Preferred Alternative
SR 424/Existing US 24	Interchange
Switzer Rd./W. High St.	Grade-separated crossing with US 24 passing over Switzer Rd./W. High St.

The existing bridge over the Maumee River consists of a four-span, continuous welded haunched plate girder with reinforced concrete deck and substructure. Spans are 96.5 ft., 132 ft., 132 ft. and 96.5 ft. from center to center of bearings. This structure will be replaced with two four-span composite concrete beams with reinforced concrete decks, modified semi-integral abutments and drilled shaft foundations (Appendix A: Figures 45 and 46). The new spans will be 118 ft., 100 ft., 100 ft. and 118 ft from centerline of abutment bearings to centerline of piers. Each bridge deck will also contain six pairs of scuppers.

The existing bridge over the Tiffin River also consists of a continuous welded haunched plate girder with reinforced concrete deck and substructure. The bridge currently contains four spans of 87.5 ft., 120 ft., 120 ft. and 87.5 ft from center to center of bearings. This structure will be replaced by two, four-span composite pre-stressed concrete beams with reinforced concrete deck, modified semi-integral abutments and drilled shaft foundations (Appendix A: Figure 47). Spans will be 120 ft., 100 ft., 100 ft. and 120 ft. from centerline of abutment bearings to centerline of piers. Each bridge deck will contain six pairs of scuppers.

Nature of Activity by Impacted Features: The majority of this major transportation project will occur through areas that are primarily rural in nature, consisting of farmland, woodlots, old fields

and wetlands. In Ohio, the proposed Minimal Degradation Alternative will impact 11 jurisdictional streams at 20 locations, as well as 30 wetlands, which include 17 non-isolated wetlands and 13 isolated wetlands. Cumulatively US 24 design will impact a total of 7,944 feet of jurisdictional stream channel and 20.03 acres of non-isolated jurisdictional wetlands. Of the 7,944 feet of total jurisdictional stream impacts, 2,419 feet will occur in Paulding County and 5,525 feet will occur in Defiance County.

The proposed US 24 design will impact a total of 20.03 acres of non-isolated wetlands. Non-isolated wetland impacts include 3.11 acres of Category 3 wetlands, 16.83 acres of Category 2 wetlands and 0.09-acre of Category 1 wetlands. Impacts to isolated wetlands will be permitted under a separate Ohio EPA Level 2 Isolated Permit Application.

Tables 4 and 5 contain summaries of all stream and non-isolated wetlands that will be impacted by this project.

See Appendix A, Figures 3-44 and Appendix B: Tables A through F, for detailed descriptions of the proposed actions to these features.

Table 4
Impacts to Jurisdictional Streams

Stream ID	Name	Length of Impact (ft)	Drainage Volume (Cubic Feet)	Fill Volume (Cubic Yards)
44	North Creek	25	63	No Impact
42	North Creek	25	44	No Impact
41	North Creek	209	681	694
OH-58	North Creek	659	3,021	3,055
OH-58a	North Creek	250	881	932
60	North Creek	414	1,417	1,642
35	North Creek	25	74	No Impact
30/ OH-64	Zuber Cutoff	323	2,817	939
32	North Creek	149	939	2,855
28/ OH-80	Sixmile Cutoff	20	30	No Impact
25/ OH-84	Sixmile Cutoff	295	2,875	3,276
19	Unnamed Tributary	25	2	No Impact
15	UNT* W of Ashwood	998	856	93
13	Stevens Ditch	25	3	No Impact
OH-37	Stevens Ditch	3,542	3,731	412
Maumee River	Maumee River	225	No Impact	780
OH-C	Unnamed Tributary	130	No Impact	102
OH-F	Unnamed Tributary	165	No Impact	36
OH-39	Dowe Ditch	215	No Impact	212
Tiffin River	Tiffin River	225	No Impact	477
Total Impacts		7,944	17,434	15,505

*UNT: Unnamed Tributary

Table 5
Area of Wetland Impact and Fill Volumes to Non-Isolated Wetlands

Wetland ID	ORAM Score	ORAM Category	Wetland Type	Impacted Area (Acres)	Fill Volume (Cubic Yards)	Drain Volume (Cubic Yards)
L-6	41	Modified 2	Forested	0.29	1,568	1,568
RC-10	37.5	Modified 2	Non-Forested	0.40	234	38
Wetland 8	48.5	2	Forested	0.34	392	7
W-4 (A)	55.5	2	Forested	0.47	459	191
W-4 (F)	55.5	2	Non-Forested	0.15	136	85
W-4 (I)	55.5	2	Non-Forested	7.00	4,771	4,652
OH-6	55.5	2	Forested	0.52	No Impact	401
RC-5	55.5	2	Non-Forested	0.90	12	18
RC-2	46	2	Non-Forested	0.13	No Impact	7
R-4	46	2	Forested	5.90	No Impact	7,633
RC-1*	73.5	3	Non-Forested	0.16	No Impact	No Impact
R-1 (A)	73.5	3	Forested	2.83	2,474	1,069
R-1 (B)	45	2	Forested	0.13	60	54
R-1 (C)	39.5	Modified 2	Forested	0.04	65	No Impact
R-1 (F)	14	1	Non-Forested	0.09	103	14
R-1 (G)	32	Modified 2	Non-Forested	0.56	558	79
S-4	73	3	Forested	0.12	9	36
Total Impacts				20.03	10,841	15,852

*Wetland RC-1 is located between the construction limits and the edge of right of way and will be indirectly impacted.

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

The segment of US 24 between the Ohio/Indiana line and Defiance, Ohio is a two-lane road that suffers from congestion and safety related issues as a result of inadequate capacity to accommodate current traffic demand. The facility does not meet current design criteria for travel lane widths, provision of shoulders, roadway curvature, sight distance and travel speed. These characteristics contribute to increasing travel time delays and a declining level of service along the roadway.

Deteriorating levels of service are due primarily to an increased volume of users, location and existing design. Much of US 24 in the study area is a two-lane rural, winding arterial roadway as it follows the Maumee River. Frequent driveway cuts or access points for local residences, businesses and other local roadway crossings are common. In some areas, development is directly adjacent to the roadway.

The roadway has narrow, often discontinuous shoulders and numerous no-passing zones. The frequency of no-passing zones severely limits the flow of traffic and the capacity of the roadway. Approximately 45 percent of the overall traffic on US 24 consist of trucks and along some roadway segments, truck traffic is more than half of the total traffic. This high volume of trucks often results in platoons of three or more trucks, making passing difficult and dangerous.

US 24 is identified as a macro corridor in the *Access Ohio* plan. Its importance was also nationally recognized when US 24 was identified as one of the 21 High Priority Corridors as part of the National Highway System in the Intermodal Surface Transportation Efficiency Act of 1991.

ODOT and INDOT, in cooperation with FHWA, are proposing to improve the operational characteristics of US 24 for both local and through traffic from New Haven, Indiana to Defiance, Ohio through a major transportation project. The purpose of this project is to:

- Improve traffic flow and level of service.
- Reduce travel times between project termini.
- Improve roadway safety.
- Enhance the regional transportation network.
- Accommodate future economic growth in the region to enhance the competitiveness of local and regional businesses.

The purpose of this major transportation project is to address traffic congestion and safety related issues through the development of an alternative route for US 24.

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.**

**Table 6
Hydrologic Connection for Jurisdictional Wetlands**

Wetland ID	Receiving Stream	Flow Direction	Approximate Distance to Receiving Stream (feet)
L-6	UNT* Maumee River	N/NE	1,050
RC-10	UNT* Maumee River	N	1,800
Wetland 8	UNT* Maumee River	N	6,150
W-4 (A)	UNT* West of Ashwood	NE	4,500
W-4 (F)	UNT* West of Ashwood	N	2,700
W-4 (I)	UNT* West of Ashwood	N/NE	5,250
OH-6	UNT* West of Ashwood	N	1,200
RC-5	UNT* West of Ashwood	N/NE	5,250
RC-2	Stevens Ditch	NE	3,000
R-4	Stevens Ditch	N	900
RC-1	Stevens Ditch	N	3,150
R-1 (A)	Stevens Ditch	N	0
R-1 (B)	Stevens Ditch	N	3,000
R-1 (C)	Stevens Ditch	N	2250
R-1 (F)	Stevens Ditch	N	2,700
R-1 (G)	Stevens Ditch	N	900
S-4	Stevens Ditch	N	0

*UNT: Unnamed Tributary

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))

Preferred Alternative:

In Ohio, the Preferred Alternative for this project consists of approximately 26 miles of four-lane expressway along a new alignment from the Ohio/Indiana State Line to State Route 18 (SR 18), in Defiance, Ohio (Appendix A, Figures 1A - 1H). The typical section for the Preferred Alternative includes the following:

1. four 12-foot wide travel lanes (two in each direction);
2. a 10-foot wide paved right side shoulder;
3. a 4-foot wide paved left side shoulder; and
4. a 60-foot wide grass median (Appendix A, Figure 2)

The Preferred Alternative, identified as the Selected Alternative in the Final EIS, was selected in 2003 after 26 Feasible Alternatives were evaluated and refined using a multi-step screening process. A brief history of the selection of the Preferred Alternative is presented below.

As part of the Concurrence Point #2 of ODOT's nine-step Preliminary Development Process, a meeting was held on March 8, 2001 with representatives of USEPA, Ohio EPA, FHWA and ODOT to discuss recommendations for a Preferred Alternative. USEPA comments on the US 24 New Haven to Defiance Preliminary Draft Environmental Impact Statement (PDEIS) were focused only on wetland impacts. Ohio EPA expressed concern about impacts to Category 3 wetlands and streams. Both agencies recommended Alternative C as the Preferred Alternative. This alternative is depicted in Figures 1A-1H, Appendix A. In general, the resource agencies that provided comments on the PDEIS indicated a preference for alternatives that minimized impacts to wetlands, streams, farmlands, wildlife habitat, woodlands and the Maumee River.

In April, 2001 ODOT recommended Alternative C as the Preferred Alternative (described above). This decision was based on the analysis of the environmental impacts associated with the Feasible Alternatives, agencies' reviews of the PDEIS and public input. The selection of the Preferred Alternative was the focus of public meetings held on May 1, 2 and 3, 2001. At that time citizens and local officials requested that Alternative D be re-considered as the Preferred Alternative (Figures 1A-1H, Appendix A). Alternative D follows the same route as Alternative C, from the intersection with I-469 in Indiana to Defiance County, Ohio. In Defiance County, Alternative C follows Segments 14 and 19, while alternative D follows Segments 15 and 18.

Alternative D was then presented to the U.S. Army Corps of Engineers (USACE) and Ohio EPA during a field review on May 10, 2001. During this agency field review, Ohio EPA and the U.S. Army Corps of Engineers agreed that Alternative C not be selected as the Preferred Alternative, due to severe impacts that would occur to Wetland S-4, a forested, Category 3 wetland located adjacent to the Maumee River. However, both agencies suggested modifying Alternative D from Krouse Road to the existing intersection of US 24/SR 424, in order to minimize impacts to Wetland R-1. In response to the agencies' request, ODOT developed Alternative D-1 as the Preferred Alternative for this project. This reduced impacts to Category 3 wetlands from 12.8 to 11.6 acres.

The Preferred Alternative (Alternative D-1) follows the same route as Alternative D from the Ohio/Indiana State Line to Krouse Road in Defiance County, Ohio (Appendix A, Figures 1A - 1H). At Krouse Road, the Preferred Alternative follows a more curved path through Wetland R-1 to the junction of US 24 and SR 424. From this point the Preferred Alternative follows the existing alignment of US 24 to the SR 15/18 intersection.

In Paulding and Defiance counties, the Preferred Alternative will impact 23.03 acres of non-isolated wetlands. More specifically, impacts to non-isolated wetlands for the Preferred Alternative include:

- 3.31 acres of Category 3 forested wetlands
- 0.15-acre of Category 3 non-forested wetlands
- 10.10 acres of Category 2 forested wetlands
- 9.33 acres of Category 2 non-forested wetlands
- 0.01-acre of Category 1 forested wetlands.
- 0.13-acre of Category 1 non-forested wetlands.

Tables 7 and 8 provide a comparison of non-isolated wetland and jurisdictional stream impacts between the Preferred Alternative and the Minimal Degradation Alternative.

Minimal Degradation Alternative

In an effort to further minimize impacts to wetlands and jurisdictional streams, ODOT revised the design of Alternative D-1. For example, by changing the design of the roadway in Paulding County, impacts to Wetlands L-9 (A), L-9 (B), 9, 9a and 10 were eliminated. These design modifications resulted in a reduction of 3.0 acres of jurisdictional wetland impact. All changes to non-isolated wetland impacts are summarized in Table 7. Stream impacts were also reduced, from 9,904 feet to 7,944 feet (Table 8).

**Table 7
Refinement of Jurisdictional Wetland Impacts**

Wetland ID	Provisional ORA/MC Category	Preferred Alternative	Minimal Degradation Alternative
L-9 (A)	1	0.01	No Impact
L-9 (B)	1	0.04	No Impact
L-6	Mod 2	0.29	0.29
RC-14 (B)	Mod 2	0.04	No Impact
Wetland 10	2	0.84	No Impact
Wetland 9	3	0.29	No Impact
Wetland 9a	3	0.13	No Impact
RC-10	Mod 2	0.47	0.40
Wetland 8	2	0.34	0.34
W-4 (A)	2	0.51	0.47
W-4 (F)	2	0.22	0.15
W-4 (I)	2	7.43	7.00
OH-6	2	1.07	0.52
RC-5	2	0.57	0.90
RC-2	2	0.03	0.13
R-4	2	6.86	5.90
RC-1	3	0.15	0.16
R-1 (A)	3	2.78	2.83
R-1 (B)	2	0.14	0.13
R-1 (C)	Mod 2	0.05	0.04
R-1 (F)	1	0.09	0.09
R-1 (G)	Mod 2	0.57	0.56
S-4	3	0.11	0.12
Total Impacts		23.03	20.03

**Table 8
Refinement of Stream Impacts**

Site/Feature	Preferred Alternative	Minimal Degradation Alternative
45 Maumee & Erie Canal	1,195	No Impact
44 North Creek	25	25
42 North Creek	25	25
41/58b North Creek	209	209
OH-58 North Creek	659	659
OH-58a North Creek	250	250
60 North Creek	414	414
35 North Creek	25	25
30/OH-64 Zuber Cutoff	323	323
32 North Creek	125	149
28/OH-80 Sixmile Cutoff	20	20
25/OH-84 Sixmile Cutoff	295	295
20 Sixmile Creek	25	No Impact
19 UNT*	25	25
18 UNT*	25	No Impact
15 UNT* W of Ashwood	2020	998
13 Steven's Ditch	25	25
OH-37 Steven's Ditch	3073	3542
Maumee River	225	225
OH-A UNT*	30	No Impact
OH-C UNT*	163	130
OH-E UNT*	125	No Impact
OH-F UNT*	165	165
OH-39 Dowe Ditch	213	215
Tiffin River	225	225
Total Impacts (ft)	9,904	7,944

*Preferred Alternative Impacts area estimated from preliminary roadway right-of-way designs, prior to design modifications for access roads and drainageways

Streams/Ditches:

Eleven jurisdictional streams, including the Maumee and Tiffin Rivers, will be impacted as a result of the Minimal Degradation Alternative, resulting in a total of 7,944 feet of impact. Impacts will consist of approximately 15,505 cubic yards of clean fill and approximately 17,434 cubic yards of dredged material. Tables 1 and 4 contain summaries of these jurisdictional stream impacts and Tables A and C in Appendix B contain quantified details of the proposed impacts to these streams.

Wetlands:

In Paulding and Defiance counties, the Minimal Degradation Alternative will impact 30 wetlands. These 30 wetlands occupy a total area of approximately 226 acres, of which only 22.05 acres will be impacted by the Minimal Degradation Alternative. Of the 30 impacted delineated wetlands, 17 are non-isolated and 13 are isolated. Non-isolated wetlands have a total impact of 20.03 acres. More specifically, impacts to non-isolated wetlands include:

- 2.95 acres of Category 3 forested wetlands (0.36 acre reduction*)

- 0.16-acre of Category 3 non-forested wetlands (0.01 acre increase)
 - 7.69 acres of Category 2 forested wetlands (2.41 acre reduction)
 - 9.14 acres of Category 2 non-forested wetlands (0.19 acre reduction)
 - 0.09-acre of Category 1 non-forested wetlands. (0.04 acre reduction)
- * as compared to Preferred Alternative

Impacts to jurisdictional wetlands are summarized in Tables B and C in Appendix B. Authorization to impact the 2.02 acres of isolated wetlands will be sought under a separate Ohio EPA Level 2 Isolated Wetland Permit Application.

The encroachments on individual non-isolated wetlands vary from 0.04-acre to 7.00 acres. A number of wetlands that will be impacted by the Minimal Degradation Alternative are railroad swales located adjacent to the Maumee and Western Railroad. These are Wetlands RC-1, RC-2, RC-5 and RC-10. Of the 20.03 acres of non-isolated wetland impacts in Paulding and Defiance Counties, Ohio, approximately 1.59 acres are associated with these railroad swales.

Overpasses will be constructed at the two existing railroad crossings along the Preferred Alternative. Bridges over rivers, streams and crossroads will be constructed to the same width as the approach roadway, including pavement and shoulders. The project will also include a number of intersection refinements, which were summarized in Table 3.

The existing bridges over the Maumee and Tiffin Rivers west of Defiance will be removed and replaced. The existing bridge over the Maumee River consists of a four-span, continuous welded haunched plate girder with reinforced concrete deck and substructure. Spans are 96.5 ft., 132 ft., 132 ft. and 96.5 ft. from center to center of bearings. This structure will be replaced with two four-span composite concrete beams with reinforced concrete decks, modified semi-integral abutments and drilled shaft foundations (Appendix A, Figures 45-46). Each bridge deck will also contain six pairs of scuppers. Span lengths will be 118 feet, 100 feet, 100 feet and 118 feet from centerline of abutment bearings to centerline of the piers.

The Tiffin River Bridge also consists of a continuous welded haunched plate girder with reinforced concrete deck and substructure. The bridge currently contains four spans of 87.5 ft., 120 ft., 120 ft. and 87.5 ft from center to center of bearings. This structure will be replaced by two, four-span composite pre-stressed concrete beams with reinforced concrete deck, modified semi-integral abutments and drilled shaft foundations (Appendix A: Figure 47). Spans will be 120 ft., 100 ft., 100 ft. and 120 ft. from centerline of abutment bearings to centerline of piers. Each bridge deck will contain six pairs of scuppers

The typical section for the Minimal Degradation Alternative is similar to the typical section of the Preferred Alternative and includes the following design elements

- four 12-foot wide travel lanes (two in each direction);
- a 10-foot wide paved right side shoulder;
- a 4-foot wide paved left side shoulder; and
- a 60-foot wide grass median (Appendix A: Figure 2).

Additional features of the Minimal Degradation Alternative are summarized below:

- The total length of the Minimal Degradation Alternative is 26 miles
- The Minimal Degradation Alternative utilizes existing transportation corridors for approximately 43 percent of its total length
- The Minimal Degradation Alternative impacts 20.03 acres of non-isolated jurisdictional wetlands
- The Minimal Degradation Alternative has a total of 20 stream impacts, along 11 streams, impacting a total of 7,944 feet of jurisdictional streams
- The Minimal Degradation Alternative impacts 80.0 acres of floodplain
- The Minimal Degradation Alternative impacts 198.8 acres of forested area and 25 woodlots.

Table 3 contains a summary of proposed intersection treatments for the Minimal Degradation Alternative.

Four service roads are also proposed for the Minimal Degradation Alternative in Paulding County. These will provide access to 77 acres of land that would otherwise be landlocked by this alternative. In Defiance County, two service roads will be constructed to provide access to 62 acres.

The existing interchange at SR 15/18 and US 24 in Defiance County will also be upgraded as part of the Minimal Degradation Alternative. The improvements involve lowering the profile of the US 24 mainline to increase the bridge clearance, adding turn lanes on exit ramps and widening SR 15/18 to include a third lane in the vicinity of the interchange.

In response to public comments a connector road will be constructed to link W. High Street with SR 15/18. Construction of the Minimal Degradation Alternative will eliminate access to US 24 at W. High Street/Switzer Road. The connector road will provide an alternate route for traffic going to and from US 24 via SR 15/18 without traveling through the Harding Street residential area.

Non-degradation Alternative:

The No-build alternative represents the Non-degradation alternative for this project. This alternative is not practicable to avoid impacts to jurisdictional wetlands and streams because it does not meet the Purpose and Need for the project. Additionally the No-build alternative does not correct any of the existing safety hazards associated with the existing US 24. Furthermore, the Non-degradation alternative would continue to jeopardize the safety of the motoring public along US 24.

- 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)**

Preferred Alternative:

Throughout the development of the Preferred and Minimal Degradation Alternatives, impacts to wetlands and aquatic resources were avoided and/or minimized to the greatest extent possible. Functional and value assessments were completed for all of the wetlands and aquatic resources as part of the ODOT Nine Step Transportation Development Process. These assessments of functions and values utilized methods developed by the Ohio EPA and included the Qualitative Habitat Evaluation Index (QHEI) and Primary Headwater Habitat Evaluation Index (HHI) for streams and the Ohio Rapid Assessment Method for wetlands (ORAM, version 5.0).

Biologists from The Mannik & Smith Group, Inc. identified and characterized these ecological features, which have been described in:

- *US 24: Ecological Survey for Defiance and Paulding Counties, Ohio* (3 Volumes) (December 2000)
- *US 24: Wetlands Delineation Study-Addendum to the Ecological Survey for Allen County, Indiana and Defiance and Paulding Counties, Ohio* (June 2003).

Stream/Ditches:

Impacts to aquatic life will include burying of aquatic organisms and increased siltation during construction. Overall, impacts are expected to be relatively minor and localized. The project has been designed such that downstream impacts should not occur. Impacts from erosion and siltation will be minimized through the use of Best Management Practices (BMPs) for sediment and erosion control. Stream flows and sediment transport capabilities should not be adversely affected by the project. The footprint of the Preferred Alternative includes areas upstream and downstream of culverts where energy and erosion control components are required to achieve pre-construction velocities, water surface elevations and channel stability conditions.

The contractor will be responsible for the development of a sediment and erosion control plan, which will be approved prior to any instream construction. This plan will include such measures as framed and entrenched sediment fencing and adequately sized rock check dams. All denuded areas, including ditches, culverts, outfall structures and river/stream banks will be permanently seeded and mulched upon completion. The contractor is also responsible for the design and construction of the in-stream work pads in both the Maumee and Tiffin Rivers. Work pads will be constructed to minimize sedimentation downstream of the construction site and will be constructed in the streambeds during the low flow period (August 1 through October 31). Work pads will be constructed with culverts large enough so as not to impede the normal flow of the river, and will be designed and constructed to allow for the 5-foot diameter direct drill shafts to be excavated directly through the work pad, which will prevent sedimentation downstream. Work pads will also be removed from the streams during the low flow period upon completion of the in-stream work. A detail of the work pad is provided in Appendix A, Figure 48.

Impacts to jurisdictional stream channels and wetlands will be mitigated to offset any lowering of water quality as a result of this project. A three-part mitigation approach is

being proposed to offset any lowering of water quality as a result of the proposed impacts to these natural resources. The proposed mitigation consists of both on-site and off-site mitigation strategies to compensate for the impacts to jurisdictional channels and non-isolated wetlands impacted as a result of this project.

As part of on-site mitigation ODOT proposes to purchase and preserve approximately 133-acres of mature forest that consists of approximately 66-acres of Category 3 Wetlands and approximately 72- acres of mature forested upland at the Plummer Property mitigation site. This mitigation site also includes the creation of approximately 26-acres of mitigation wetland and the construction of approximately 2,025 feet of two-stage natural channel design at the site. This constructed two-stage natural channel is designed to replace aquatic habitat lost as a result of this project. A summary of the mitigation plan for impacts to jurisdictional streams and wetlands is located in section 10k of this permit application. The detailed wetland and stream mitigation plan is provided in Appendix C.

Under the Preferred Degradation Alternative, the proposed stream channel mitigation has been designed and will be constructed with channel modifications designed to enhance in-stream habitat for the establishment of aquatic life. Some of these habitat features designed into the relocated channels include the addition of alternating pools, riffles and eddies, and the use of a two stage natural channel design in areas where appropriate. The second part of the stream mitigation is to place conservation easements on Stevens Ditch and its unnamed tributaries that are located in the Plummer Property. Thirdly, remaining stream mitigation requirements will be facilitated through the placement/purchase of conservation easements on streams within the surrounding area. ODOT is currently in preliminary negotiations with willing sellers to secure these easements to cover the remaining balance of stream mitigation requirements.

Threatened/Endangered Species:

The USFWS identified six federally listed species that have ranges that overlap the study area in Paulding and Defiance Counties (Table 9). These listed species include two federally endangered species, two federally threatened species and two federal candidate species. The two federally endangered species include the Indiana bat (*Myotis sodalis*) and the clubshell mussel (*Pleurobema clava*). The two federally threatened species identified within the study area included the copperbelly watersnake (*Nerodia erythrogaster neglecta*) and the bald eagle (*Haliaeetus leucocephalus*). The two federal candidate species identified included the eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*) and the rayed bean mussel (*Villosa fabalis*).

**Table 9
Federally Listed Species within the Project Area**

Species		Federal Status	County
Common Name	Scientific Name		
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened	Defiance
Clubshell Mussel	<i>Pleurobema clava</i>	Endangered	Defiance
Copperbelly Water Snake	<i>Nerodia erythrogaster neglecta</i>	Threatened	Defiance
Eastern Massasauga Rattlesnake	<i>Sistrurus catenatus catenatus</i>	Candidate	Defiance & Paulding
Indiana Bat	<i>Myotis sodalis</i>	Endangered	Defiance & Paulding
Rayed Bean Mussel	<i>Villosa fabalis</i>	Candidate	Defiance

A search of the Ohio Natural Heritage Inventory database revealed the presence of eight records for state listed species (Table 10).

Table 10
State Listed Species within the Project Area

Species		County	State Listing
Common Name	Scientific Name		
Deertoe Mussel	<i>Truncilla truncata</i>	Paulding	Special Interest
Four-toed Salamander	<i>Hemidactylium scutatum</i>	Paulding	Special Interest
Grove Sandwort	<i>Arenaria lateriflora</i>	Paulding	Potentially Threatened
Kirtland's Snake	<i>Clonophis kirtlandii</i>	Paulding	Threatened
Pale Carrion Flower	<i>Smilax lasioneura</i>	Paulding	Potentially Threatened
Prairie Ironweed	<i>Vernonia fasciculata</i>	Defiance	Potentially Threatened
Purple Wartyback	<i>Cyclonias tuberculata</i>	Defiance	Special Interest
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Defiance	Special Interest

Endangered and threatened species surveys were conducted during the stream, wetland and terrestrial surveys. Special interest was given to those areas identified as containing suitable habitat for those species identified during the initial query of state and federal agencies.

Surveys conducted for the copperbelly water snake and the eastern massasauga rattlesnake failed to identify the presence of either of the species within the Preferred Alternative. Sub-fossil shells of the federally endangered clubshell mussel were found in both the Tiffin and Maumee River Bridge crossings. Additionally, sub-fossil shells of the northern riffleshell were found at the Tiffin River site. Two state special interest mussels, the deertoe and purple wartyback, were found alive at both the Maumee and Tiffin Rivers. In order to minimize impacts to mussel populations, the existing bridge structures will be replaced at their existing locations. Prior to construction of each bridge crossing, existing populations of mussels will be removed and relocated upstream of the project site.

According to a letter, dated February 2, 1999, from the United States Fish and Wildlife Service the Indiana myotis (*Myotis sodalis*) may be found in both Paulding and Defiance Counties. In response to this concern, ODOT performed a habitat analysis and literature review for the Indiana myotis within vicinity of the Preferred Alternative. The literature review determined that the most recent capture of an Indiana myotis within the study area occurred in Paulding County in 1976, within 30 miles of Defiance, Ohio.

The habitat analysis focused on the quantity and quality of Indiana bat habitat available within 2.5 miles of the centerline of the Minimal Degradation Alternative. Closed canopy deciduous forest provides the most potential for suitable Indiana bat maternity roosting, while open deciduous forest provides the best foraging habitat for the species. The habitat analysis determined that only 10.8 percent of the action area is forested. Impacts to the Indiana bat from the Minimal Degradation Alternative were based on loss or adverse modification of forest habitat potentially used for roosting and foraging. The results of the habitat analysis and literature review are currently being coordinated with the USFWS through the formal Biological Assessment (BA) process. Currently, the BA is undergoing revisions based on USFWS comments. A copy of the final BA/BO will be provided to the agencies upon approval from the USFWS.

Both the USFWS and the Ohio Division of Wildlife have determined, that the proposed impacts to streams and wetlands will not adversely effect the copperbelly water snake or the eastern massasauga rattlesnake, because neither of these species is believed to exist with the Preferred Alternative.

Minimal Degradation Alternative:

The types of impacts associated with the Minimal Degradation Alternative are the same as the Preferred Alternative.

Non-degradation Alternative:

Because the Non-degradation Alternative is a No-build Alternative, it will have no water-quality impacts related to construction activities.

- 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)**

Preferred Alternative:

The Preferred Alternative is available, cost effective and technically feasible. The construction techniques and associated BMP's that would be used to construct the Preferred Alternative have been accomplished on numerous occasions on other ODOT projects. The techniques and methods used to construct bridges, culverts and embankments have proven to be both reliable and cost effective. Therefore, there are no foreseeable operational or maintenance difficulties that would have a detrimental impact on water quality. Any possible impacts to water quality during the construction phase of this alternative would be minimized through the use of BMP's.

The estimated total cost to construct the Preferred Alternative in both Ohio and Indiana is \$243,440,000 (FEIS, 2004).

Minimal Degradation Alternative:

The Minimal Degradation Alternative is also technically feasible, cost effective and available.

As with the Preferred Alternative there are no foreseeable operational or maintenance difficulties anticipated that would have an adverse impact on water quality. The construction techniques and associated BMP's which would be used to construct the Minimal Degradation Alternative have been accomplished on numerous occasions with other ODOT projects. The techniques and methods used to construct bridges, culverts and embankments have proven to be both reliable and cost effective. Adverse impacts to water quality during the construction phase of the Minimal Degradation Alternative will be minimized through the use of BMP's throughout the construction process. Table 11 provides a summary of the construction costs associated with the Minimal Degradation Alternative.

**Table 11
Project Cost Summary**

Category	Estimated Cost Sub-Total
Roadway	\$46,370,335
Erosion Controls (BMPs)	\$4,589,926
Drainage	\$11,674,826
Pavement	\$45,121,103
Traffic Control	\$1,248,288
Structure DEF-24-0981 L & R	\$4,417,000
Structure DEF-24-0827 L & R	\$4,800,000
Structure DEF-24-0306 L & R	\$4,121,260
Structure PAU-24-0168 L & R	\$1,007,204
Structure PAU-24-1268 L & R	\$1,480,798
Structure PAU-24-1348 L & R	\$973,808
Structure DEF-24-0981 L & R	\$4,417,000
Structure DEF-24-0827 L & R	\$4,800,000
Maintenance of Traffic	\$3,695,180
Contingency	10%
Total Estimated Cost	\$140,440,000

The Minimal Degradation Alternative costs a total of \$269,960,800 for both Indiana and Ohio. The total estimated construction cost for the Minimal Degradation Alternative in Ohio is \$160,695,500. This includes \$140,440,000 for construction and \$20,255,500 for right-of-way acquisition.

Non-degradation Alternative:

There are no construction costs associated with this alternative.

- 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))**

The proposed project does not involve sewage collection or treatment facilities.

- 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))**

All three Alternatives considered for the relocation of US 24 are located within the Maumee (HUC 04100005) and Tiffin River (HUC 04100006) Watersheds.

On January 30, 2004, ODOT sent letters to fifty-one county and state offices, area conservation groups, park districts and conservancy groups requesting information regarding any conservation projects that these parties may have scheduled for the Upper

Maumee and Tiffin River Watersheds. The various agencies and groups are listed in Appendix D.

ODOT received seven responses from the following agencies/groups:

- Black Swamp Conservancy (written response)
- Black Swamp Chapter of the Audubon Society (written response)
- Defiance Soil and Water Conservation District (written response)
- Maumee Watershed Conservancy District (written response)
- Metropolitan Park District of the Toledo Area (written response)
- Defiance County Engineer (telephone response)
- Antwerp Conservation Club (telephone response)

These responses are summarized in Table 12.

TABLE 12
Summary of Agency and Group Responses

AGENCY/ ORGANIZATION	Contact	CONSERVATION PROJECT TYPE/GOALS	PROJECT LOCATION(S)	WATERSHED	DISTANCE FROM PROJECT SITE
Black Swamp Conservancy	Attn: Executive Director 115 W. Front Street Perrysburg, OH 43551 (419) 872-5263 bsc@wcnnet.org	<ul style="list-style-type: none"> • Purchase and protect 4,500 linear feet of Marie DeLarne Creek • Potential to protect a total of 28,000 linear feet of stream channel • Purchase and Protect 31 acres of existing Category 2 and 3 wetlands • Restore 11 acres of wetlands within the Marie DeLarne watershed 	Forrest/Harper Tract, 157 acres, Section 8, Crane Township, Paulding County, OH, Maumee River Watershed	Maumee River	Approximately 1 mile north of the Preferred Alternative
Audubon Society, Black Swamp Chapter	Attn: Mr. Don Kyle P.O. Box 7086 Defiance, OH 43512 (419) 599-5316 don.kyle@pioneer.com	<ul style="list-style-type: none"> • Install native wetlands plants in 5 acres of recently created wetlands • Improve grassland, meadow and agricultural ground by planting native species that will provide critical wildlife habitat, including 7 acres of native wildflowers, 20 acres of native prairie grasses, 8 acres of native pine and spruce species • No stream preservation or enhancement projects are currently planned for Maumee or Tiffin River watersheds. 	72 acres adjacent to Maumee River in northern 1/2 of Section 27, Carryall Township, Paulding County, OH	Maumee River	1 mile northwest of Preferred Alternative
Antwerp Conservation Club	Attn: Mr. Virgil Meyer 4037 Road 192 Antwerp, OH 45813 (419) 258-5692	No stream preservation or enhancement projects are currently planned for Maumee or Tiffin River watersheds.	NW 1/4 Section 12, Carryall Township, Paulding County, OH	Maumee River	3 miles northwest of Preferred Alternative

TABLE 12
Summary of Agency and Group Responses

AGENCY ORGANIZATION	Contact	CONSERVATION PROJECT TYPE/GOALS	PROJECT LOCATION(S)	WATERSHED	DISTANCE FROM PROJECT SITE
Defiance Soil and Water Conservation District	Attn: Mr. James E. Harris, Jr. District Administrator 06879 Evansport Road, Suite C Defiance, OH 43512 (419) 782-8751 swcd@defiance-county.com	Hydrologic Study to preserve and improve flow conditions in Lick Creek. Currently the Joint Board is seeking funds (\$104,000) to complete a hydrologic study that will: <ul style="list-style-type: none"> • Establish existing conditions along Lick Creek and Little Lick Creek • Develop alternatives to improve drainage and reduce flooding along area streams 	Williams and Defiance Counties, OH	Tiffin River	Between 7 and 21 miles northwest of the Preferred Alternative
Defiance County Engineer	Attn: Mr. Gaylon Davis, P.E., P.S. County Courthouse Annex 500 Second Street Defiance, OH 43512 (419) 782 4751	Referred to the Hydrologic Study of Lick Creek, which is described above.	Williams and Defiance Counties, OH	Tiffin River	Between 7 and 21 miles northwest of the Preferred Alternative
Maumee Watershed Conservancy District	Attn: Mr. Clark Lynn Army District Manager 1464 Pinehurst Drive Defiance, OH 43512 (419) 782-8746	<ul style="list-style-type: none"> • Habitat restoration of St. Joseph River consisting of removal of 3 logjams along six miles of stream channel in Defiance County and removal of 22 logjams along 42 miles of stream channel in Williams County. Reseeding of stream bank will also be completed where necessary. • No stream preservation or enhancement projects are planned for the Maumee or Tiffin River watersheds. 	St. Joseph River, Williams and Defiance Counties, OH	St. Joseph River	Between 15 and 30 miles north of the Preferred Alternative

TABLE 12
Summary of Agency and Group Responses

AGENCY/ ORGANIZATION	Contact	CONSERVATION PROJECT TYPE/GOALS	PROJECT LOCATION(S)	WATERSHED	DISTANCE FROM PROJECT SITE
Metropolitan Park District of the Toledo Area	Attn: Mr. John F. Jaeger Director of Natural Resources 5100 West Central Ave. Toledo, OH 43615-2100 (419) 535-3050 john.jaeger@metroparkstoledo.com	<ul style="list-style-type: none"> • Purchase of parcels along Bad and Dry Creeks in Henry County, OH • Lease or purchase of lands along Maumee River Canal Corridor, Henry County, OH • Purchase of Category 3 wetlands within the Oak Openings Corridor, Lucas County, OH • Purchase of floodplain lands along Swan Creek in Toledo and in headwaters of Swan Creek • Preservation of lands along Maumee State Scenic River Corridor in Lucas County, OH • Construction of trail from Secor Metropark to University/Parks Trail along west branch of Ten Mile Creek • Park Development within the Lower Maumee River Corridor • Possible trail construction from Swan Creek Metropark to downtown Toledo 	No specific areas identified to date	Maumee River	Between 25 and 50 miles from Preferred Alternative

- 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))

Preferred Alternative:

The costs for water pollution control after final design modifications to the Preferred Alternative would be similar to the costs associated with the Minimal Degradation Alternative (Table 10).

Minimal Degradation Alternative:

Soil and erosion control will be accomplished in accordance with ODOT's "Construction Materials and Specifications." Table 13 provides an estimate of the quantities and cost for sediment and erosion control associated with the Minimal Degradation Alternative.

**Table 13
Estimated Sediment and Erosion Control Costs**

Item	Quantity	Unit	Unit Cost	Total
Temporary Seeding and Mulching	2,255,556	SY	\$0.45	\$1,012,004
Temporary perimeter filter fabric fence	322,205	LF	\$1.58	\$507,789
Temporary ditch check filter fabric fence	10,255	LF	\$2.96	\$30,328
Temporary inlet protection filter fabric fence	14,245	LF	\$4.08	\$58,115
Temporary Slope Drains	1,480	LF	\$7.00	\$10,360
Temporary sediment basin and dams	38,924	CY	\$2.80	\$108,987
Temporary dikes	10,610	CY	\$1.50	\$15,915
Crushed aggregate slope protection	550	SY	\$15.00	\$8,250
Rock channel protection, Type B with filter	3,375	CY	\$32.00	\$108,000
Rock channel protection, Type C with filter	9,578	CY	\$32.00	\$306,496
Rock channel protection, Type C without filter	574	CY	\$30.00	\$17,220
Soil analysis test	36	Each	\$75.00	\$2,700
Placing topsoil	51,575	SY	\$8.50	\$438,388
Seeding and mulching	3,533,135	SY	\$0.74	\$2,618,758
Repair seeding and mulching	176,657	SY	\$0.33	\$59,166
Interseeding	97,008	SY	\$0.22	\$21,342
Commercial fertilizer	533	Ton	\$308.98	\$164,685
Lime	400	Acre	\$62.08	\$24,833
Water	15,368	Mgal	\$1.83	\$28,047
Mowing	11,086	Msf	\$2.19	\$24,236
Ditch erosion protection	64,344	SY	\$1.69	\$108,915
Slope erosion protection	1,917	SY	\$1.57	\$3,010
Total Cost				\$5,677,543

Non-degradation Alternative:

There are no water pollution control costs associated with the Non-degradation Alternative.

- 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)

Preferred Alternative:

Overall, impacts to human health are expected to be positive in nature as a result of the new alignment for US 24. These positive impacts will result from the improved safety for the motoring public. The Preferred Alternative will be designed, permitted and constructed in accordance with all federal, state and local regulations intended to protect human health and water quality. Furthermore, during the construction of the new highway alignment BMP's will be used to maximum extent possible to further minimize impacts to human health from any lowering of water quality.

Minimal Degradation Alternative:

Impacts to human health would be similar to the impacts associated with the preferred Alternative. As this alternative would require the same construction activities, impacts to human health related to water quality would be virtually the same.

Non-degradation Alternative:

The No-build alternative will have an adverse affect on human health due to accidents that will continue to occur on existing US 24. Water resources will not be adversely affected by this alternative.

- 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))

Preferred Alternative:

The area surrounding the Preferred Alternative is predominately rural in nature. Agriculture is the principal economic industry operating within the affected area in Paulding and Defiance Counties.

As designed, construction of the Preferred Alternative will cost approximately \$243 million (FEIS, 2004). A 1999 report entitled *Summary: Economic Impacts of Federal-Aid Highway Investment* summarizes the economic impacts of highway investment. This study indicates that for every \$1 billion in highway investment supports between 42,100 and 44,709 full-time equivalent jobs within the economy. Based upon the employment projection formulas found within the report approximately 10,249 employment opportunities will be created as a result of this project. This employment projection is based upon the following multipliers:

- Short-term on-site construction jobs: 7,900 jobs per billion dollars invested in construction (exclusive of right-of-way costs)
- Short term off-site construction jobs: 19,700 jobs per billion dollars in invested in construction (exclusive of right-of-way costs)
- Short-term construction induced jobs: 14,500 jobs per billion dollars invested in construction (exclusive of right-of-way costs).

These jobs include 1,923 "direct" construction employment opportunities, 4,796 "indirect" employment opportunities, which include jobs that are created at those companies providing equipment and materials for construction 3,530 "induced" employment opportunities, which include those jobs, created as a result of on-site and off-site employees spending their earnings within the surrounding economy. In all, it is anticipated that as many as 10,249 construction-related jobs will be created by the Preferred Alternative.

These new employment opportunities will also provide an increase in state and local tax revenues.

The economy of Paulding County generates various tax revenues, including:

- 6 percent State Sales Tax (exceptions are groceries).
- 1.5 percent County Sales Tax (exceptions are groceries)
- 0.743 – 7.5 percent State Income Tax (variable rate based on income)
- County Property Tax (37.732 mills per \$1000 of assessed valuation for residential and agricultural and 41.289 mills per \$1000 of assessed valuation for commercial and industrial).
- Local Property Taxes- various rates for affected municipalities and school districts

The economy of Defiance County generates various tax revenues, including:

- 6 percent State Sales Tax (exceptions are groceries).
- 1.5 percent County Sales Tax (exceptions are groceries)
- 1.3 percent Residential Income Tax (City of Defiance)
- 1.3 percent Corporate Income Tax (City of Defiance)
- 0.743 – 7.5 percent State Income Tax (variable rate based on income)
- County Property Tax (37.732 mills per \$1000 of assessed valuation for residential and agricultural and 41.289 mills per \$1000 of assessed valuation for commercial and industrial).
- 0.4 percent County Economic Development Income Tax

There are thirteen local industrial facilities that will be affected as a result of this project. These facilities and the type of impact are summarized in Table 14.

Table 14
Summary of Impacts to Industrial Facilities

Industrial Facility	County	Location	Impact	Comment
Antwerp Tool and Die	Paulding	Village of Antwerp	Decreased Access	Freight Generator
K & L Tools	Paulding	Village of Antwerp	Decreased Access	
Steve Reiff, Inc.	Paulding	Village of Antwerp	Decreased Access	
Dana Boston Weatherhead	Paulding	Village of Antwerp	Decreased Access	Major Traffic Generator, Freight Generator, Largest Employer in Paulding County
Spec-Temp, Inc.	Paulding	Village of Antwerp	Decreased Access	Major Traffic Generator, Freight Generator, Major Employer in Paulding County
Quarry	Paulding	Crane Township	Improved Access	Freight Generator
Cement Plant	Paulding	Crane Township	Improved Access	Freight Generator
Defiance Woodworking Machine	Defiance	City of Defiance	Improved Access and Visibility from US 24	
Koester Corporation	Defiance	Noble Township	Improved Access	Major Traffic Generator, Major Employer in Defiance County
Northwest Controls	Defiance	Noble Township	Improved Access	Major Traffic Generator
Olson Electric	Defiance	City of Defiance	Improved Access	Major Traffic Generator, Freight Generator
Olson Cold Storage	Defiance	City of Defiance	Improved Access	Major Traffic Generator, Freight Generator
Defiance Hospital	Defiance	City of Defiance	Improved Access	Major Traffic Generator, Emergency Access Needs, Major Employer in Defiance County

Of the thirteen industrial facilities located within the study area eight of these will experience positive impacts from the construction of the Preferred Alternative.

A total of six economic development sites are located along the Preferred Alternative within Paulding and Defiance Counties. A summary of these sites and the associated impacts are presented in Table 15.

Table 15
Summary of Impacts on Economic Development Sites

Economic Development Site	County	Location	Zoning	Impact
Antwerp Industrial Park	Paulding	Village of Antwerp	Industrial	Improved Access and Visibility from US 24
Enterprise Park	Defiance	City of Defiance	Industrial/Commercial	Improved Access and Visibility from US 24
Maumee River Crossing Development	Defiance	Noble Township	Industrial/Residential	Improved Access
Fox Run Executive Park	Defiance	Noble Township	Industrial	Improved Access
Olson Industrial Park	Defiance	City of Defiance	Industrial	Improved Access
Defiance Hospital	Defiance	City of Defiance	Industrial	Improved Access

All six of the economic development sites will be positively effected by the new alignment of US 24. These positive benefits are a result of improved access and reduced traffic congestion from realignment of existing US 24.

Minimal Degradation Alternative:

The Minimal Degradation Alternative would be expected to have a more positive economic impact compared to the Preferred Alternative, with respect to jobs created and revenues gained. Because of its higher construction cost (\$270 million for the Minimal Degradation Alternative as opposed to \$243 million for the Preferred Alternative), it is anticipated that the Minimal Degradation Alternative will generate a total of 11,365, or 1,116 more jobs, than that of the Preferred Alternative. It is anticipated that the construction of the Minimal Degradation Alternative will create 2,133 direct jobs, 5,318 indirect jobs and 3,914 induced jobs.

The Minimal Degradation Alternative will also have a positive impact on four economic development sites in Paulding and Defiance Counties. The Antwerp Industrial Park will experience improved access as US 24 is relocated closer to the sites. The Maumee River Crossing Development, Fox Run Executive Park, Olson Industrial Park and Defiance Regional Medical Center will experience improved access through reduction in congestion on US 24 and the local roadway system; improvements to the SR 424 crossing and the SR 15/18 interchange; and construction of a connector road between SR 15/18 and West High Street/Switzer Road.

Non-degradation Alternative:

The Non-degradation Alternative will not create any new jobs or provide increased revenues the community.

- 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 3745-1-05(C)(6)(e))**

Preferred Alternative:

No important social benefits are expected to be lost as a result of the proposed project.

The Preferred Alternative will require the acquisition of 1,159 acres of land within Ohio for right-of-way. This acquisition will remove land that currently generates property tax revenue streams for the affected counties and municipalities.

Potential negative economic impacts may occur to five industrial entities as a result of decreased access to US 24, as the highway is relocated further away from their existing facilities. These entities include Antwerp Tool and Die, K & L Tools, Steve Reiff, Inc., Dana Boston Weatherhead, and Spec-Temp, Inc.

The Preferred Alternative will be constructed along right-of-way that is or will be owned by ODOT. Public property will not be purchased for right-of-way purposes. Only the Tiffin and Maumee Rivers would be considered recreational waters. Bridge crossings at both of these locations are immediately adjacent to existing bridges. There are no public river access points currently located at either of the bridge sites. Additionally, the proposed highway and associated stream crossings will be constructed using BMP's to minimize the unavoidable impacts to these aquatic resources. Therefore, no permanent

lowering of recreational use, aesthetics, economic or social benefits is foreseen from the crossing of either the Maumee or Tiffin Rivers is expected.

Impacts to remaining jurisdictional streams will have no effect on recreational activities because, while these channels are considered regulated waters of the state they are intermittent in nature and provide only minimal opportunities for recreational use and economic benefits.

Jurisdictional wetlands to be impacted as a result of this project are located on private property and are not available as a resource to the general public. While some of these wetland areas are hydrologically connected and in some cases lie immediately adjacent to the Maumee State Scenic River, there will be no impact on commercial or economical uses of this aquatic resource. Construction practices that impact any jurisdictional wetland within the project area will be carried out using BMP's to prevent any unnecessary lowering of recreational, tourism, aesthetic, social or economic benefits afforded by these aquatic resources. All regulated stream and wetland impacts resulting from this project will be mitigated at the appropriate mitigation ratios. The detailed mitigation plan for these impacts is described in Section 10k of this permit and in Appendix C.

Minimal Degradation Alternative:

The Minimal Degradation Alternative will result in almost the same impacts as the Preferred Alternative. However, more land will be required for right-of-way acquisition for this alternative. As proposed, the Minimal Degradation Alternative will require approximately 1,370 acres of right of way acquisition as opposed to the 1,159 acres for the Preferred Alternative

Residential and business displacements associated with the Minimal Degradation Alternative will also have a slight effect on municipal tax revenues. In Ohio, the Minimal Degradation Alternative will result in 12 residential displacements, the displacement of four farms and three commercial displacements. However, as there is available replacement housing within the study area to accommodate all residential displacements, the Minimal Degradation Alternative will likely have no effect on personal income tax revenues. The displaced businesses are small businesses and their displacement should have a nominal effect on personal income tax revenues and corporate income tax revenues.

Non-degradation Alternative:

The continued transportation inefficiencies along existing US 24 could discourage future economic growth along the project corridor. This could not only discourage new job-creating businesses from establishing themselves along the corridor but also discourage expansion of existing businesses. This could have a negative impact on the local economy.

- 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)**

Preferred Alternative:

Construction of the Preferred Alternative for US 24 will be in accordance with all federal, state and local regulations enacted to protect surface and ground water quality, aquatic life, wildlife, threatened and endangered species, human health and the environment. A detailed discussion of the environmental benefits lost as related to streams and wetlands is contained in Section 10b of this application.

Environmental benefits will occur as relocated drainage ditches are replaced with two-stage channels that promote better flow dynamics and provide for more naturally behaving streams with better in-stream habitat. The project should also result in improved traffic flows, thereby reducing air pollution in the project area.

Construction of the Preferred Alternative will also not result in an impact to the sediment moving capabilities of streams and ditches in the project area. Oversized and partially buried culverts will provide for the continued sediment capabilities of the ditches.

No high quality natural communities will be affected by the Preferred Alternative. The project is also not expected to have an adverse impact on any state or federally listed endangered or threatened species.

The FHWA and ODOT have been in coordination with the USFWS to address impacts to federally listed species. ODOT has submitted a revised draft of the BA for the Indiana bat for review by the USFWS. A copy of the BA/BO will be provided to the Ohio EPA and the USACE upon acceptance by the USFWS.

Minimal Degradation Alternative:

The effect on environmental benefits lost or gained would be very similar to the Preferred Alternative. However, the Minimal Degradation Alternative will result in less impact to "general high quality waters" (OAC 3745-1-05) compared to the Preferred Alternative through the reduction of impacts to Category 2 and 3 wetlands. Since the selection of Alternative D-1 as the Minimal Degradation Alternative several design refinements, including the addition of further right of way areas to accommodate the design of service roads and drainage features, have occurred. After the addition of the access roads and drainage features impacts to aquatic resources were further reduced.

The Preferred Alternative would impact a total of 23.03 acres of jurisdictional wetlands. Further design refinements reduced the total wetland impact by 3.0 acres to 20.03 acres. Initial impacts to streams prior to the final design of the access roads and drainage features were 9,904 linear feet. Stream impacts were further reduced during final design by 1,960 feet, for a total of 7,944 feet of stream impact. Tables 7 and 8 detail the refinement of impacts to jurisdictional wetlands and streams as part of the final design of the Minimal Degradation Alternative.

Non-degradation Alternative:

The No-build Alternative will not result in any environmental benefits lost or gained.

- 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)

The proposed wetland and stream mitigation plans for both the Preferred and Minimal Degradation Alternative are the same with respect to the type and location of the mitigation project. The difference between the two would be with respect to the length of stream and the area of wetland compensated for in the mitigation project, since the length of impacted stream channel and the area of wetland impact will dictate each alternatives' mitigation requirements.

To the extent practicable, impacts to streams, ditches and wetlands have been avoided. Mitigative techniques for the preferred alternative include best management practices for erosion and sediment control, minimizing the construction limits and the use of non-erodible temporary fill materials. In addition, fade away embankment slopes will be used to minimize impacts to wetlands.

A detailed mitigation plan and design is provided in Appendix C of this application.

Literature Cited

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, Miss.

Federal Interagency Committee for Wetland Delineation (FICWD). 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands. U.S. Army Corps of Engineers, Environmental Protection Agency, U.S. Fish and Wildlife Service, and USDA Soil Conservation Service, Washington, D.C. Cooperative technical publication. 76 p. Plus appendices.

Final Environmental Impact Statement, US 24, Interstate 469 in New Haven, Indiana to Ohio Route 15 in Defiance, Ohio. FHWA-OH-EIS-02-01-D

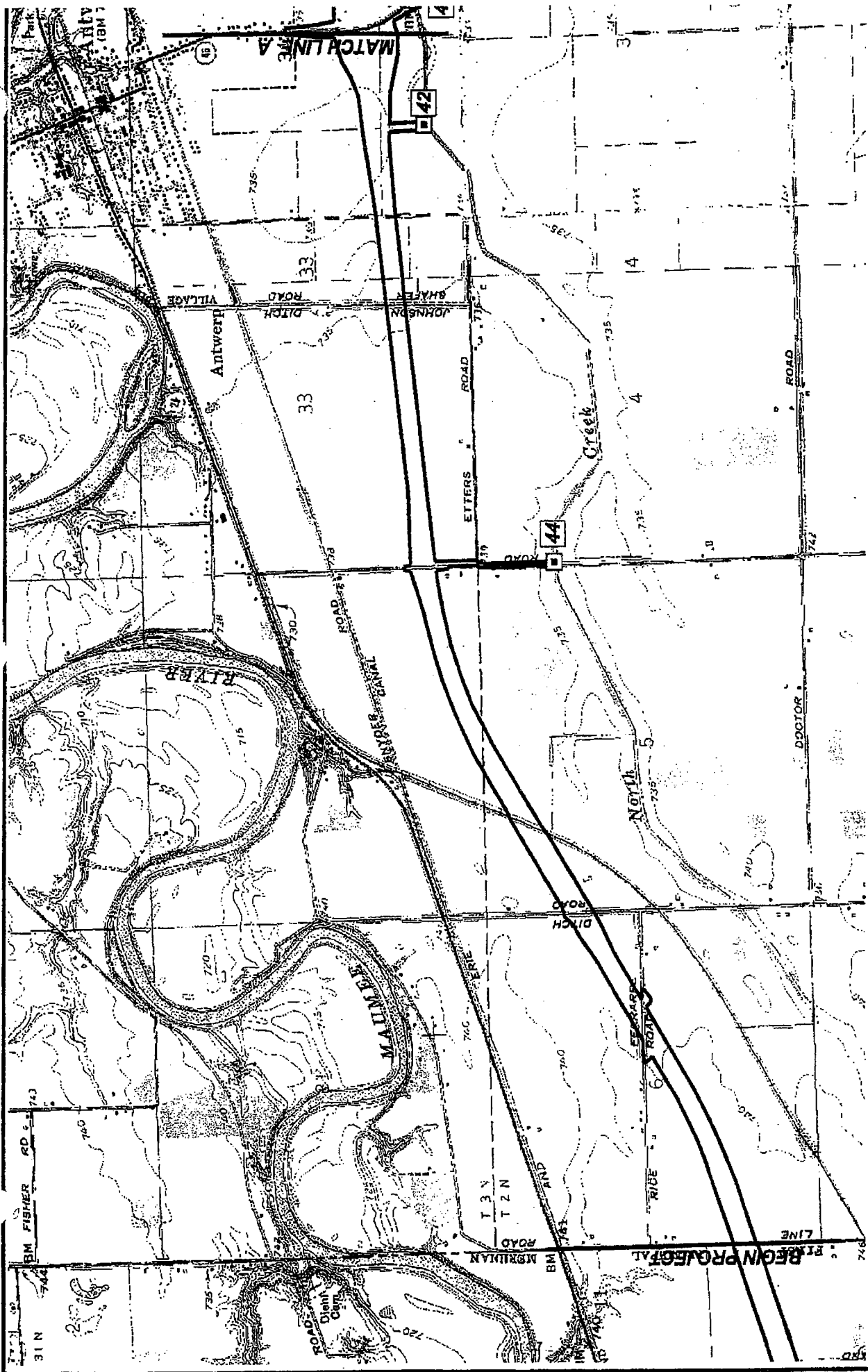
Munsell Soil Color Charts. 2000. Munsell Color Co. Inc., Baltimore, Maryland.

Reed, P.B. 1988. National List of Plant Species that Occur in Wetlands. US Fish and Wildlife Service: National Wetlands Inventory. St. Petersburg, Florida.

Rosgen, Dave, 1996. Applied River Morphology, Wildland Hydrology, Pagosa Springs, Colorado.

APPENDIX A – FIGURES

- SITE LOCATION MAPS (FIGURES 1A-1H)
- TYPICAL SECTION FOR PREFERRED AND MINIMAL DEGRADATION ALTERNATIVE (FIGURE 2)
- EXHIBITS OF WETLAND IMPACTS (FIGURES 3-26)
- EXHIBITS OF STREAM IMPACTS (FIGURES 27-44)
- EXHIBITS OF MAUMEE AND TIFFIN RIVER BRIDGE CROSSINGS (FIGURES 45-47)
- BRIDGE CROSSING WORK PAD DETAIL (FIGURE 48)

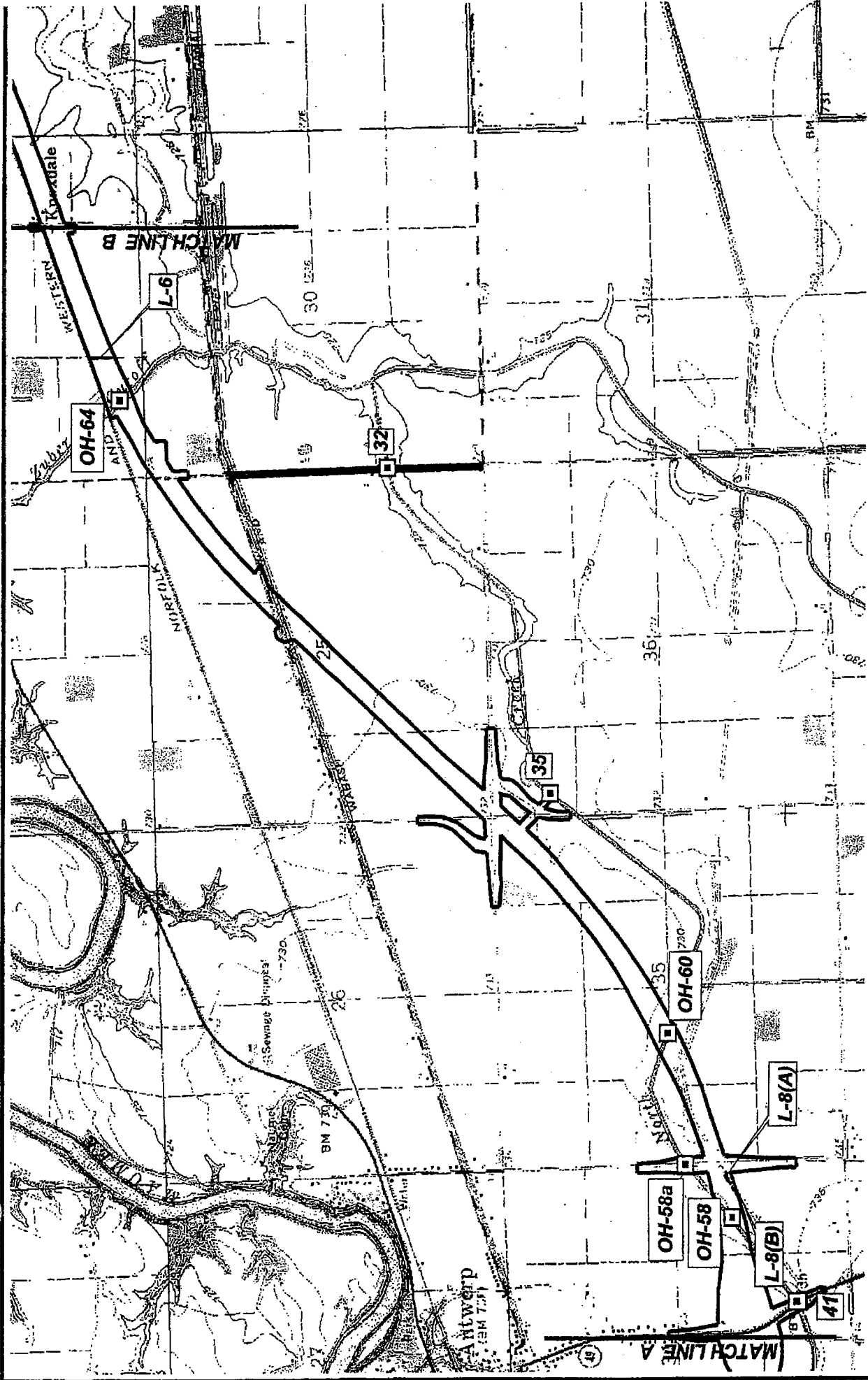


Legend

- Right-of-Way
- Stream Impact
- Wetland Impact

FIGURE 1A
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Mannik & Smith
the
Group
 1800 Indian Wood Chase
 Columbus, Ohio 43227
 Tel: (614) 891-1555
 Fax: (614) 891-1595
 Civil Engineering, Surveying and Environmental Consulting
 TOLEDO • MONROE • DETROIT



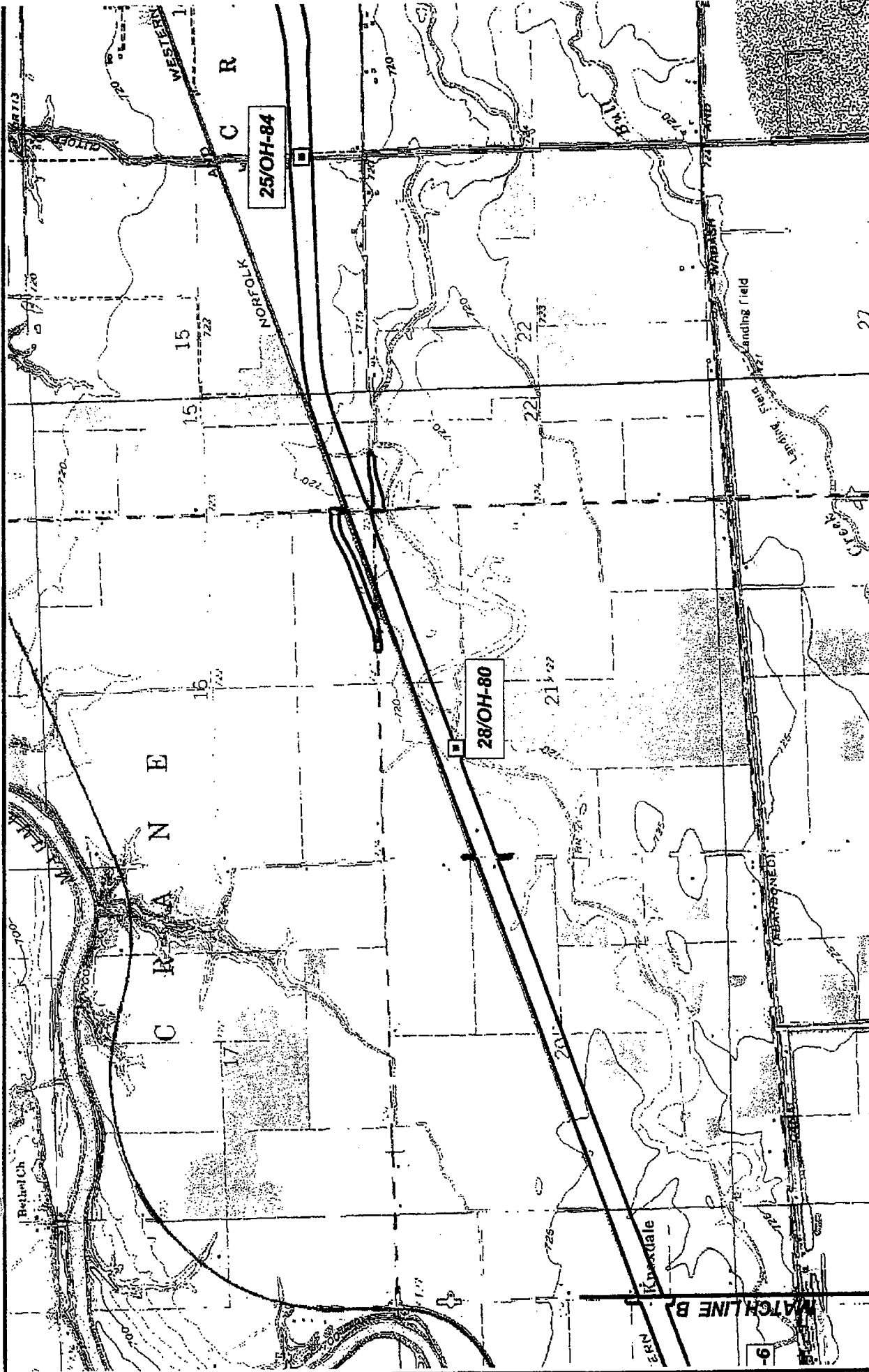
Legend

- Right-of-Way
- Stream Impact
- Water Impact

FIGURE 1B
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Mannik & Smith
 Group
 (419) 891-2222
 Fax: (419) 891-1995
 Toledo • Monroe • Detroit

Civil Engineering, Surveying and Environmental Consulting
 1400 Indian Wood Circle
 Huron, Ohio 43537

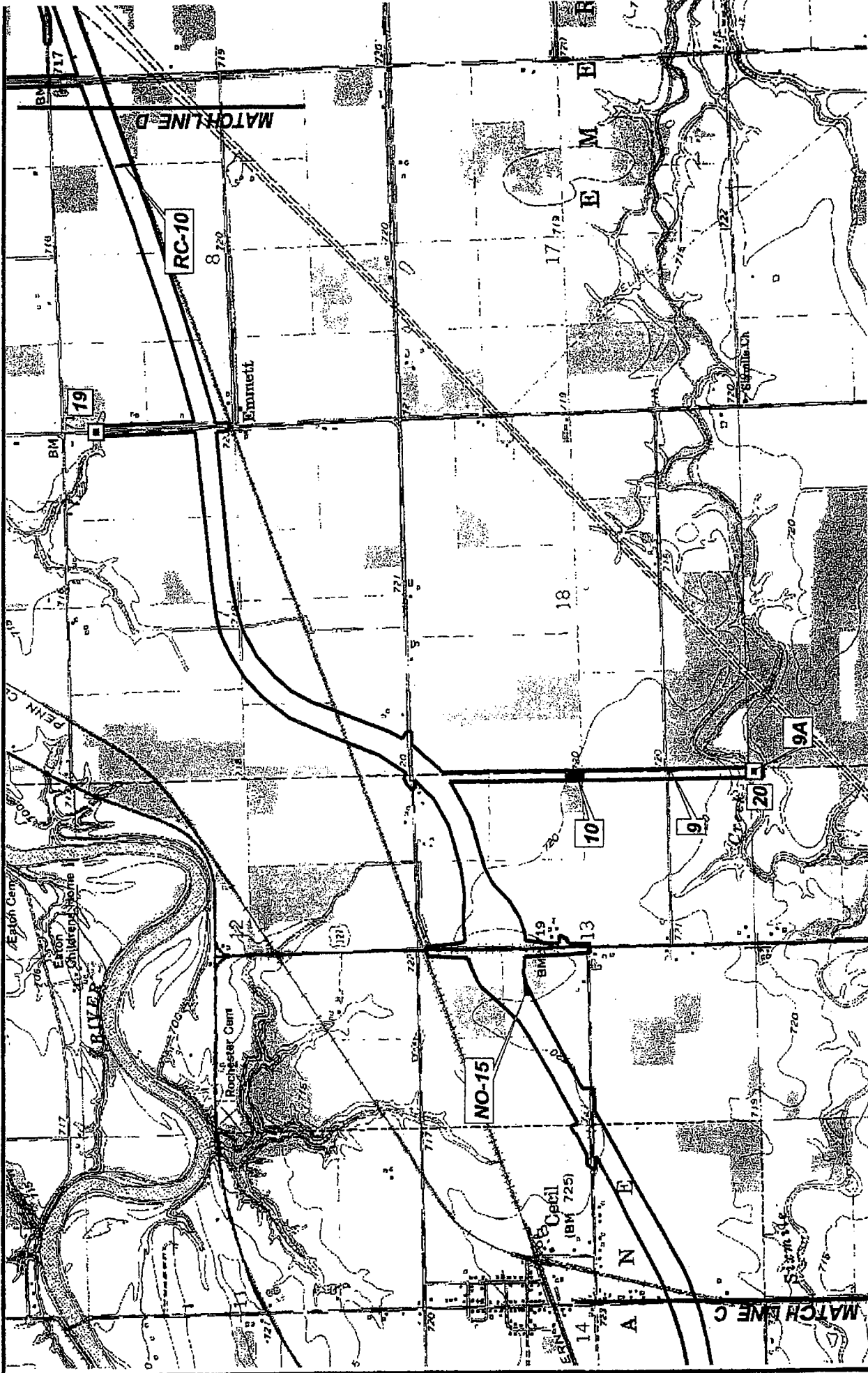


Mannik & Smith
 Group
 1800 Indian Wood Circle
 Huron, Ohio 43337
 (419) 691-2222
 Fax: (419) 691-1955
 Civil Engineering, Surveying and Environmental Consulting
 TOLEDO • MONROE • DETROIT

FIGURE 1C
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Legend

- Right-of-Way
- Stream Impact
- Wetland Impact



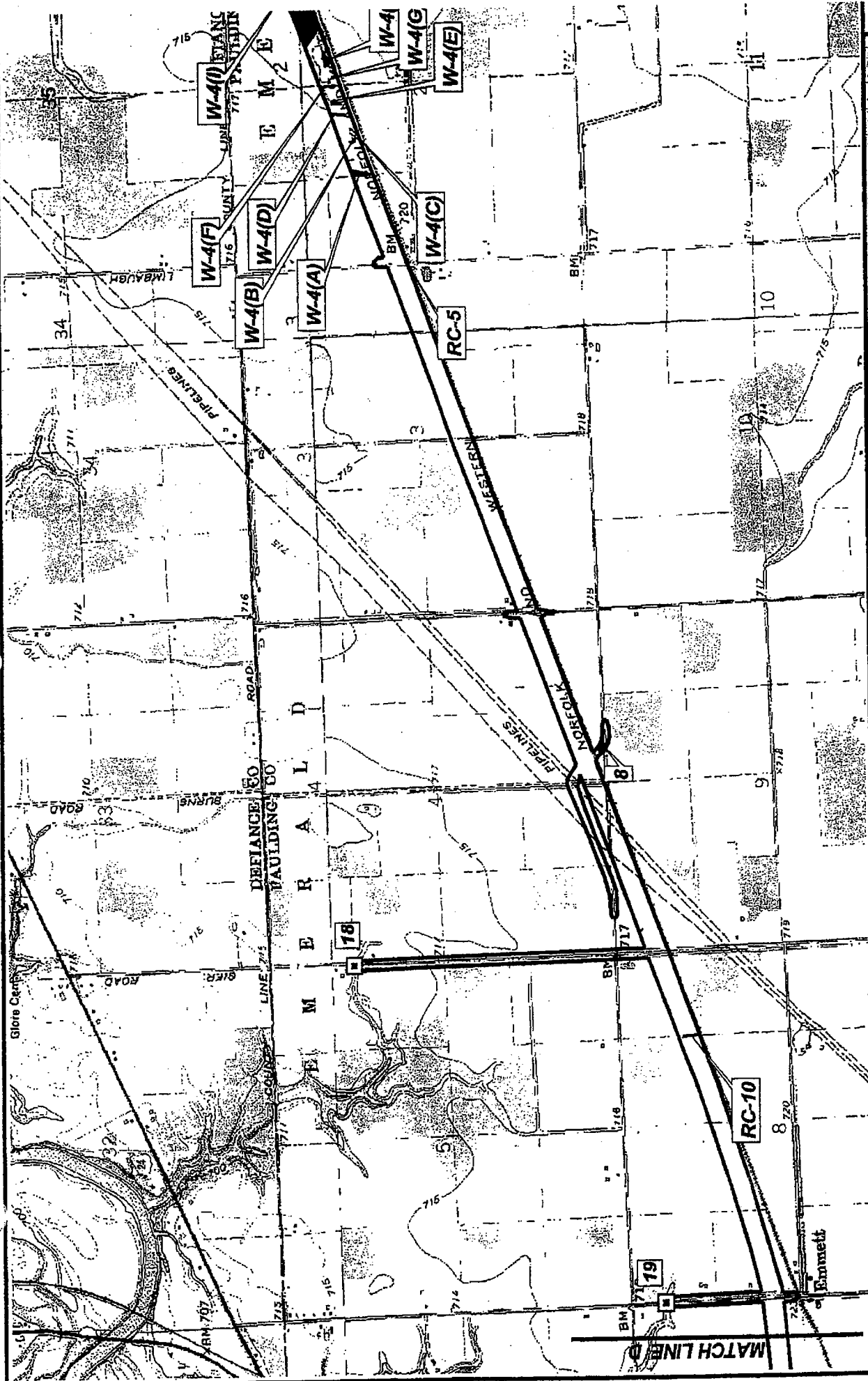
Legend

- Right-of-Way
- Stream (Map)
- Faded (Map)

FIGURE 1D
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Mannik & Smith
 The Group
 1840 Indiana Wood Circle
 Columbus, Ohio 43237
 (614) 891-2222
 Fax: (614) 891-1395

Civil Engineering, Surveying and Environmental Consulting
 TOLEDO • MONROE • DETROIT

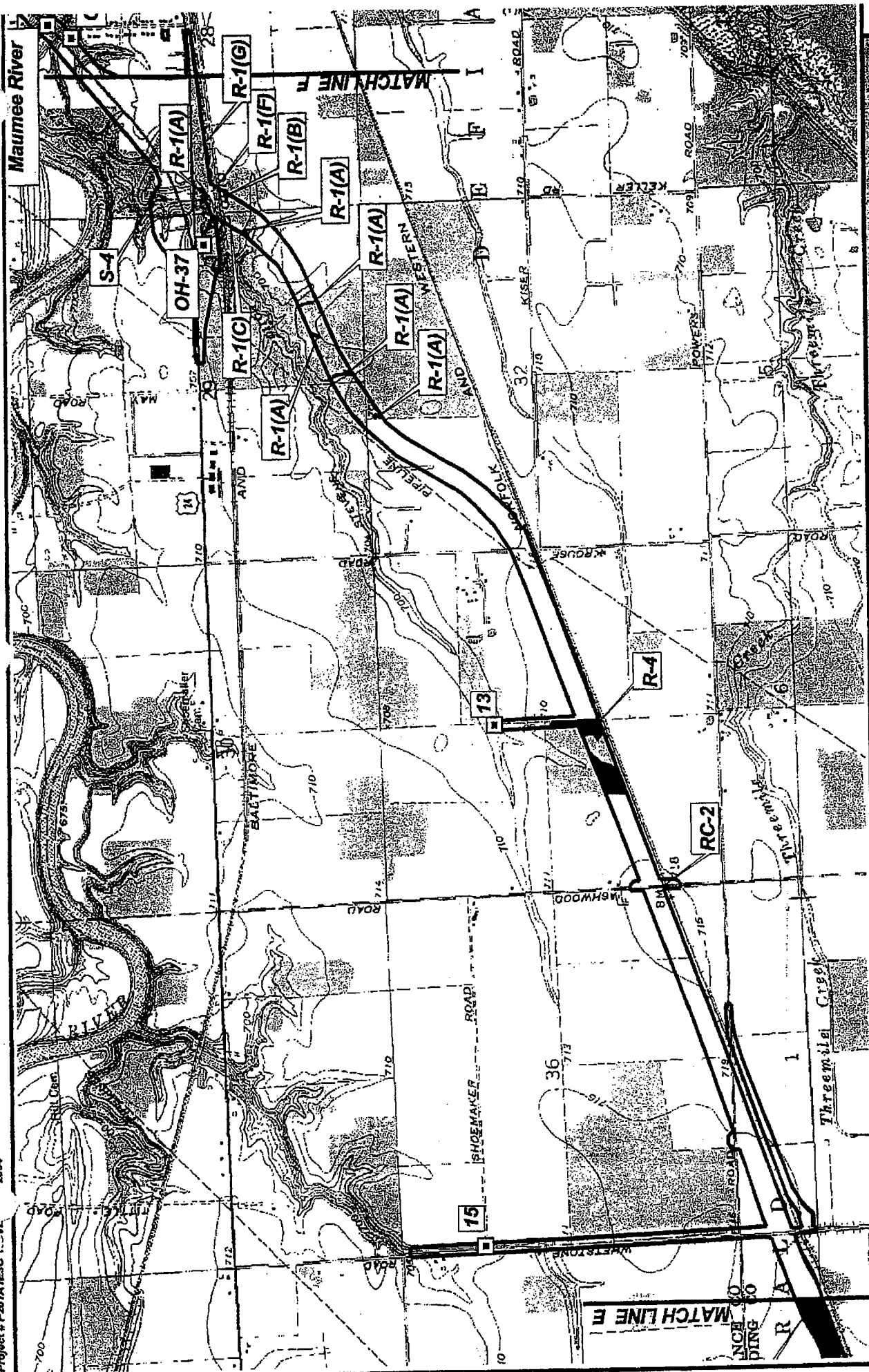


Legend

- Right-of-Way
- Stream Impact
- Wetland Impact

FIGURE 1E
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Mannik & Smith
 Group
 1800 Indian Wood Circle
 Heaume, Ohio 43037
 Civil Engineering, Surveying and Environmental Consulting
 TOLEDO • MONROE • DETROIT

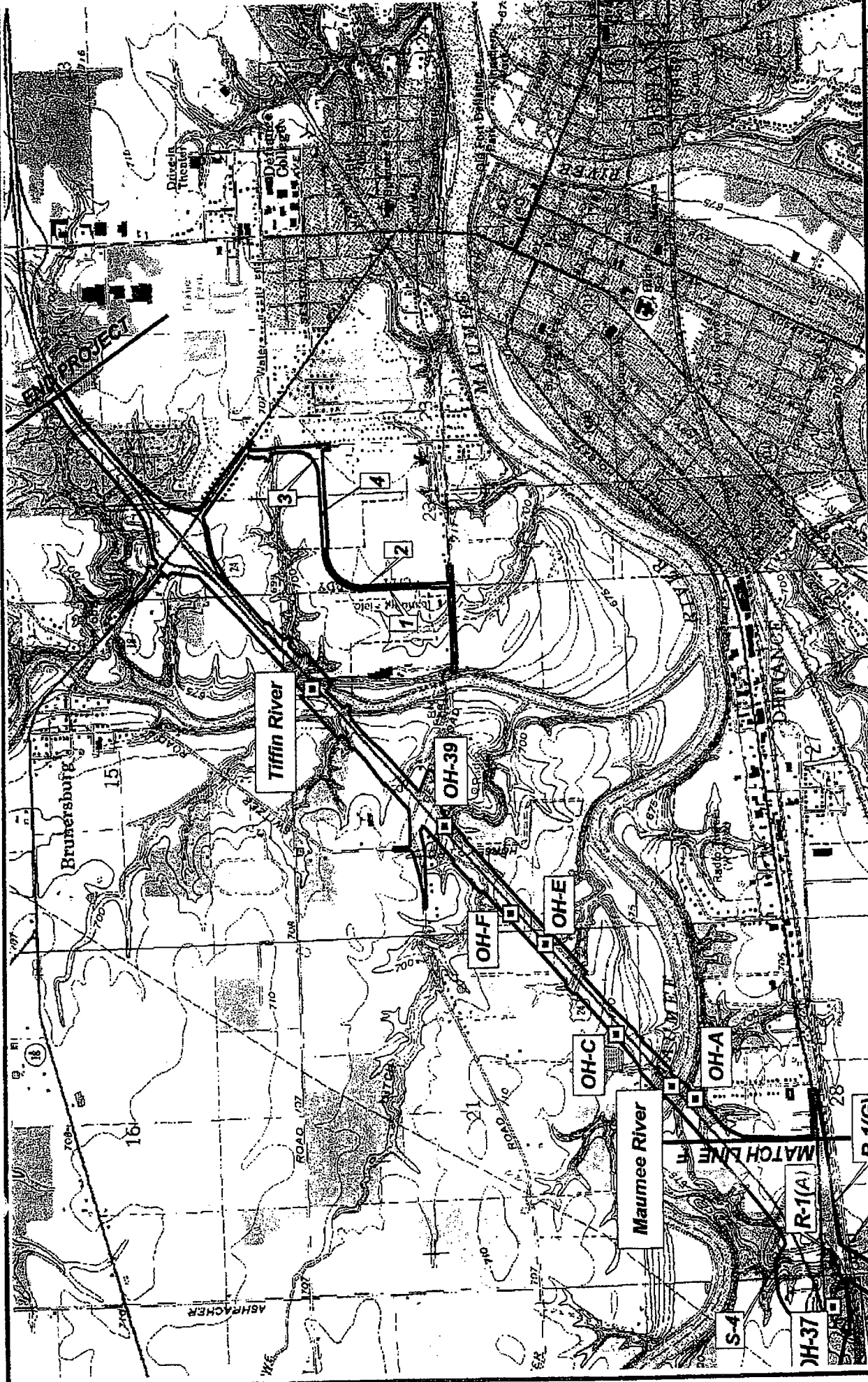


Legend

- Right-of-Way
- Submittal
- Wetland Impervious

FIGURE 1F
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Mannik & Smith
 Group
 Civil Engineering, Surveying and Environmental Consulting
 1800 Indian Wood Circle
 Maumee, Ohio 43537
 (419) 891-2222
 Fax: (419) 891-3595
 TOLEDO • MAUMEE • DETROIT



Legend

- Right-of-Way
- Stream
- Highway
- Watering Hole

FIGURE 1G
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Mannik & Smith
 Group
 1800 Jordan Wood Circle
 Maumee, Ohio 43537
 (419) 891-2272
 Fax: (419) 891-1595
 Civil Engineering, Surveying and Environmental Consulting
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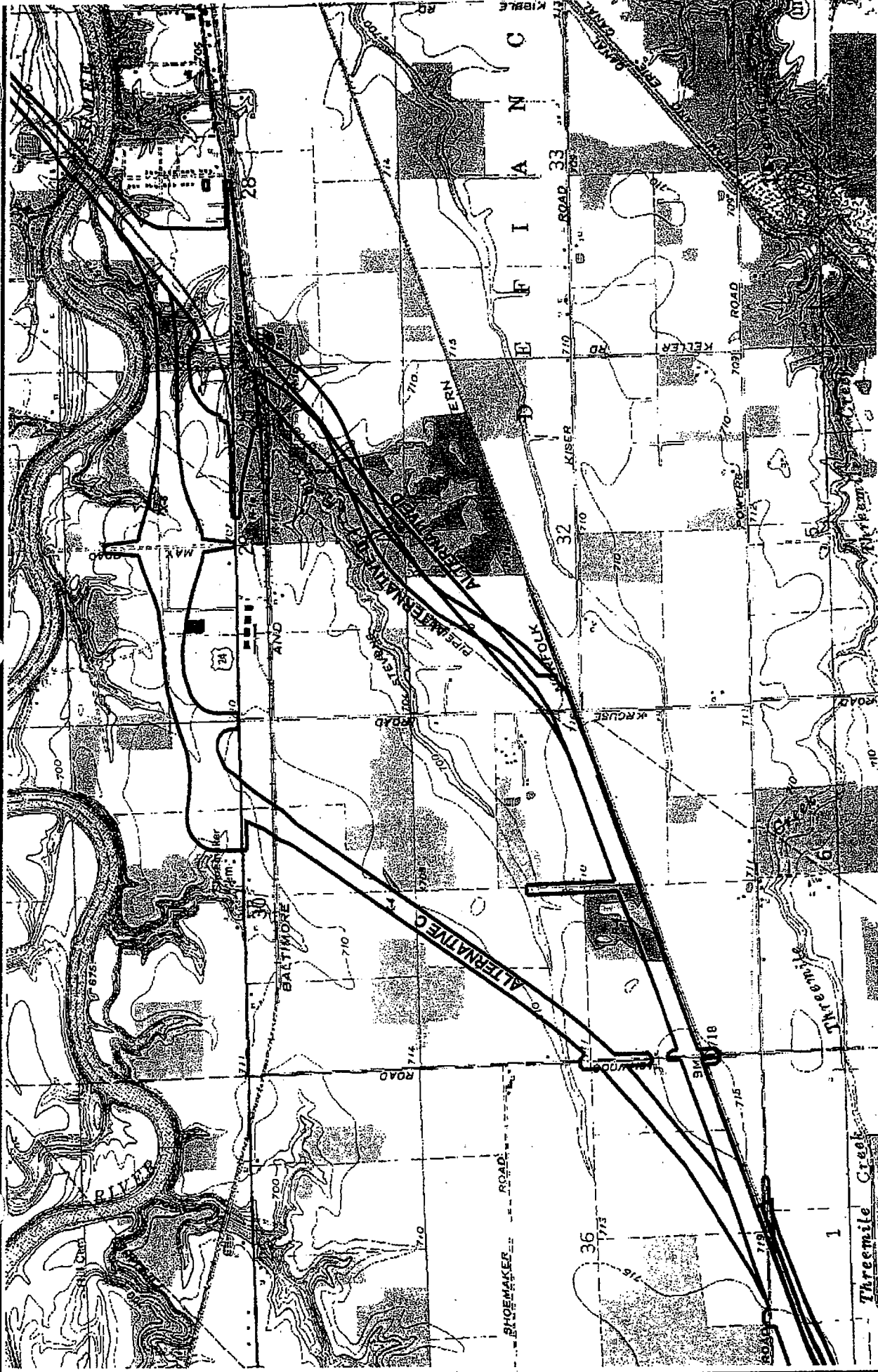


FIGURE 1H
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Mannik & Smith
 1800 Irwin Wood Circle
 Maumee, Ohio 43537
 (419) 891-2222
 Fax: (419) 891-3595
 CMI Engineering, Surveying and Environmental Consulting
 TOLEDO • MONROE • DETROIT

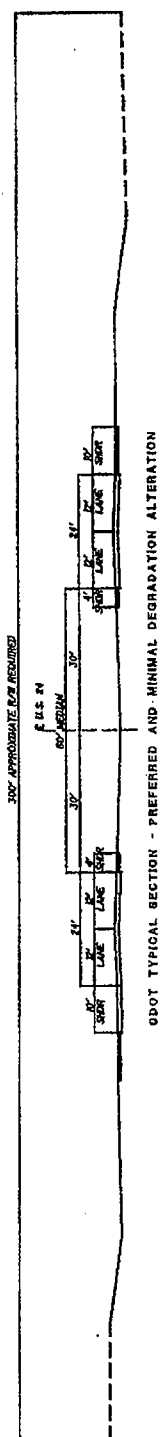


FIGURE 2
TYPICAL SECTION FOR
PREFERRED & MINIMAL
DEGRADATION ALTERNATIVE

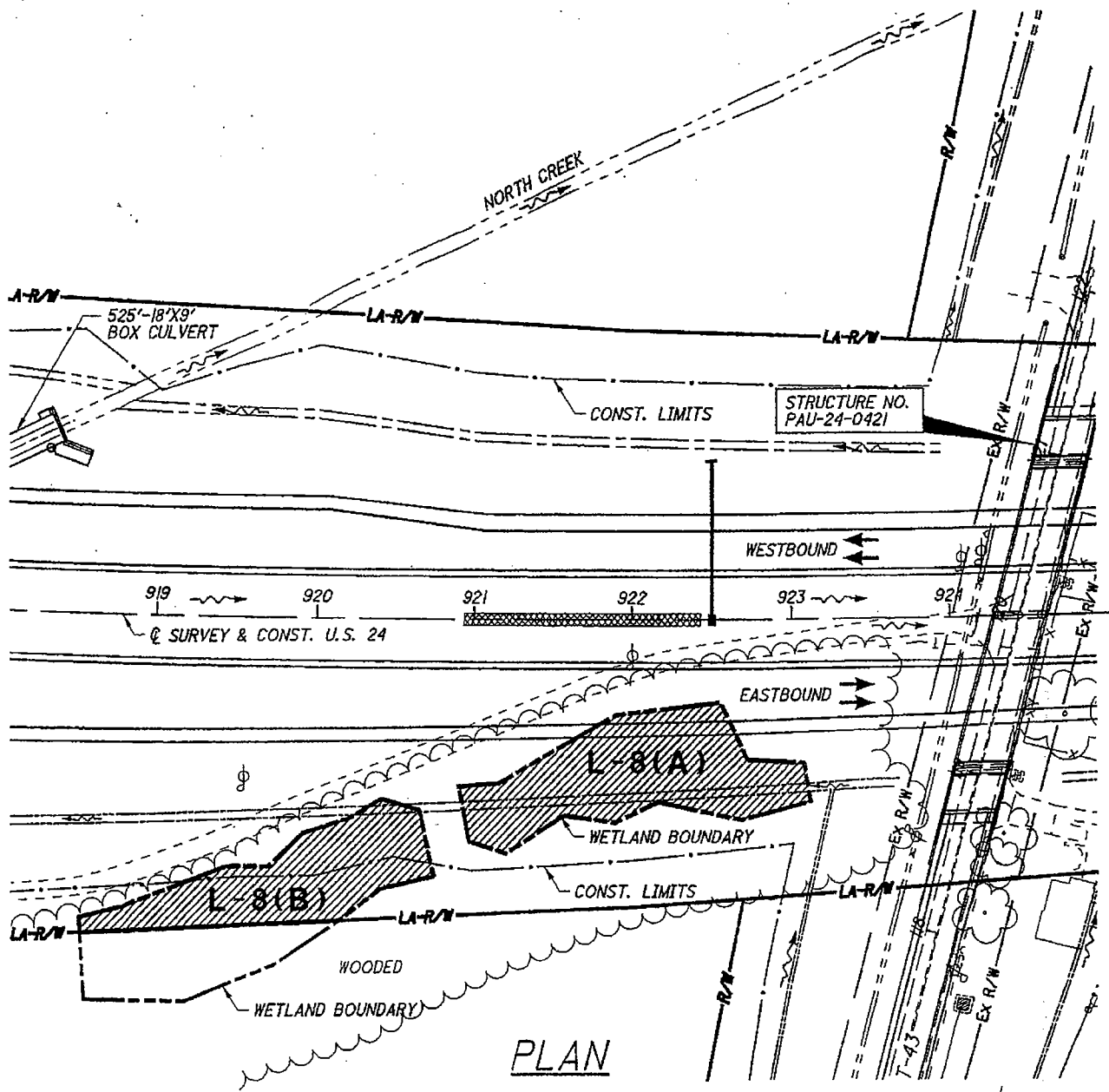
OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN HENRY & LUCAS COUNTIES
 HEN/LUC-24-10.42/0.00 PID 20404




DESIGNED BY:
 MLM


REVIEWED BY:
 JK

REVIEWED DATE:
 3/17/05



PLAN

WETLAND L-8(B)	
	TOTAL WETLAND LOSS (0.19 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.07 AC
EXCAVATION BELOW OHW:	232.00 CY
FILL BELOW OHW:	0.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.12 AC

WETLAND L-8(A)	
	TOTAL WETLAND LOSS (0.24 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.24 AC
EXCAVATION BELOW OHW:	1874.00 CY
FILL BELOW OHW:	176.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 AC



APPROXIMATE PLAN SCALE: 1"=100'



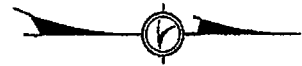
IMPACTS TO ISOLATED WETLANDS L-8(A) AND L-8(B)

OHIO DEPARTMENT OF TRANSPORTATION
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 PAU-24-0.00 PID 24334

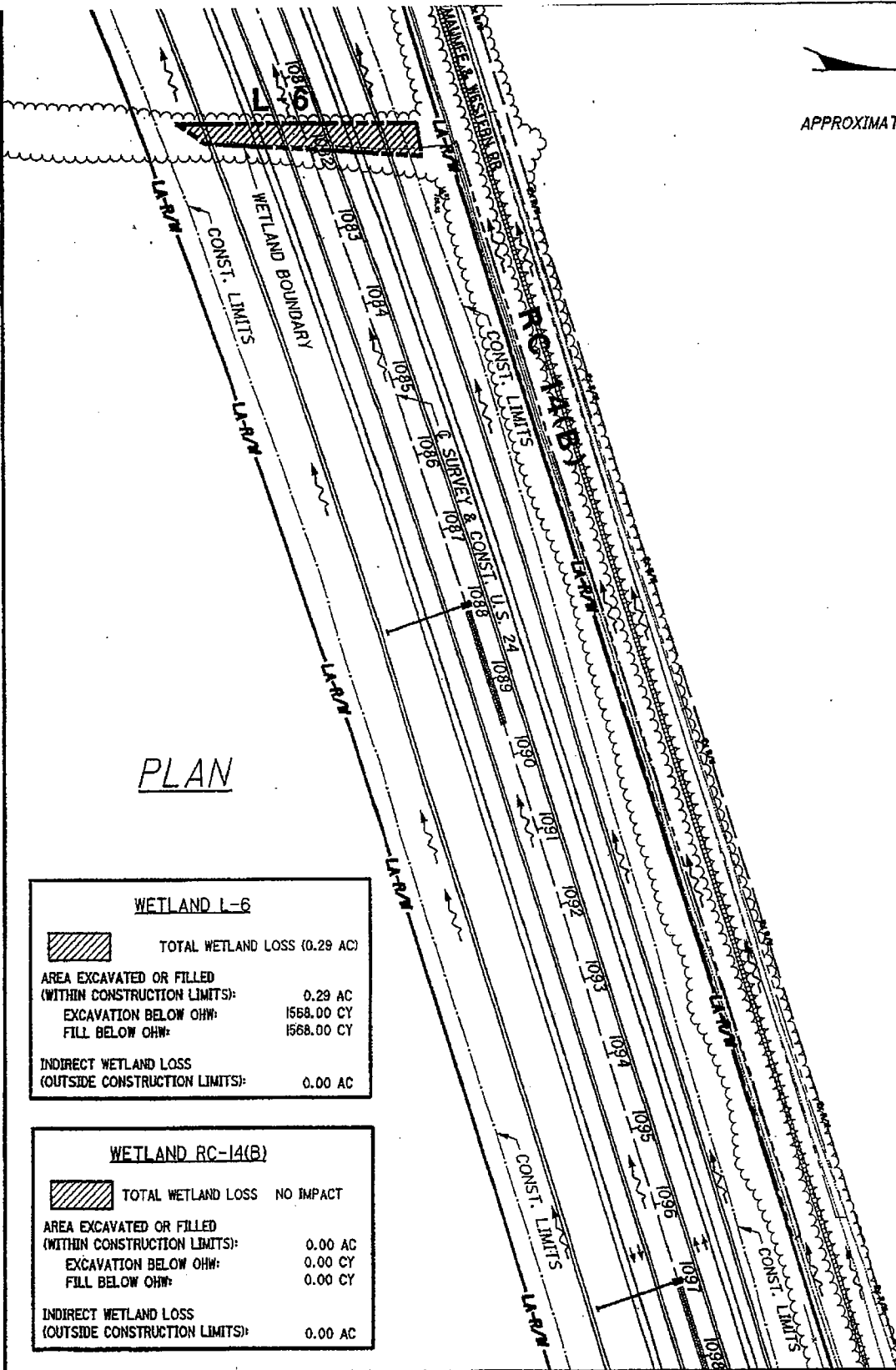
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Date: 10-19-2004


Figure 3




APPROXIMATE PLAN SCALE: 1"=200'



PLAN

WETLAND L-6	
	TOTAL WETLAND LOSS (0.29 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.29 AC
EXCAVATION BELOW OHW:	1568.00 CY
FILL BELOW OHW:	1568.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 AC

WETLAND RC-1A(B)	
	TOTAL WETLAND LOSS NO IMPACT
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.00 AC
EXCAVATION BELOW OHW:	0.00 CY
FILL BELOW OHW:	0.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 AC



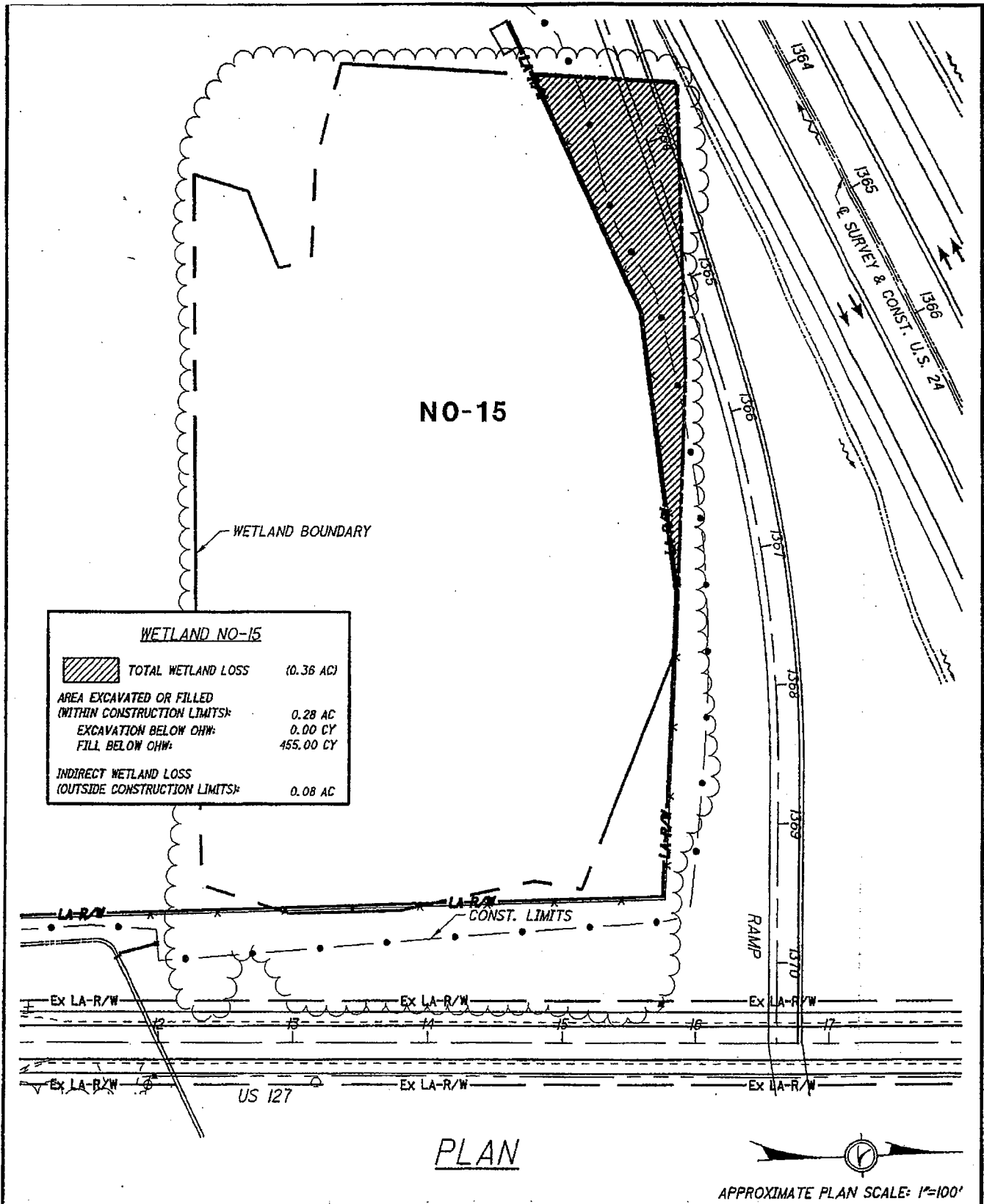
IMPACT TO NON-ISOLATED WETLAND L-6

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U.S. Army Corps of
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and OSPA Section 401
Water Quality
Certification
Application

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Figure 4



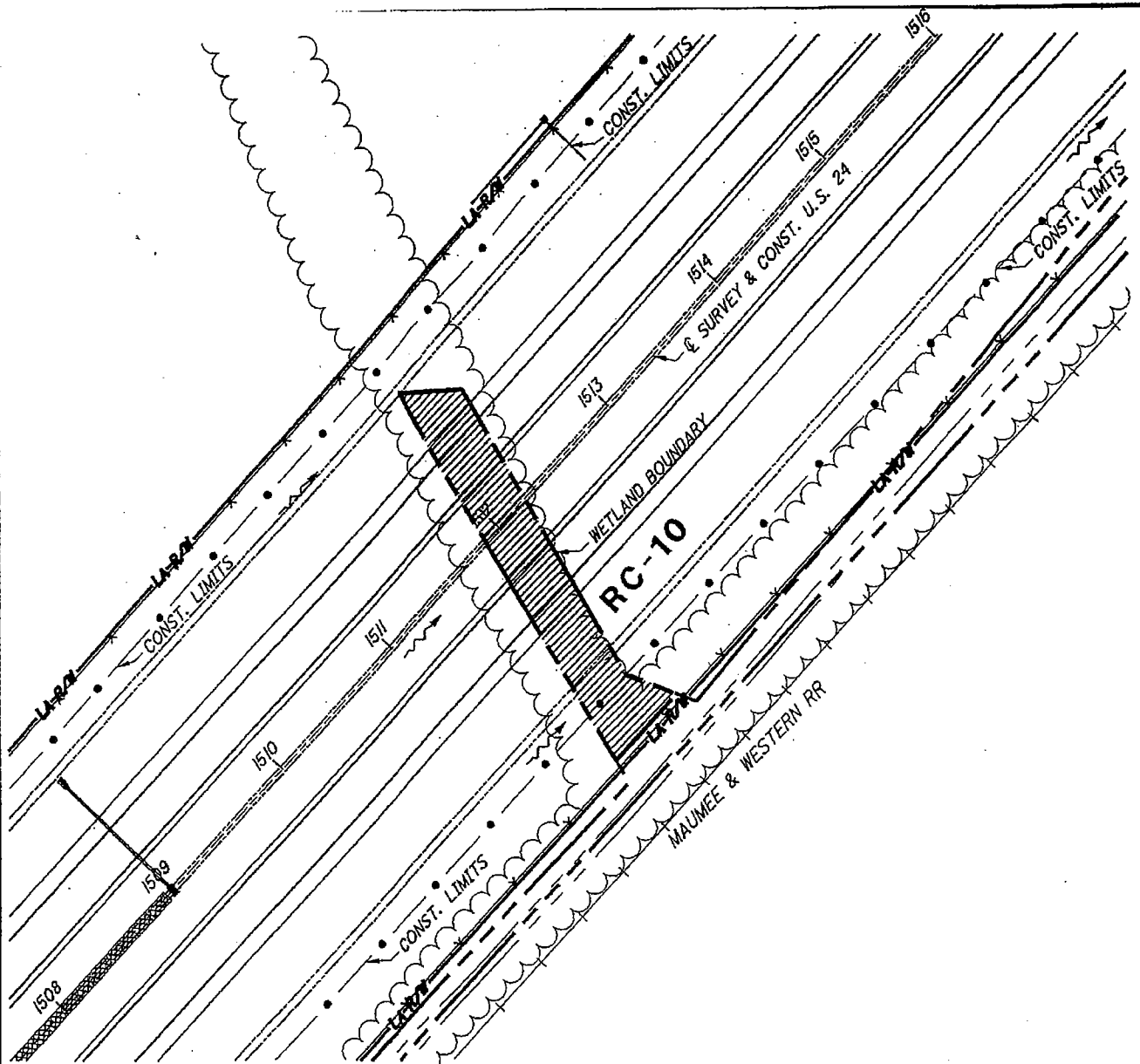
IMPACT TO ISOLATED WETLAND NO-15


OHIO DEPARTMENT OF TRANSPORTATION
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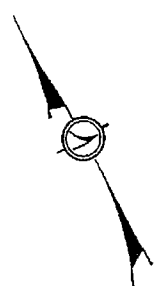
U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application

Date: 10-19-2004

Figure 5



WETLAND RC-10	
	TOTAL WETLAND LOSS (0.40 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
EXCAVATION BELOW OHW:	0.17 AC
FILL BELOW OHW:	38.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	
	0.23 AC



PLAN

APPROXIMATE PLAN SCALE: 1"=100'



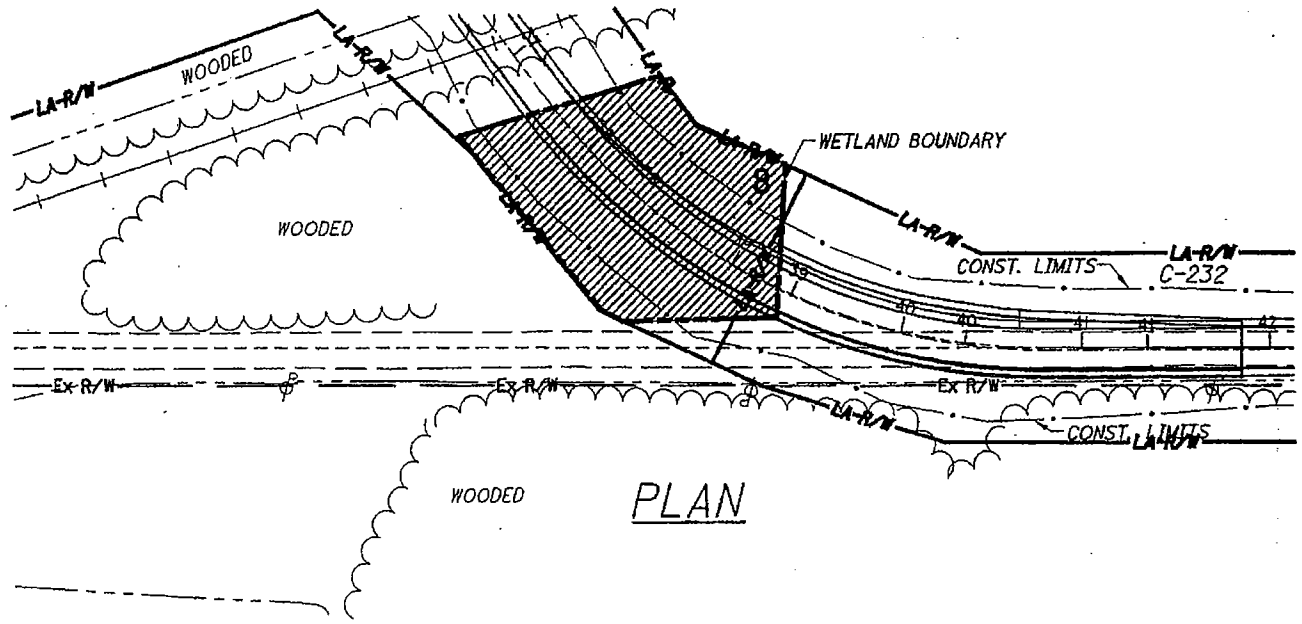
**IMPACT TO
NON-ISOLATED
WETLAND RC-10**


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Figure 6



WETLAND 8	
	TOTAL WETLAND LOSS (0.34 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS): 0.25 AC	
EXCAVATION BELOW OHW: 7.00 CY	
FILL BELOW OHW: 392.00 CY	
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS): 0.09 AC	



APPROXIMATE PLAN SCALE: 1"=100'



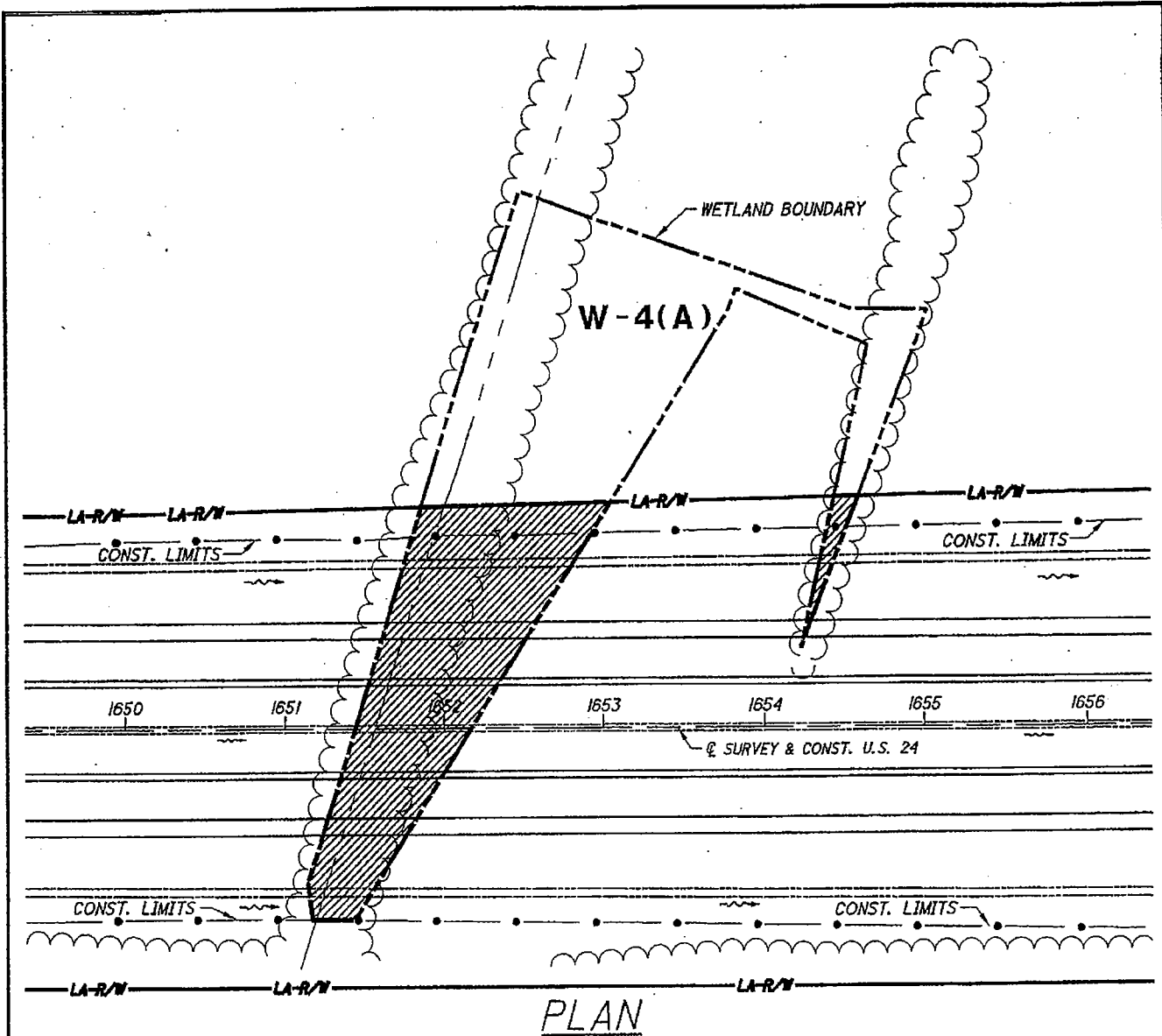
IMPACT TO NON-ISOLATED WETLAND 8


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Application

Date: 10-19-2004

Figure 7



WETLAND W-4(A)	
	TOTAL WETLAND LOSS (0.47 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
EXCAVATION BELOW OHW:	0.40 CY
FILL BELOW OHW:	191.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	
	0.07 AC



APPROXIMATE PLAN SCALE: 1"=100'



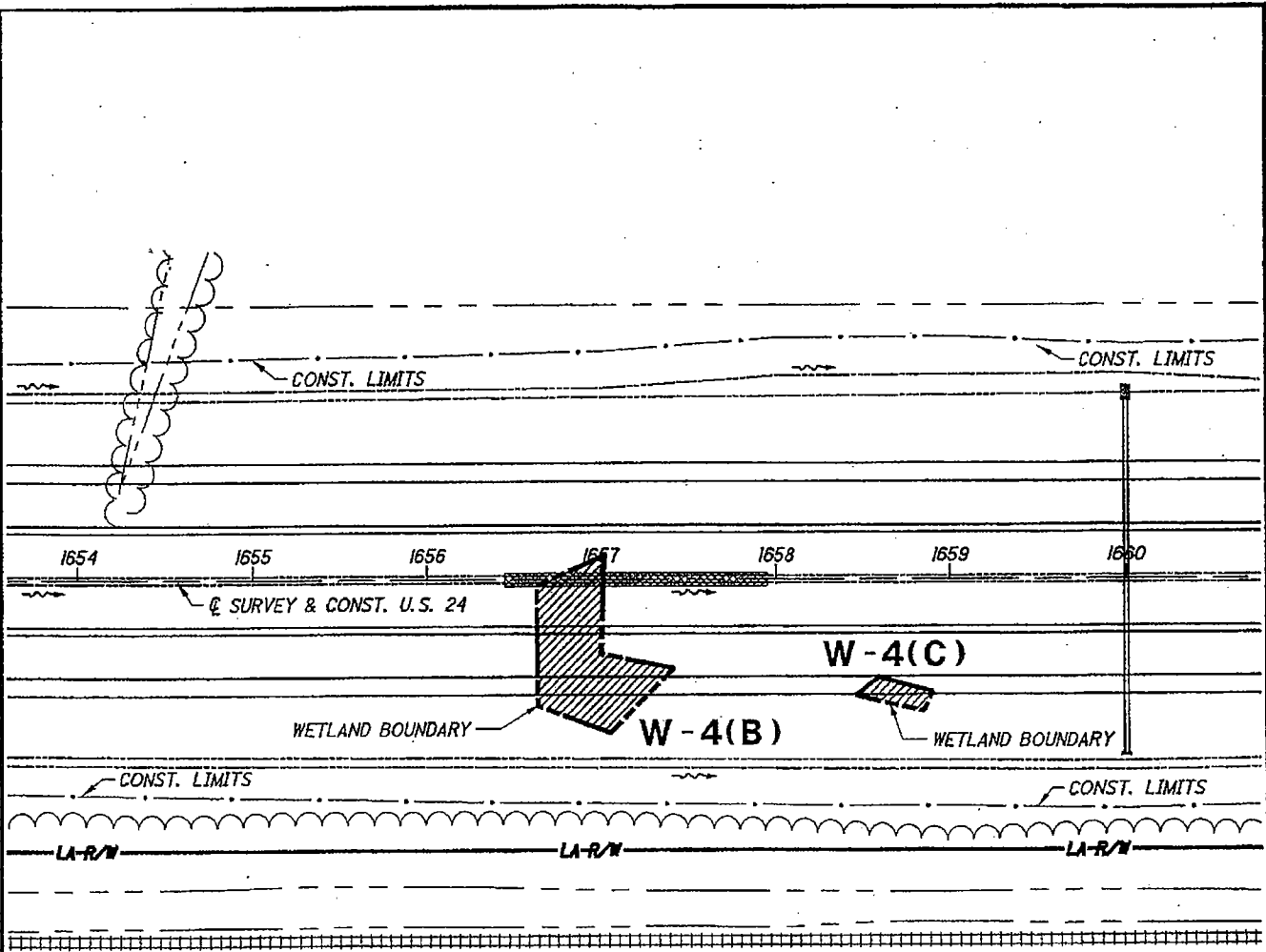
IMPACTS TO NON-ISOLATED WETLAND W-4(A)

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Application


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Figure 8



PLAN

WETLAND W-4(B)	
	TOTAL WETLAND LOSS (0.09 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.09 AC
EXCAVATION BELOW OHW:	0.00 CY
FILL BELOW OHW:	147.00CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 CY

WETLAND W-4(C)	
	TOTAL WETLAND LOSS (0.01 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.01 CY
EXCAVATION BELOW OHW:	0.00 CY
FILL BELOW OHW:	13.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 CY



APPROXIMATE PLAN SCALE: 1"=100'



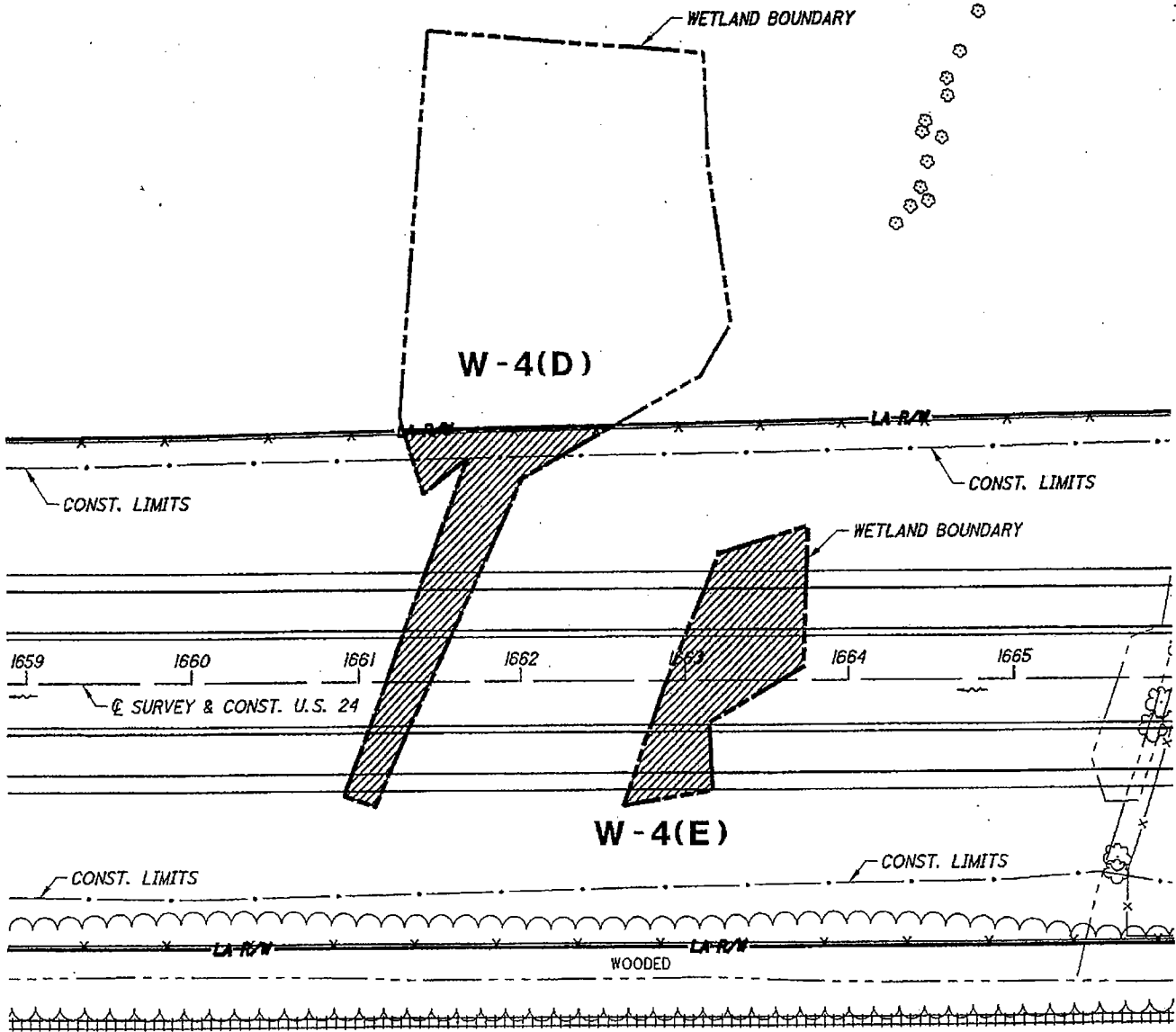
IMPACTS TO ISOLATED WETLANDS W-4(B) AND W-4(C)

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334


U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application


Date: 10-19-2004

Figure 9



PLAN

WETLAND W-4(D)	
	TOTAL WETLAND LOSS (0.19 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.15 AC
EXCAVATION BELOW OHW:	88.00 CY
FILL BELOW OHW:	154.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	.04 AC

WETLAND W-4(E)	
	TOTAL WETLAND LOSS (0.20 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.20 CY
EXCAVATION BELOW OHW:	9.00 CY
FILL BELOW OHW:	314.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 AC

APPROXIMATE PLAN SCALE: 1"=100'



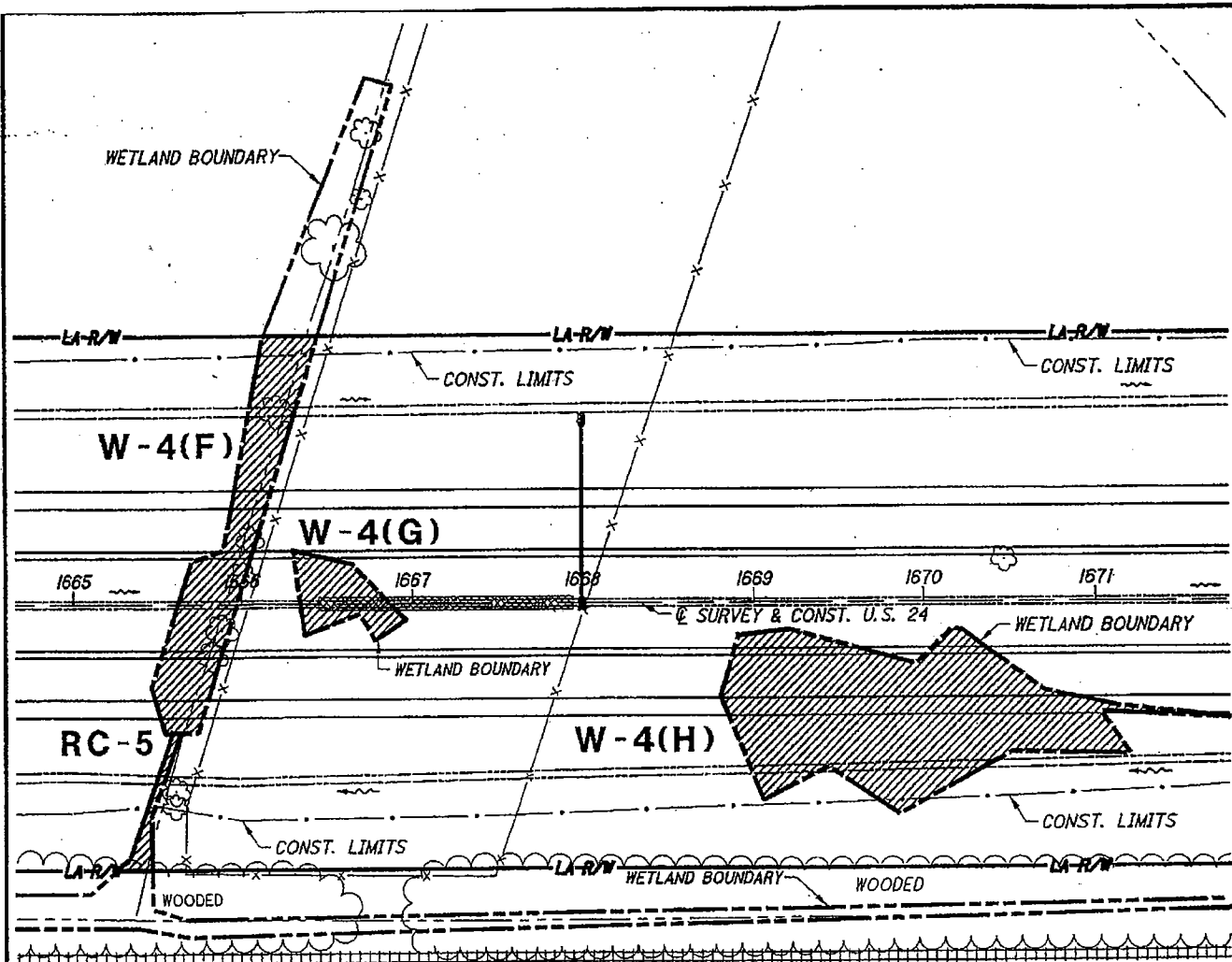
IMPACTS TO ISOLATED WETLANDS W-4(D) AND W-4(E)

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application

Date: 10-19-2004

Figure 10



WETLAND W-4(F)

	TOTAL WETLAND LOSS	(0.15 AC)
	AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.14 AC
	EXCAVATION BELOW OHW:	85.00 CY
	FILL BELOW OHW:	136.00 CY
	INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.01 AC

WETLAND RC-5 (TOTAL FROM FIG. 9, 12, & 13)

	TOTAL WETLAND LOSS	(0.90 AC)
	AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.02 AC
	EXCAVATION BELOW OHW:	18.00 CY
	FILL BELOW OHW:	12.00 CY
	INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.88 AC

WETLAND W-4(G)

	TOTAL WETLAND LOSS	(0.04 AC)
	AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.04 AC
	EXCAVATION BELOW OHW:	33.00 CY
	FILL BELOW OHW:	38.00 CY
	INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 AC

WETLAND W-4(H)

	TOTAL WETLAND LOSS	(0.35 AC)
	AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.35 AC
	EXCAVATION BELOW OHW:	249.00 CY
	FILL BELOW OHW:	316.00 CY
	INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 CY

MAUMEE & WESTERN RR

PLAN



APPROXIMATE PLAN SCALE: 1"=100'



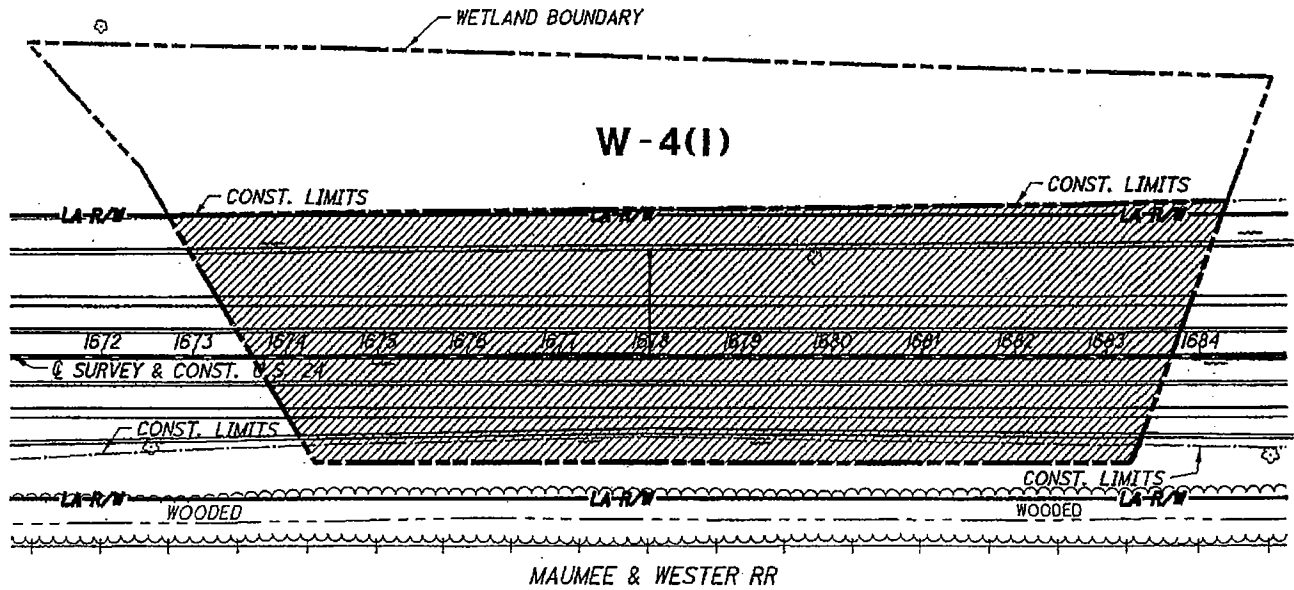
IMPACTS TO ISOLATED WETLANDS W-4(G) & W-4(H) & NON-ISOLATED WETLANDS W-4(F) & RC-5

OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULDING COUNTY
PAU-24-0.00 PID 24334


U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application

Date: 10-19-2004

Figure II



PLAN

WETLAND W-4(I)	
	TOTAL WETLAND LOSS (7.00 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
EXCAVATION BELOW OHW:	5.84 AC 4652.00 CY
FILL BELOW OHW:	4771.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS): 1.16 AC	



APPROXIMATE PLAN SCALE: 1"=200'



**IMPACT TO
NON-ISOLATED
WETLAND W-4(I)**

OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULDING COUNTY
PAU-24-0.00 PID 24334

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Date: 10-19-2004

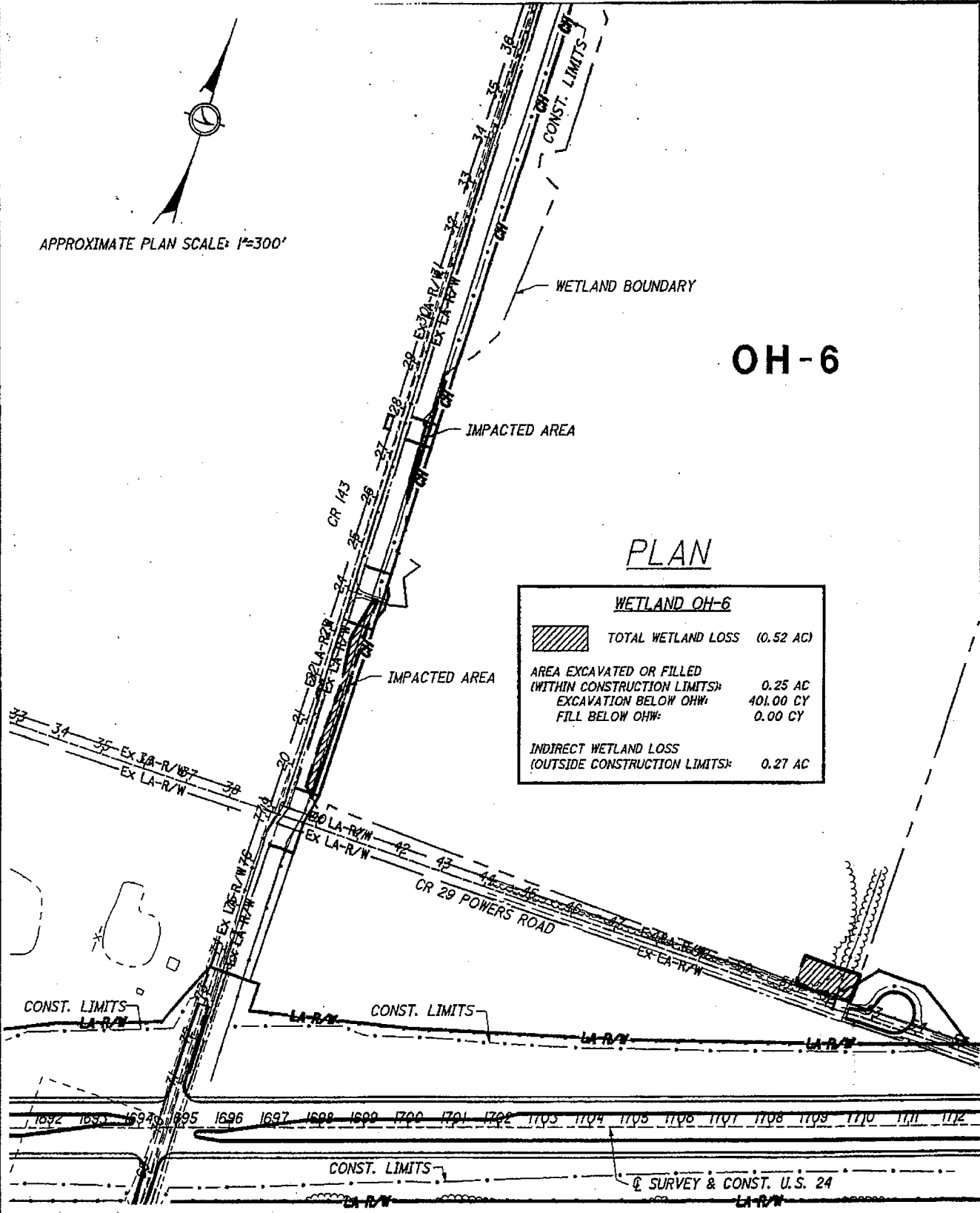
Figure 12

APPROXIMATE PLAN SCALE: 1"=300'

OH-6

PLAN

WETLAND OH-6	
	TOTAL WETLAND LOSS (0.52 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS): 0.25 AC	
EXCAVATION BELOW OHW: 401.00 CY	
FILL BELOW OHW: 0.00 CY	
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS): 0.27 AC	



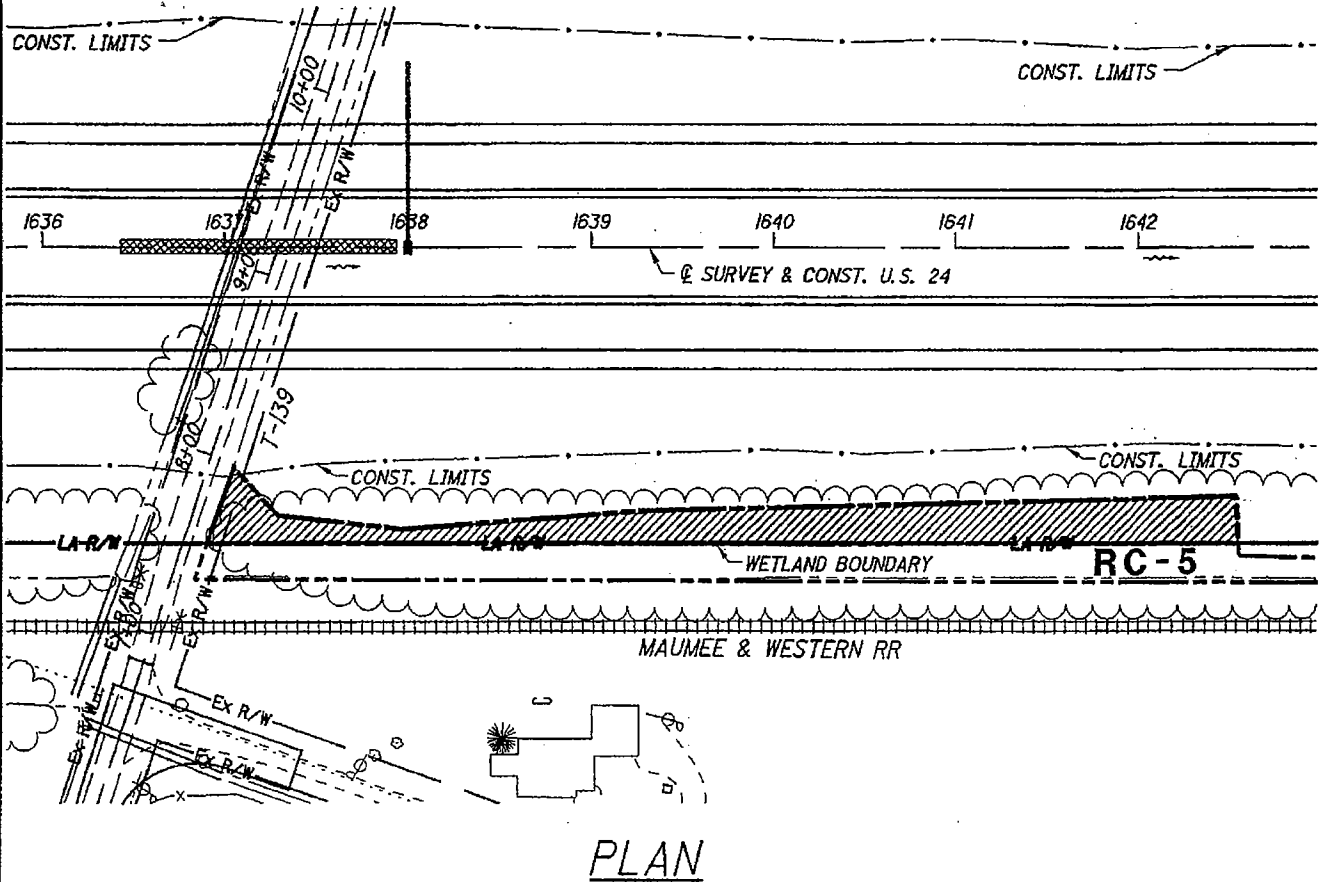
**IMPACTS TO
NON-ISOLATED
WETLAND OH-6**


OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULding COUNTY
PAU-24-0.00 PID 24334

U.S. Army Corps of
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Water Quality
Certification
Application

Date: 10-19-2004

Figure 13



WETLAND RC-5 (TOTAL FROM FIG. 9, 12 & 13)	
	TOTAL WETLAND LOSS (0.90 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
EXCAVATION BELOW OHW:	0.02 AC
FILL BELOW OHW:	18.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	
	0.88 AC

APPROXIMATE PLAN SCALE: 1"=100'



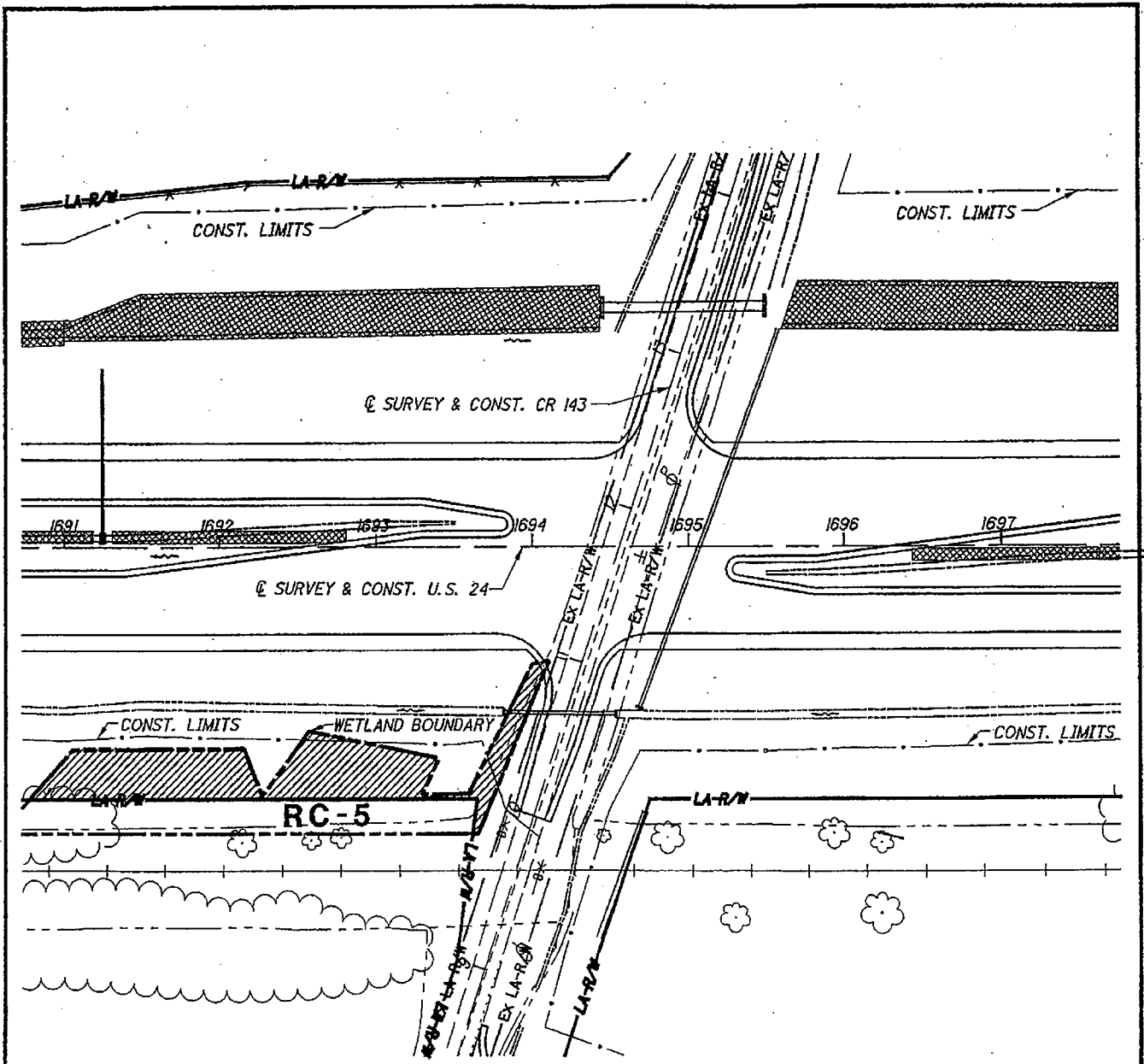
IMPACTS TO NON-ISOLATED WETLAND RC-5


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U.S. ROUTE 24 IN PAULDING COUNTY
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Date: 10-19-2004

Figure 14



WETLAND RC-5 (TOTAL FROM FIG. 9, 12 & 13)	
	TOTAL WETLAND LOSS (0.90 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
EXCAVATION BELOW OHW:	0.02 AC
FILL BELOW OHW:	18.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	
	0.88 AC

PLAN

APPROXIMATE PLAN SCALE: 1"=100'



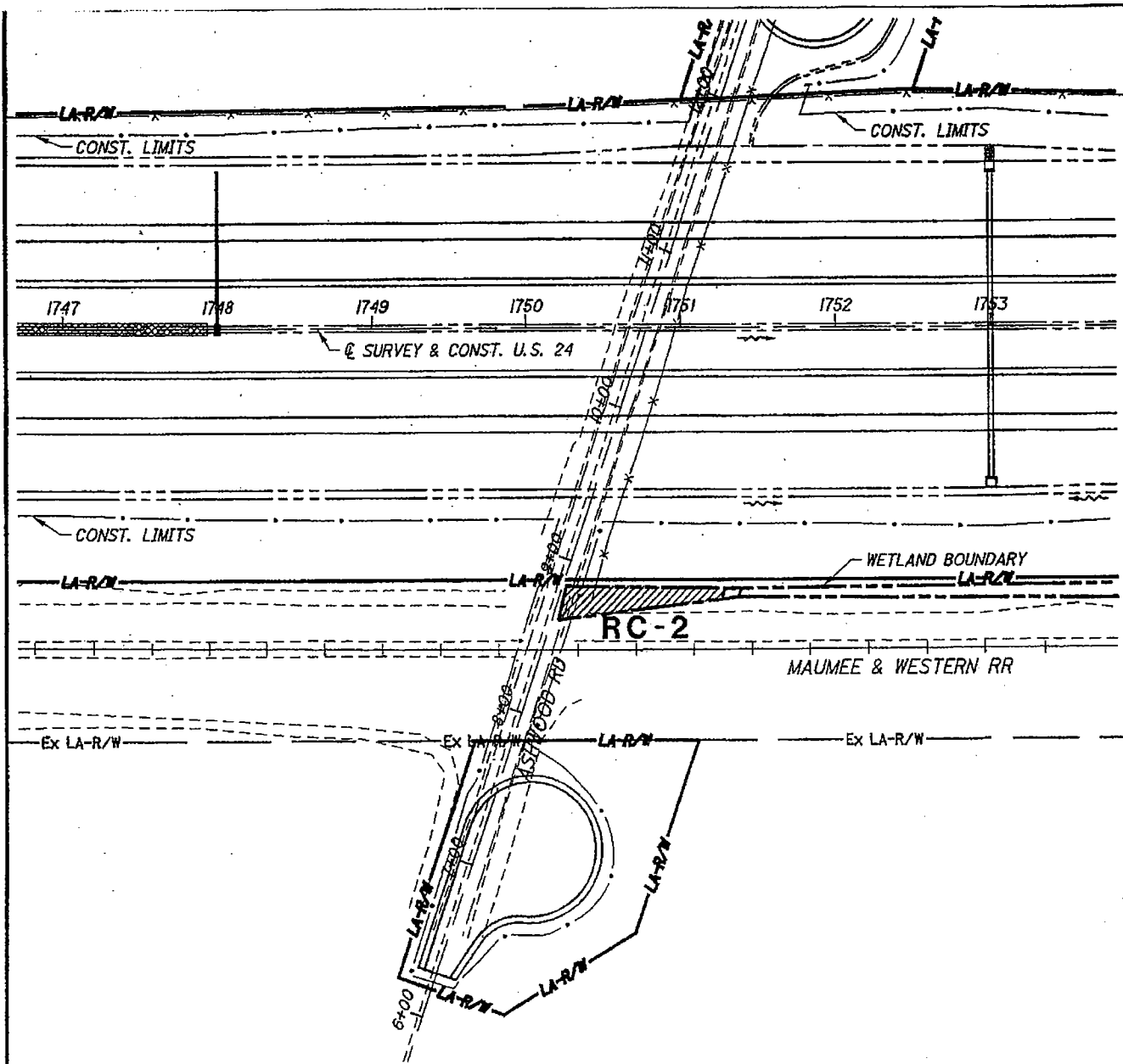
IMPACTS TO NON-ISOLATED WETLAND RC-5

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Date: 10-19-2004

Figure 15



PLAN

WETLAND RC-2 (TOTAL FROM FIG. 14 & 15)	
	TOTAL WETLAND LOSS (0.13 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.00 AC
EXCAVATION BELOW OHW:	7.00 CY
FILL BELOW OHW:	0.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.13 AC



APPROXIMATE PLAN SCALE: 1"=100'



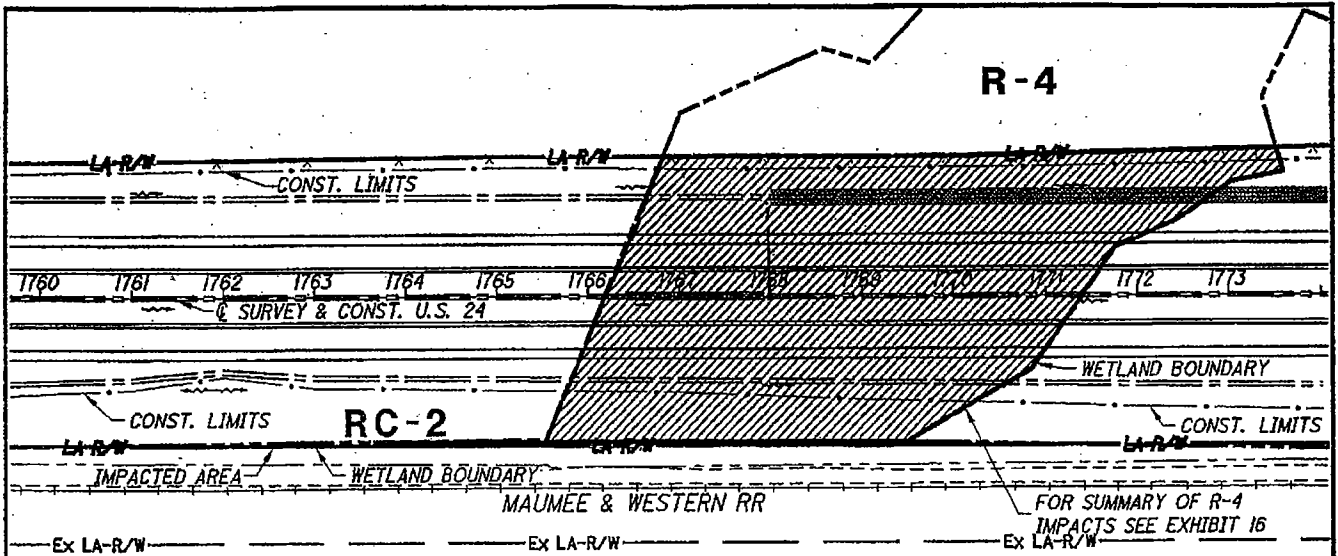
**IMPACTS TO
NON-ISOLATED
WETLAND RC-2**


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Application

Date: 10-19-2004

Figure 16



WETLAND RC-2 (TOTAL FROM FIG. 14 & 15)	
	TOTAL WETLAND LOSS (0.13 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.00 AC
EXCAVATION BELOW OHW:	7.00 CY
FILL BELOW OHW:	0.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.13 AC

PLAN



APPROXIMATE PLAN SCALE: 1"=200'




**IMPACTS TO
NON-ISOLATED
WETLAND RC-2**

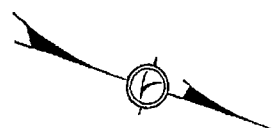
OHIO DEPARTMENT OF TRANSPORTATION
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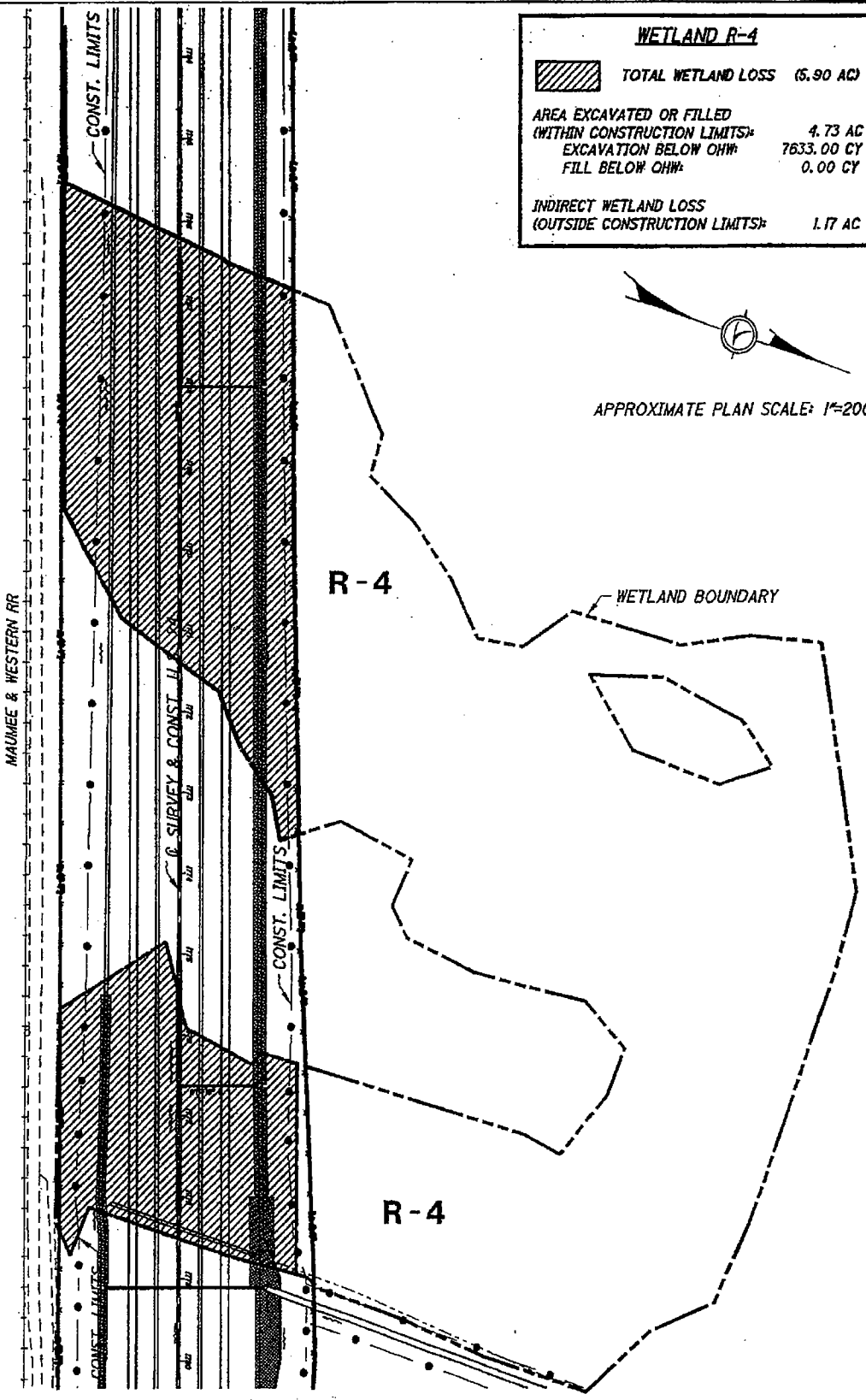
Date: 10-19-2004

Figure 17

WETLAND R-4	
	TOTAL WETLAND LOSS (5.90 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS): 4.73 AC	
EXCAVATION BELOW OHW: 7633.00 CY	
FILL BELOW OHW: 0.00 CY	
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS): 1.17 AC	



APPROXIMATE PLAN SCALE: 1"=200'



PLAN



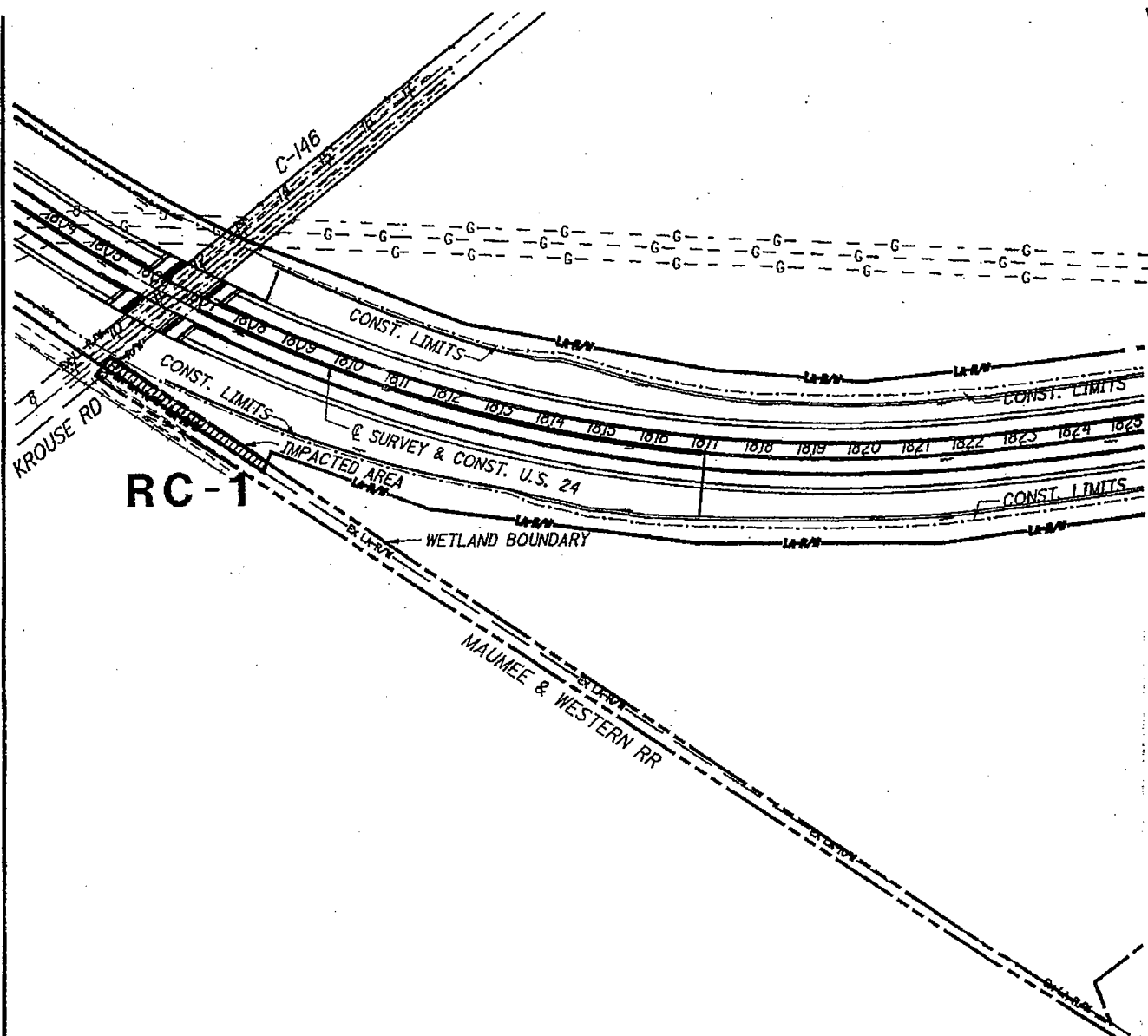
**IMPACTS TO
NON-ISOLATED
WETLAND R-4**

OHIO DEPARTMENT OF TRANSPORTATION
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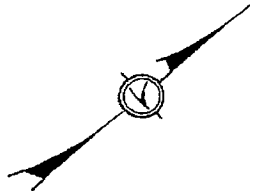
Date: 10-19-2004

Figure 18



RC-1

<u>WETLAND RC-1</u>	
	TOTAL WETLAND LOSS (0.16 AC)
AREA EXCAVATED OR FILLED	
(WITHIN CONSTRUCTION LIMITS):	0.00 AC
EXCAVATION BELOW OHW:	0.00 CY
FILL BELOW OHW:	0.00 CY
INDIRECT WETLAND LOSS	
(OUTSIDE CONSTRUCTION LIMITS):	0.16 AC



PLAN

APPROXIMATE PLAN SCALE: 1"=300'



**IMPACT TO
NON-ISOLATED
WETLAND RC-1**

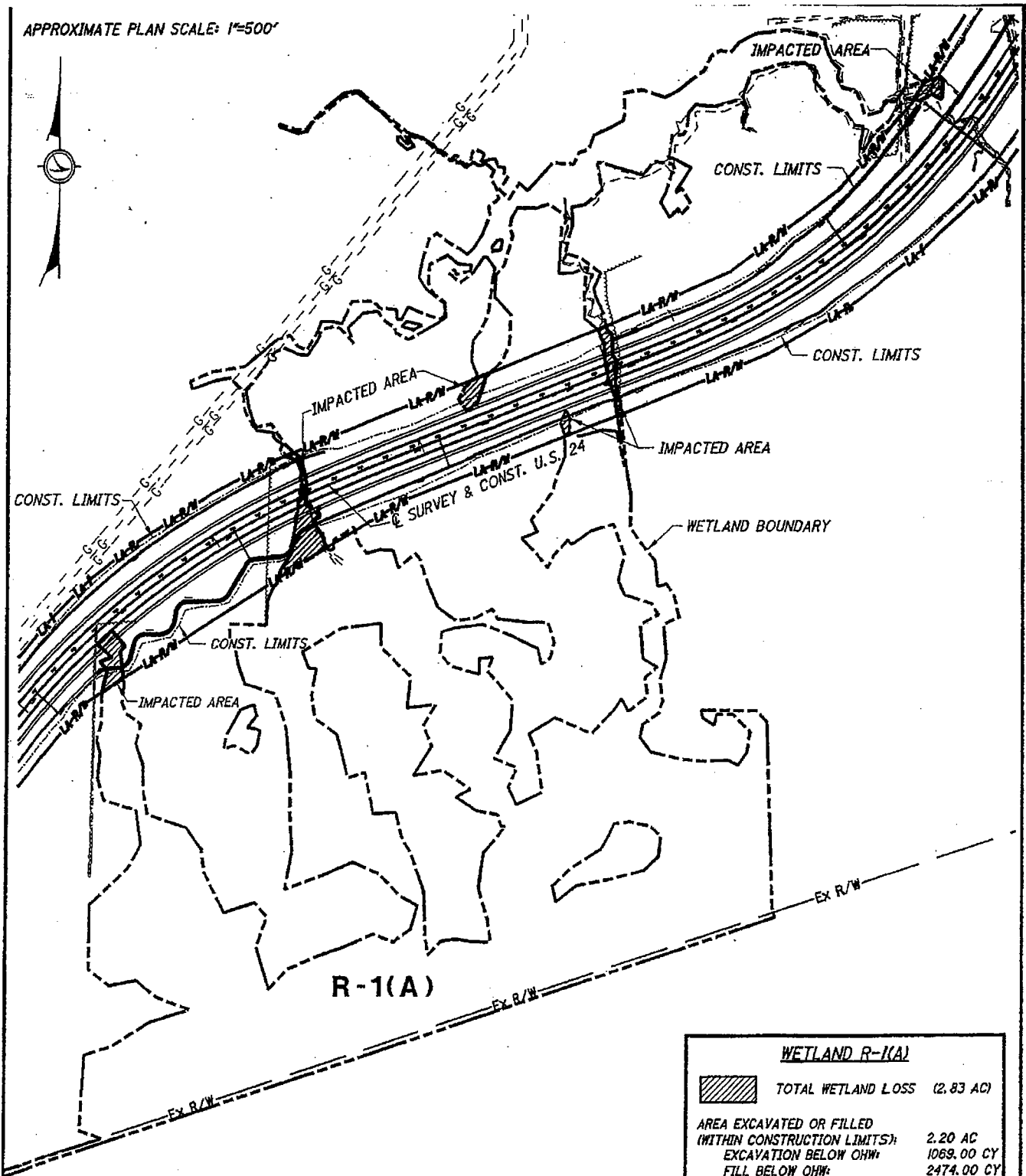
OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULDING COUNTY
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Date: 10-19-2004

Figure 19

APPROXIMATE PLAN SCALE: 1"=500'



PLAN

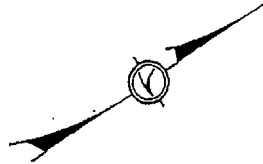
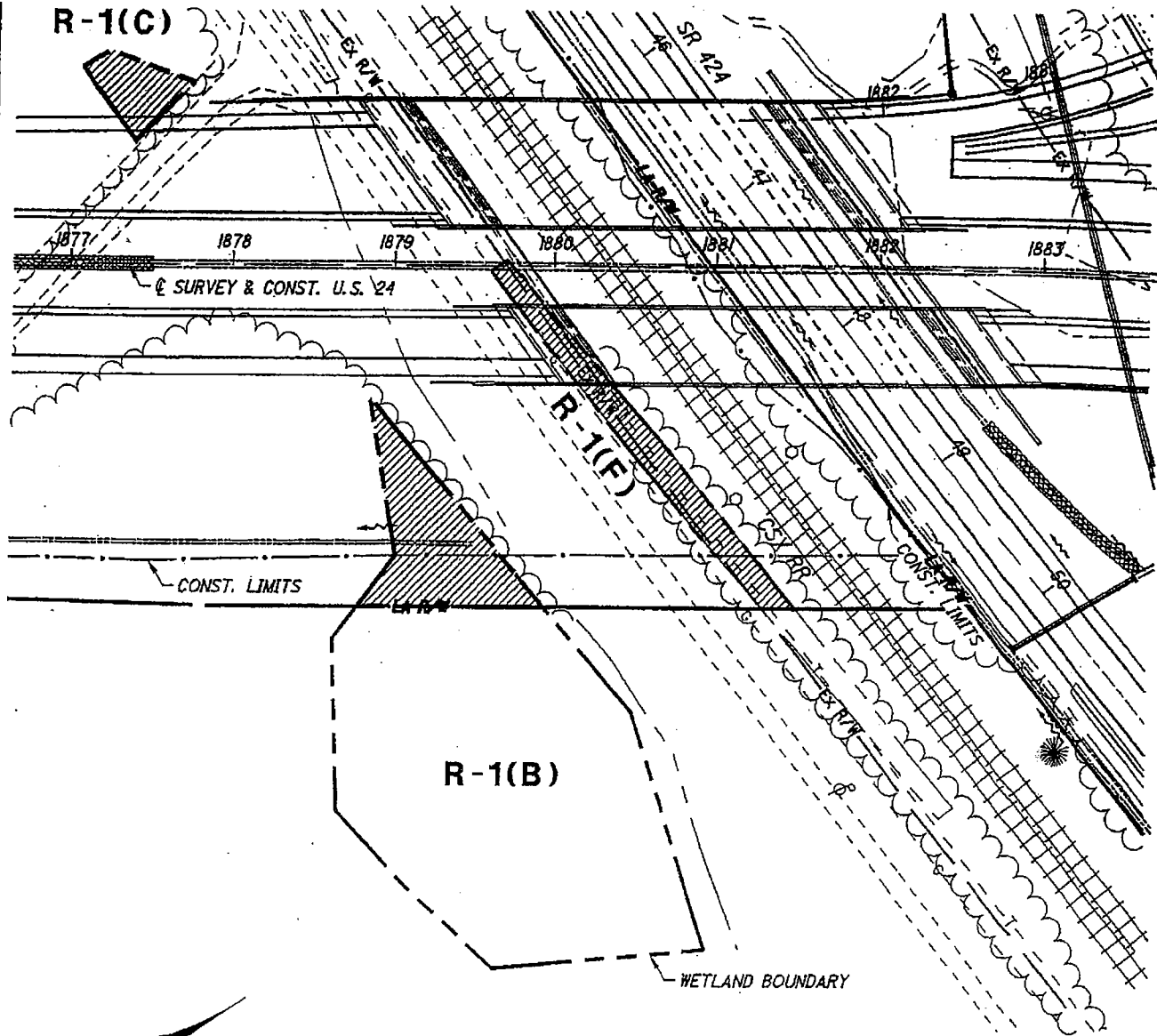
<u>WETLAND R-1(A)</u>	
	TOTAL WETLAND LOSS (2.83 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	2.20 AC
EXCAVATION BELOW OHW:	1069.00 CY
FILL BELOW OHW:	2474.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.63 AC



**IMPACTS TO
NON-ISOLATED
WETLAND R-1(A)**
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Date: 10-19-2004
Figure 20


R-1(C)




PLAN

APPROXIMATE PLAN SCALE: 1"=100'

<u>WETLAND R-1(B)</u>	
 TOTAL WETLAND LOSS	(0.13 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.07 AC
EXCAVATION BELOW OHW:	54.00 CY
FILL BELOW OHW:	60.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.06 CY

<u>WETLAND R-1(C)</u>	
 TOTAL WETLAND LOSS	(0.04 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.04 CY
EXCAVATION BELOW OHW:	0.00 CY
FILL BELOW OHW:	65.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 CY

<u>WETLAND R-1(F)</u>	
 TOTAL WETLAND LOSS	(0.09 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.07 AC
EXCAVATION BELOW OHW:	14.00 CY
FILL BELOW OHW:	103.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.02 CY



IMPACTS TO NON-ISOLATED WETLANDS R-1(B)-(C) AND R-1(F)


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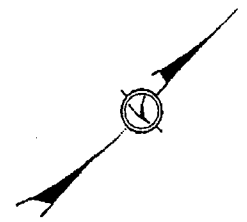
Date: 10-19-2004

Figure 21



WETLAND R-1(G)	
	TOTAL WETLAND LOSS 10.56 AC
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.40 AC
EXCAVATION BELOW OHW:	79.00 CY
FILL BELOW OHW:	558.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.16 AC

PLAN



APPROXIMATE PLAN SCALE: 1"=200'



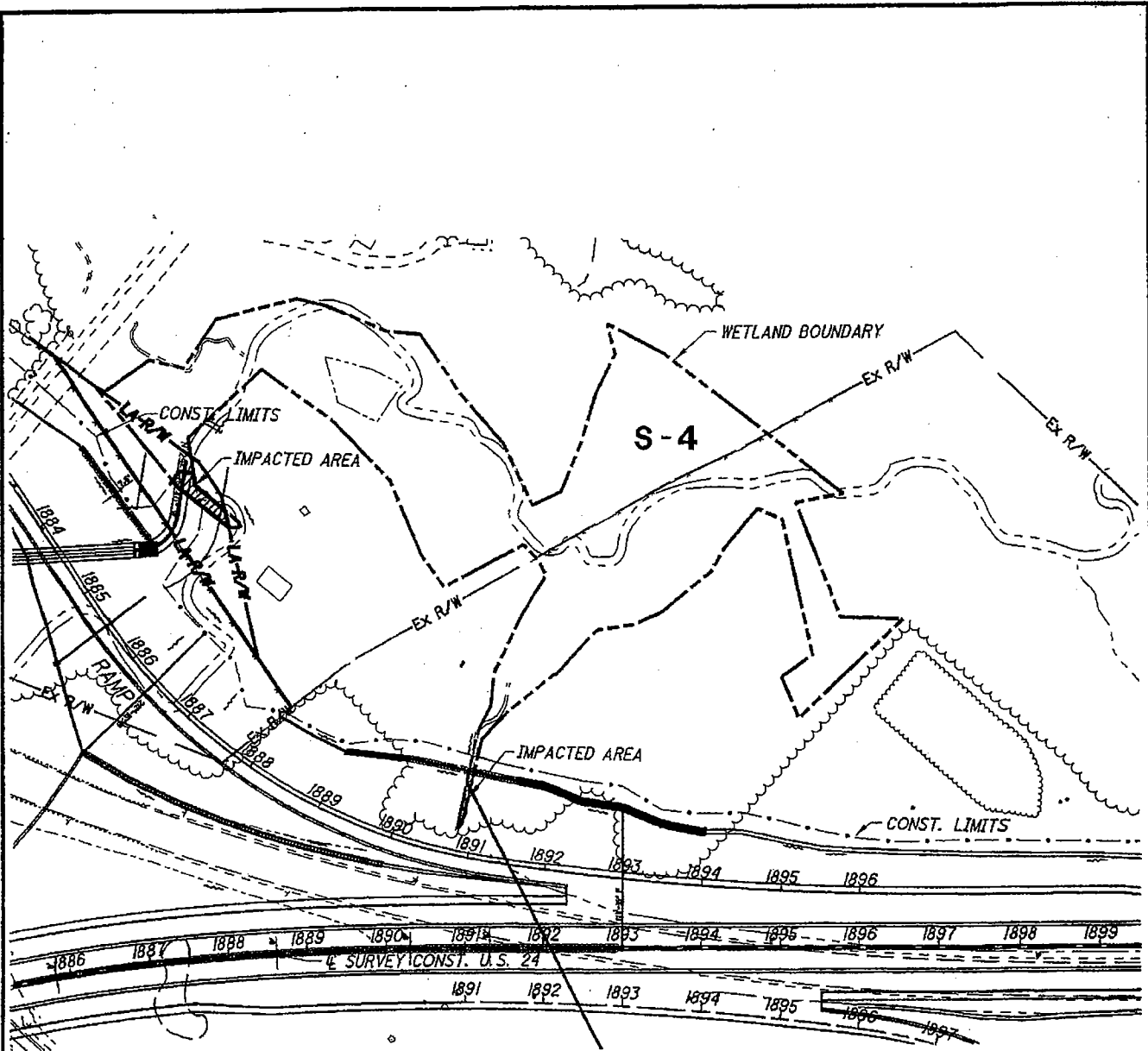
IMPACT TO NON-ISOLATED WETLAND R-1(G)

OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULDING COUNTY
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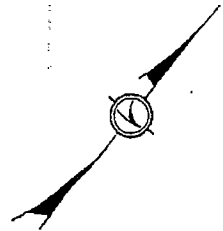
Date: 10-19-2004

Figure 22



PLAN

<u>WETLAND S-4</u>	
	TOTAL WETLAND LOSS (0.12 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
EXCAVATION BELOW OHW:	0.03 CY
FILL BELOW OHW:	36.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	
	0.09 CY



APPROXIMATE PLAN SCALE: 1"=200'



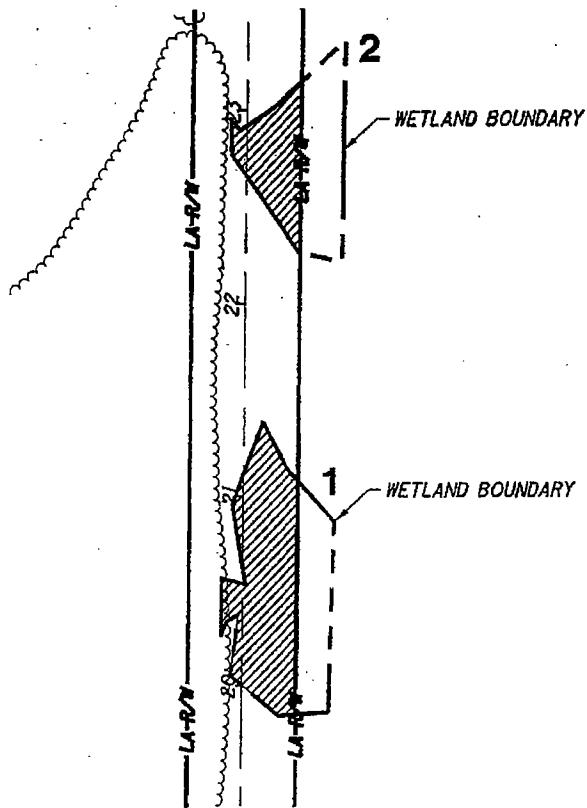
**IMPACTS TO
NON-ISOLATED
WETLAND S-4**

OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULDING COUNTY
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
U.S. Army Corps of
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Application


Date: 10-19-2004

Figure 23



PLAN

<u>WETLAND 1</u>	
	TOTAL WETLAND LOSS (0.15 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.10 AC
EXCAVATION BELOW OHW:	188.00 CY
FILL BELOW OHW:	0.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.05 AC

<u>WETLAND 2</u>	
	TOTAL WETLAND LOSS (0.10 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.04 AC
EXCAVATION BELOW OHW:	34.00 CY
FILL BELOW OHW:	0.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.06 AC



APPROXIMATE PLAN SCALE: 1"=100'



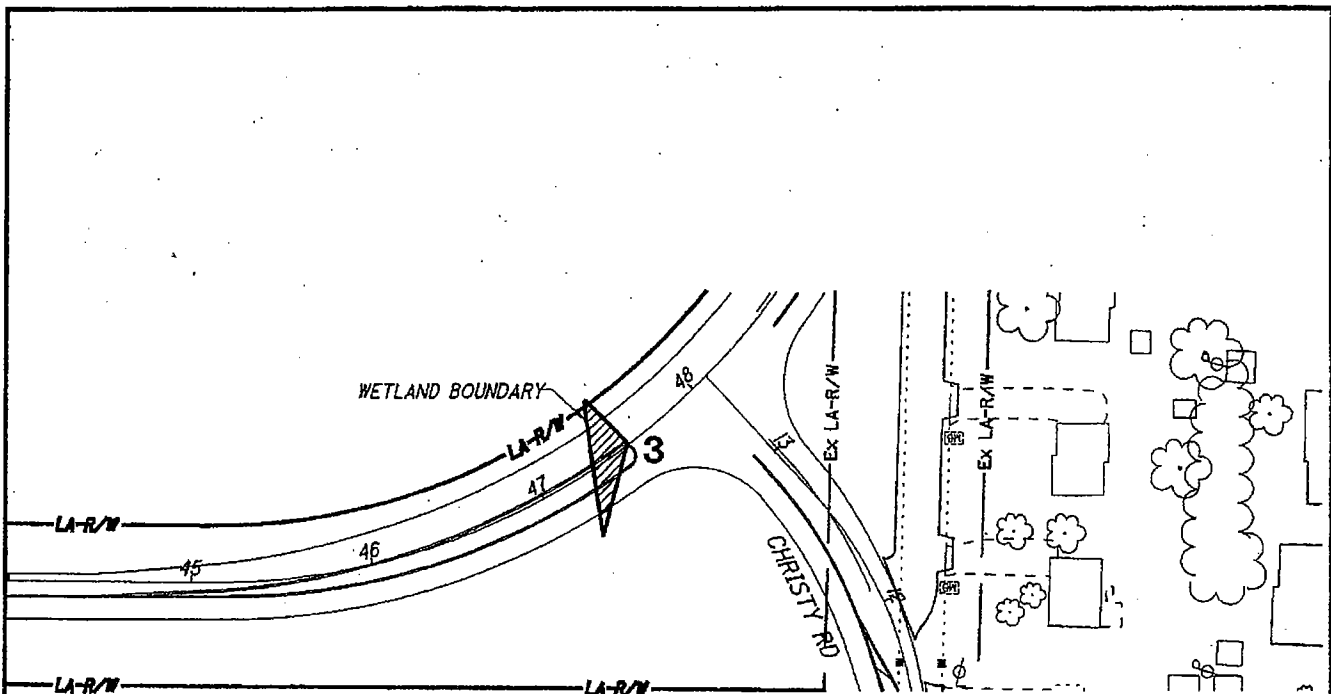
IMPACTS TO ISOLATED WETLANDS 1-2

OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULDING COUNTY
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
U.S. Army Corps of
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Application

Date: 10-19-2004

Figure 24



PLAN

<u>WETLAND 3</u>	
	TOTAL WETLAND LOSS (0.02 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.02 AC
EXCAVATION BELOW OHW:	6.00 CY
FILL BELOW OHW:	1.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 CY



APPROXIMATE PLAN SCALE: 1"=100'



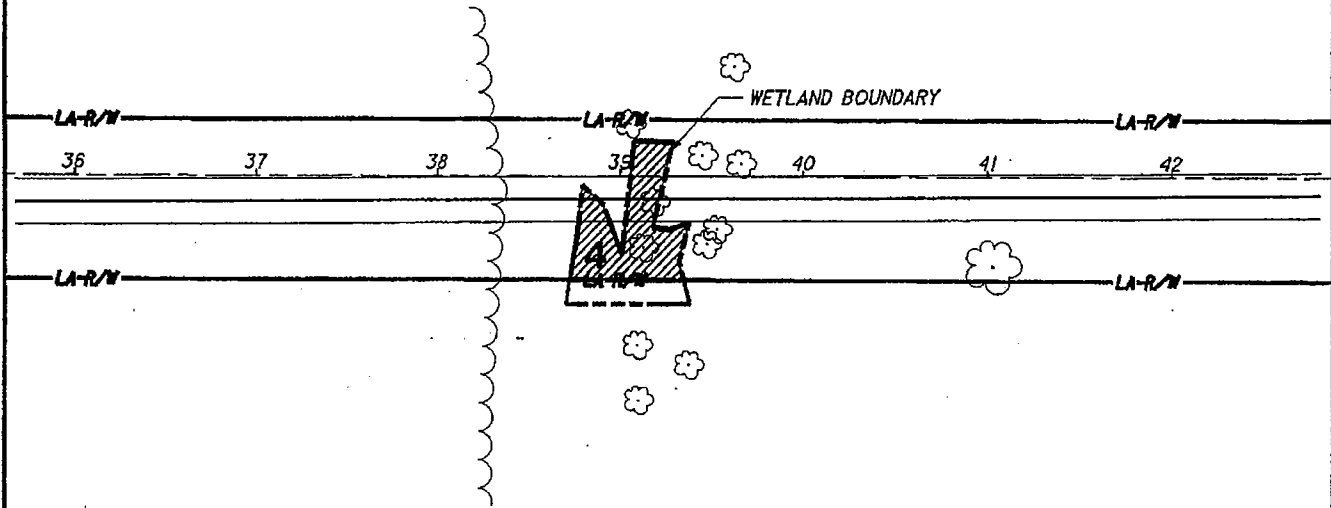
**IMPACT TO
ISOLATED
WETLAND 3**

OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULDING COUNTY
PAU-24-0.00 PID 24334


U.S. Army Corps of
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Water Quality
Certification
Application

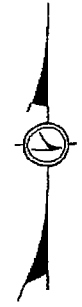
Date: 10-19-2004

Figure 25



PLAN

<u>WETLAND 4</u>	
	TOTAL WETLAND LOSS (0.08 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.07 AC
EXCAVATION BELOW OHW:	83.00 CY
FILL BELOW OHW:	9.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.01 AC



APPROXIMATE PLAN SCALE: 1"=100'



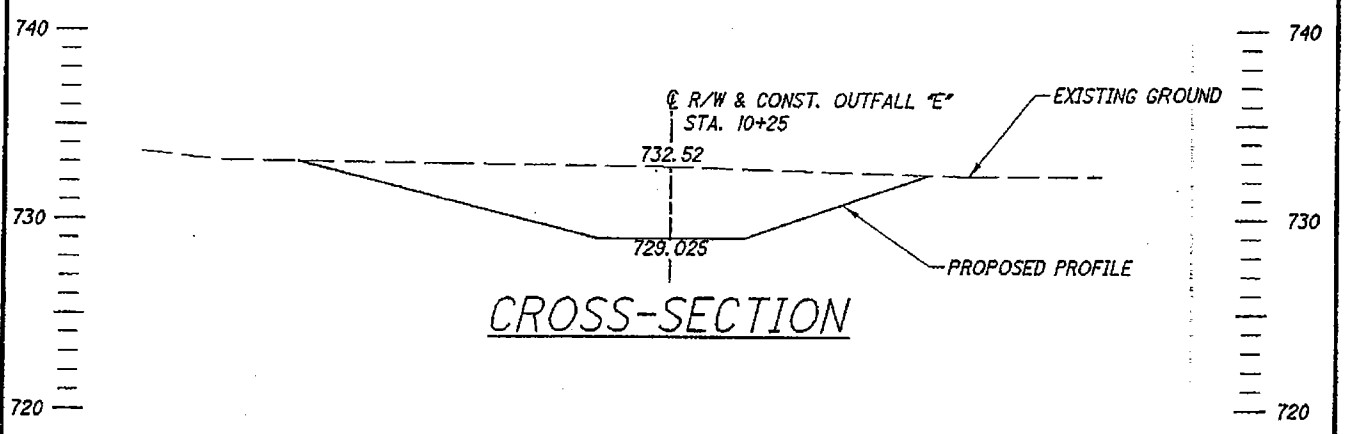
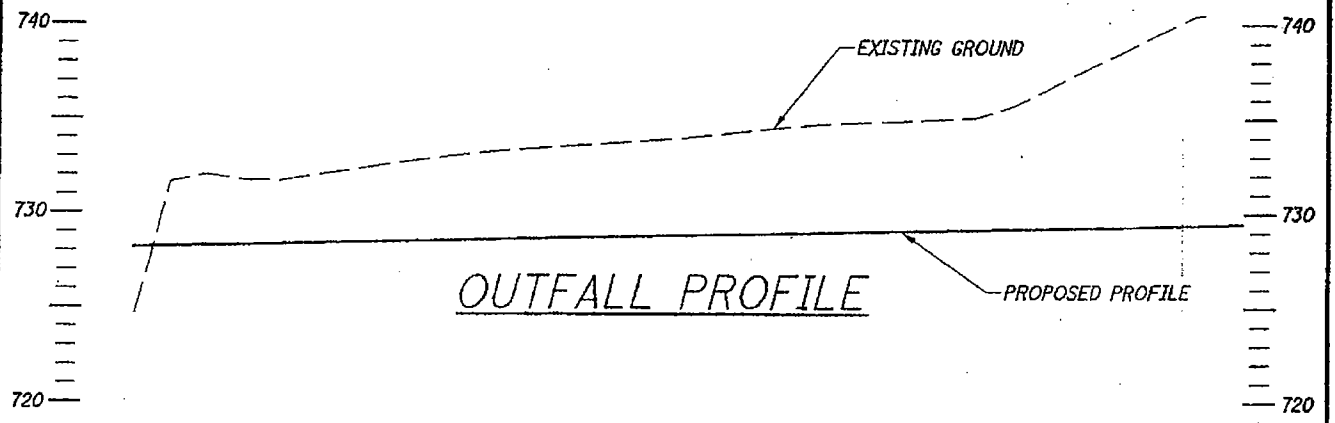
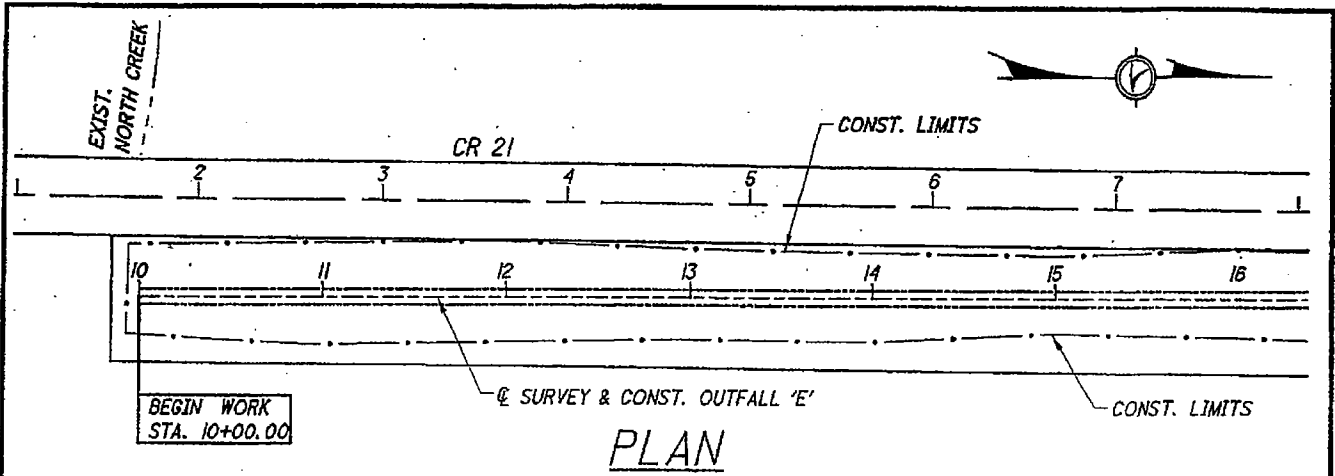
**IMPACT TO
ISOLATED
WETLAND 4**

OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULDING COUNTY
PAU-24-0.00 PID 24334

U.S. Army Corps of
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Application

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Figure 26

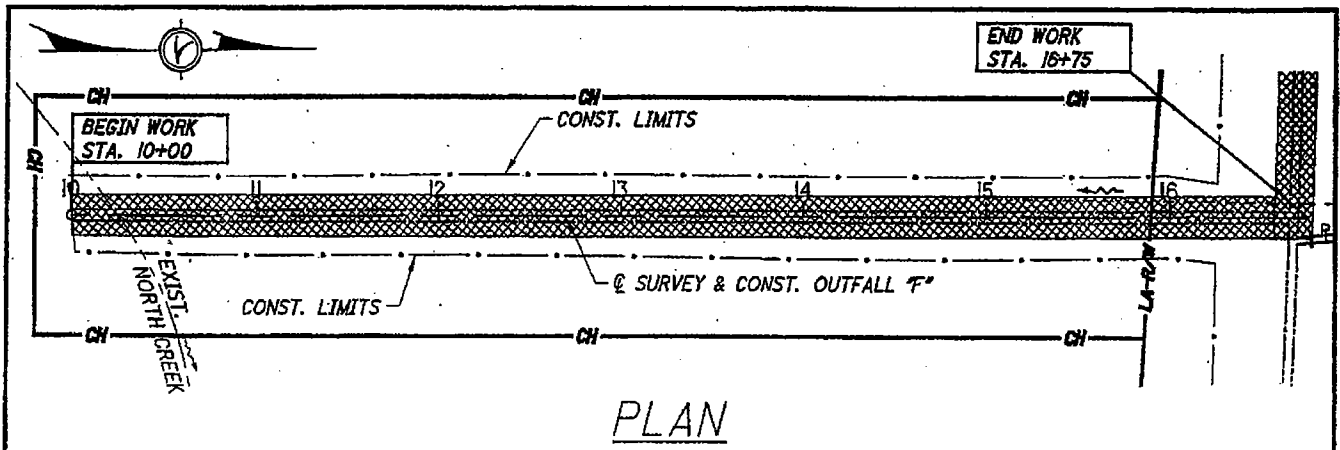


APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=10'

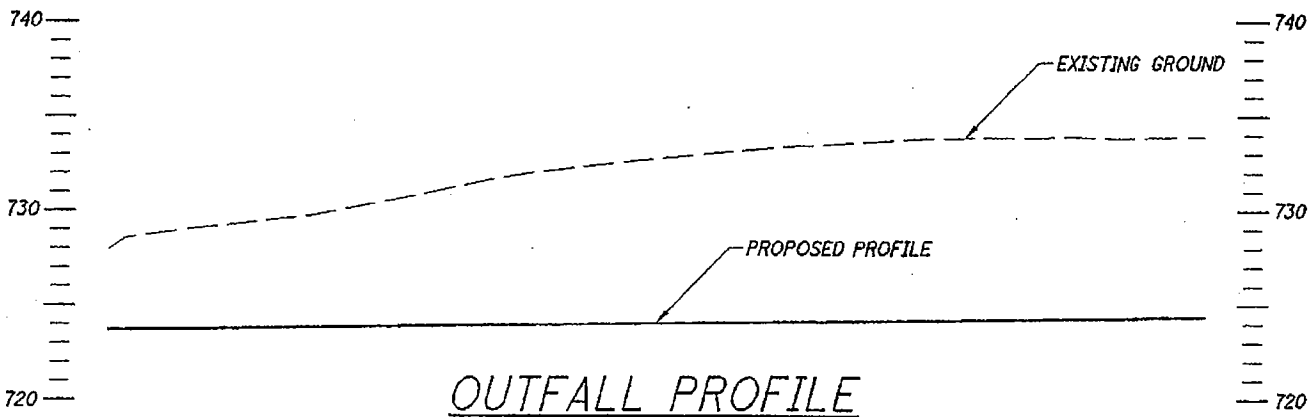


**IMPACT AT
 OUTFALL 44
 NORTH CREEK**
 OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

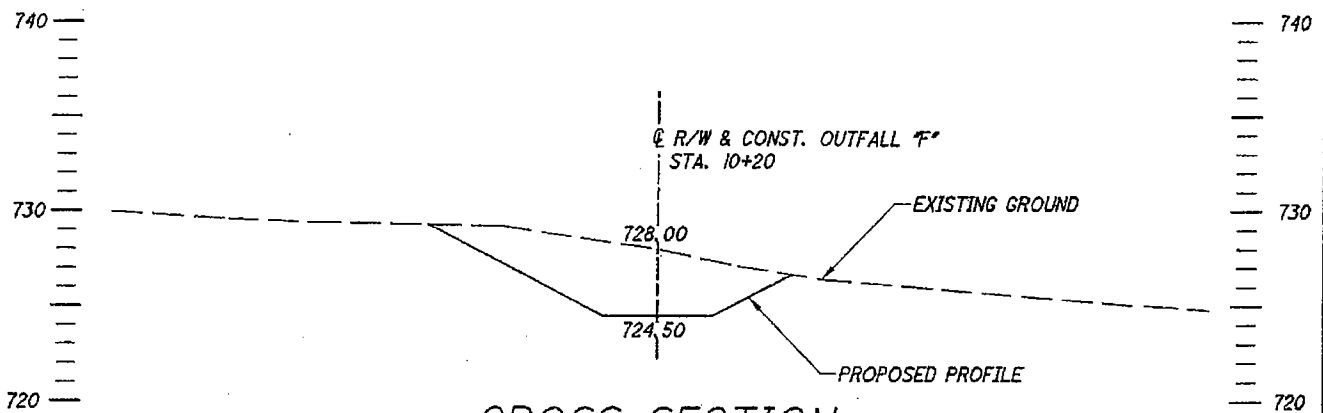
U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
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 Date: 10-19-2004
 Figure 27



PLAN



OUTFALL PROFILE



CROSS-SECTION

APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS SECTION HORIZONTAL SCALE: 1"=10'



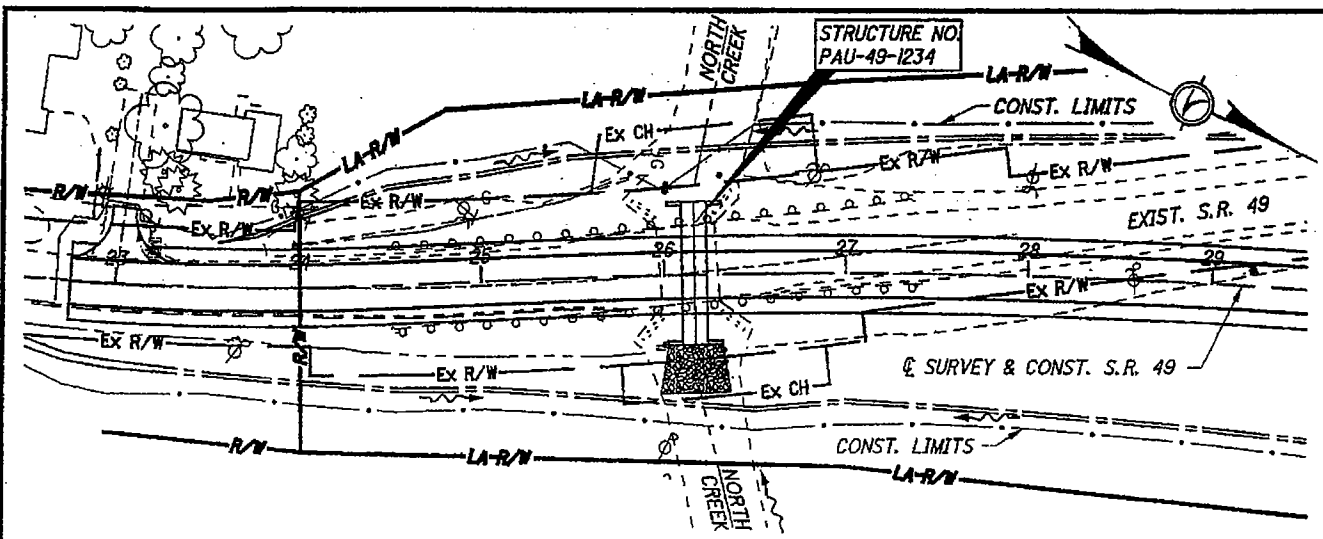
**IMPACT AT
 OUTFALL 42
 NORTH CREEK**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

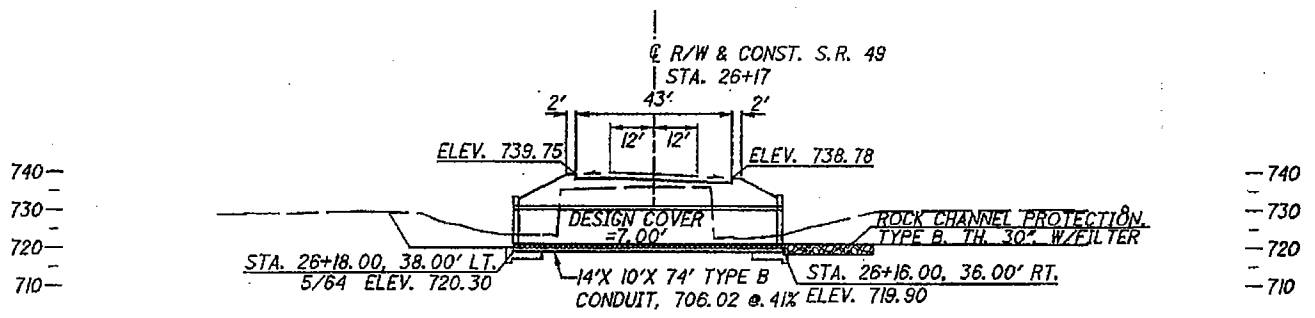
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 Application

Date: 10-19-2004

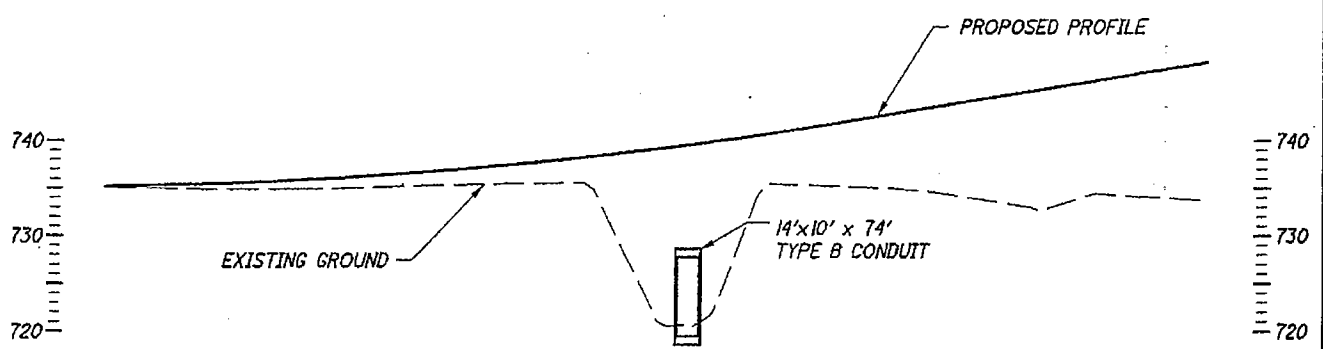
Figure 28



PLAN



CULVERT PROFILE



CROSS-SECTION

APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=50'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=100'



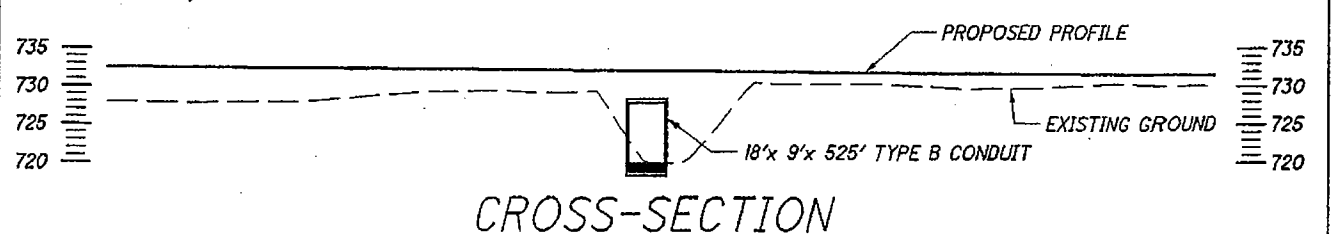
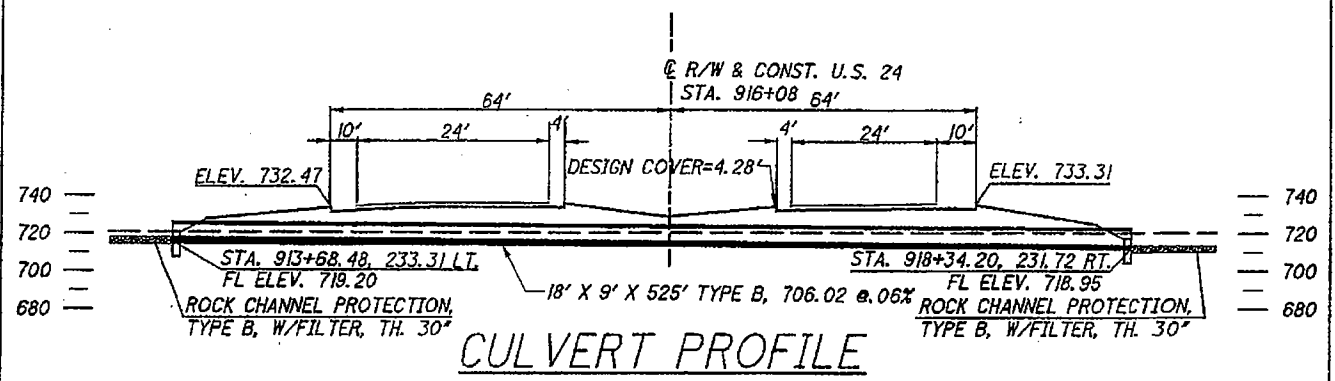
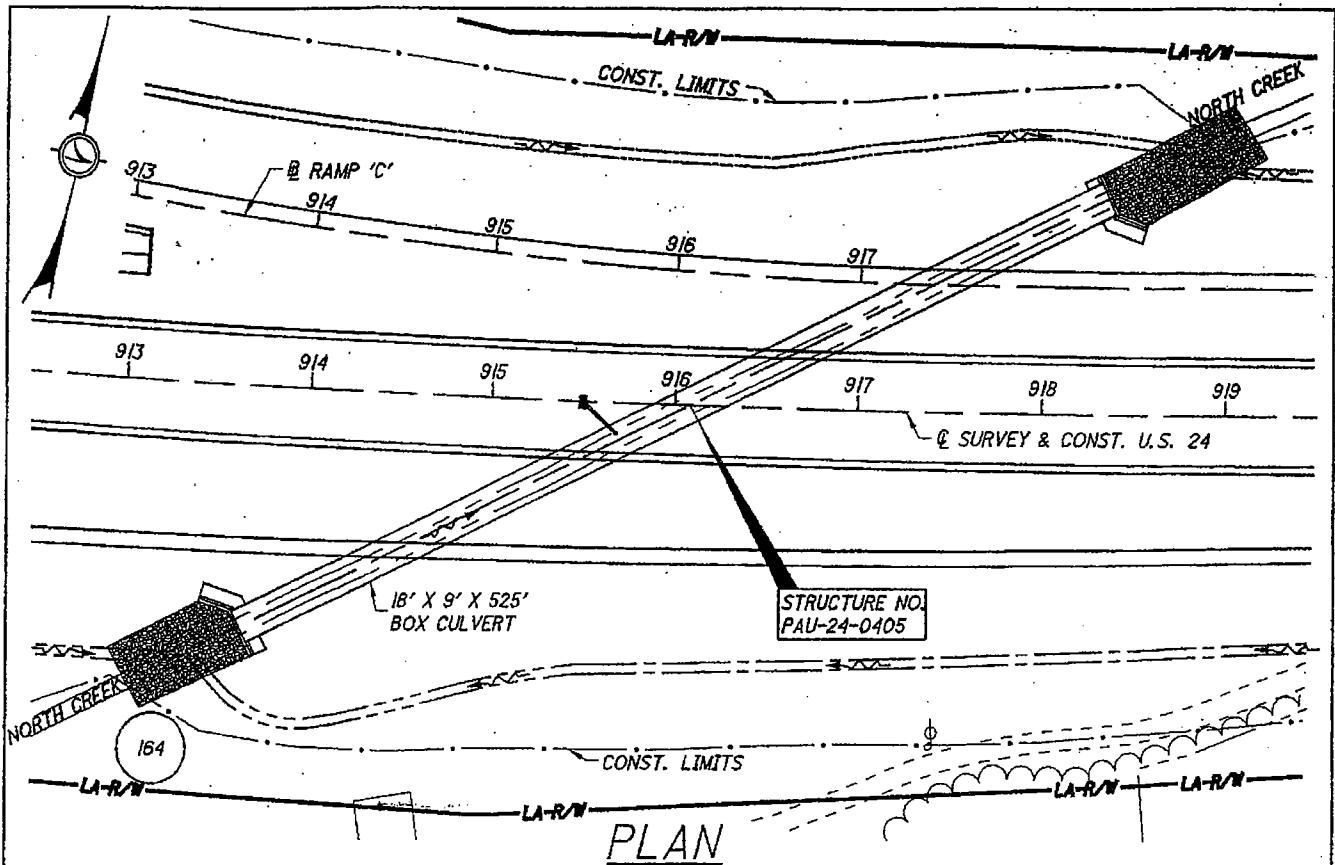
**IMPACTS AT STREAM
 CROSSING 41
 NORTH CREEK**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
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 Water Quality
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Date: 10-19-2004

Figure 29



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE HORIZONTAL PROFILE SCALE: 1"=100'
 APPROXIMATE HORIZONTAL CROSS-SECTION SCALE: 1"=100'



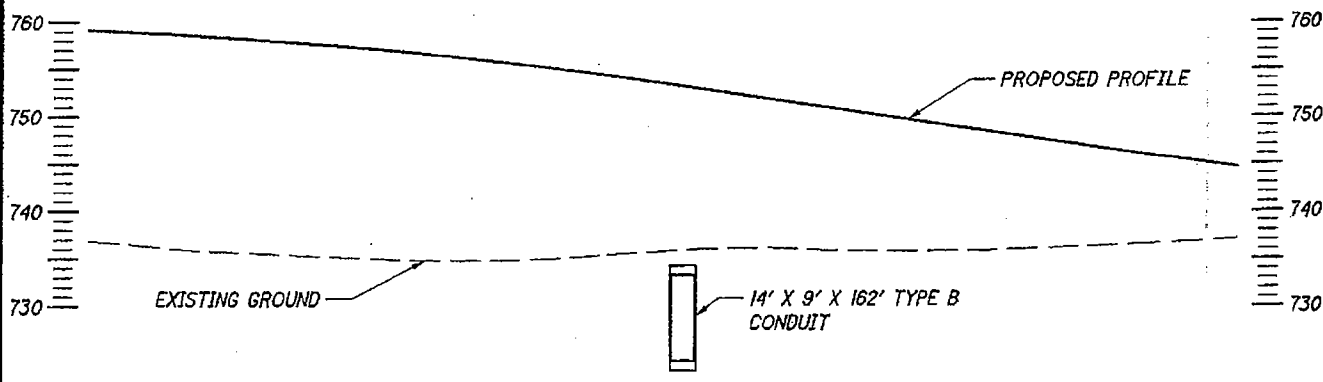
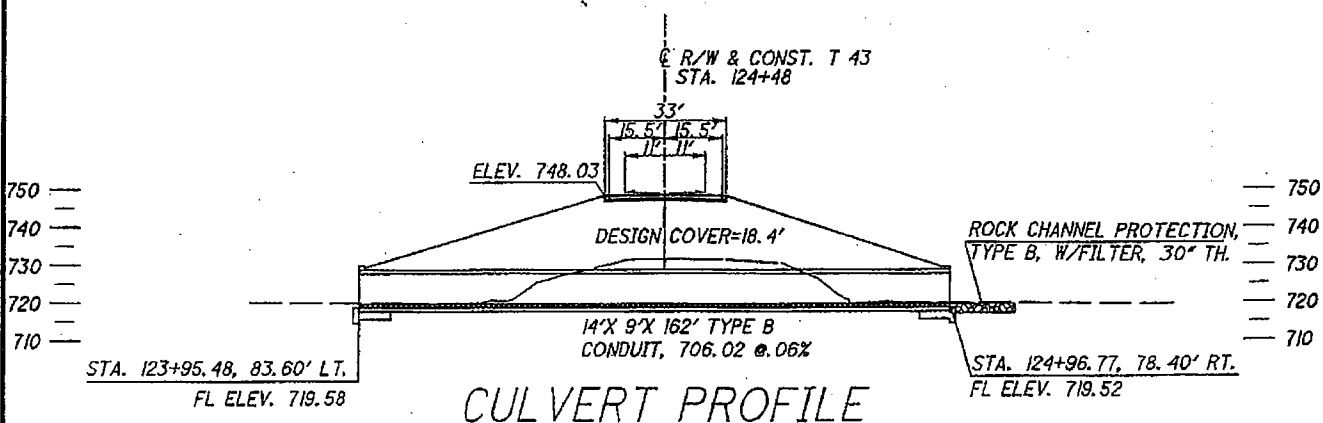
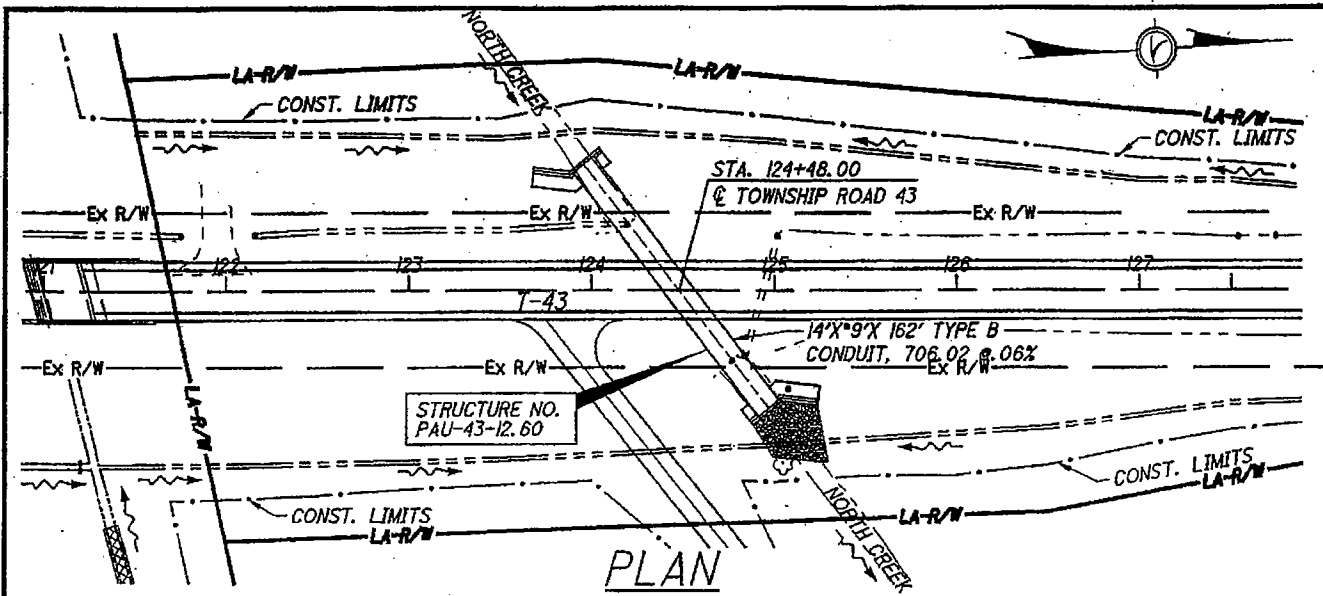
**IMPACTS AT
 STREAM CROSSING OH-58
 NORTH CREEK**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

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Date: 10-19-2004

Figure 30



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=50'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=100'



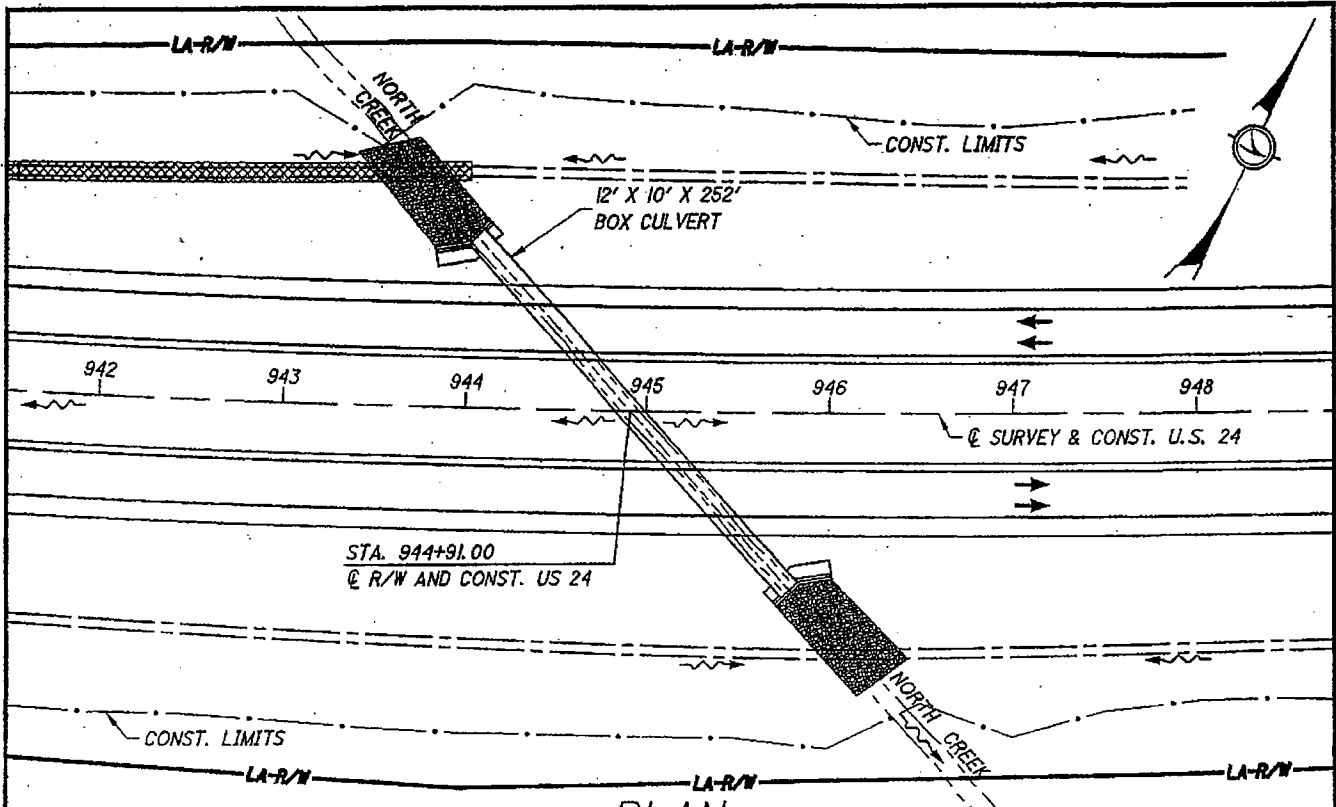
**IMPACTS AT
 STREAM CROSSING OH-58A
 NORTH CREEK**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

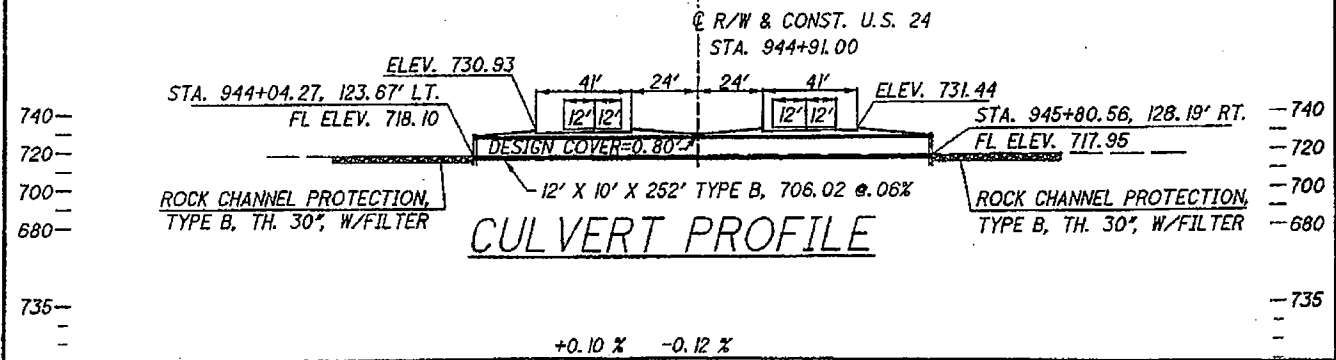
U.S. Army Corps of
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Date: 10-19-2004

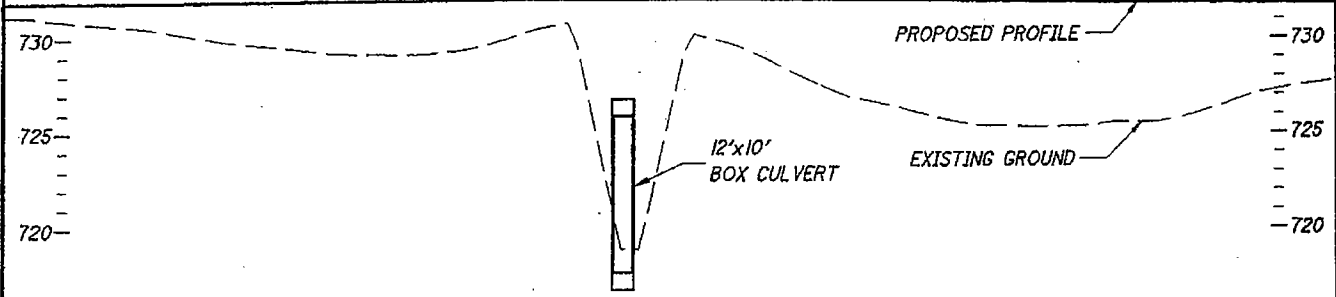
Figure 31



PLAN



CULVERT PROFILE



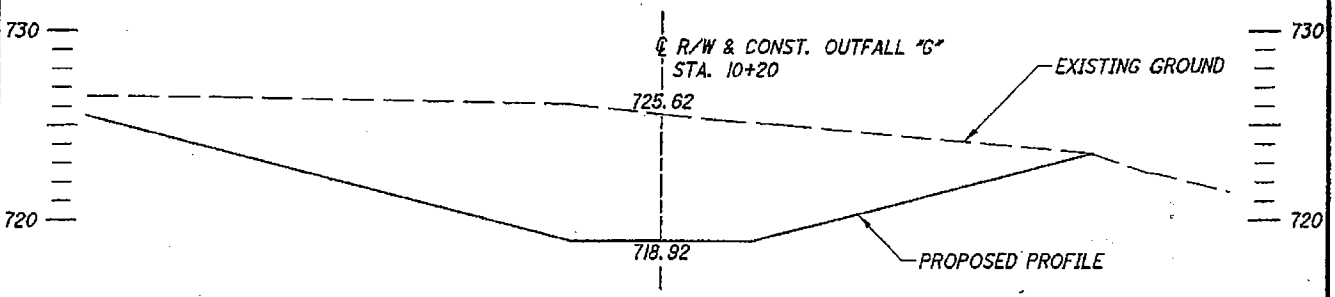
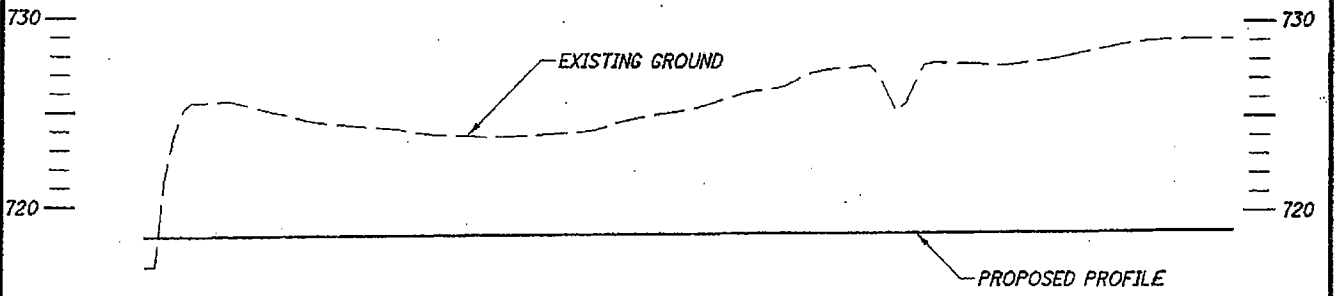
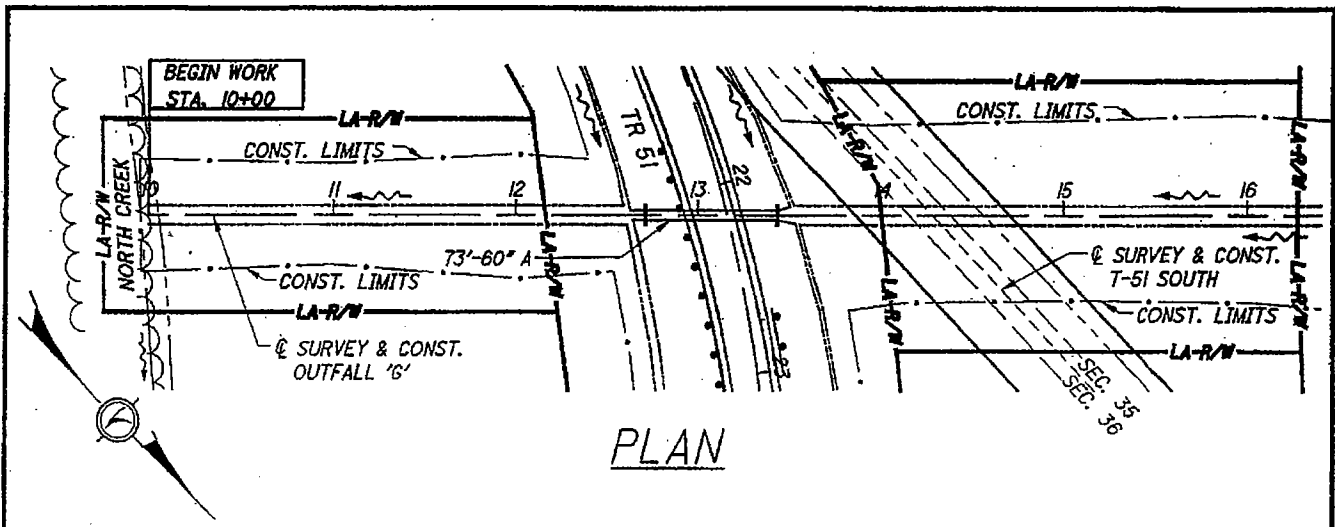
CROSS-SECTION

APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE HORIZONTAL PROFILE SCALE: 1"=100'
 APPROXIMATE HORIZONTAL CROSS-SECTION SCALE: 1"=100'



**IMPACTS AT
 STREAM CROSSING OH-60
 NORTH CREEK**
 OHIO DEPARTMENT OF TRANSPORTATION
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 Certification
 Application
 Date: 10-19-2004
 Figure 32



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=10'



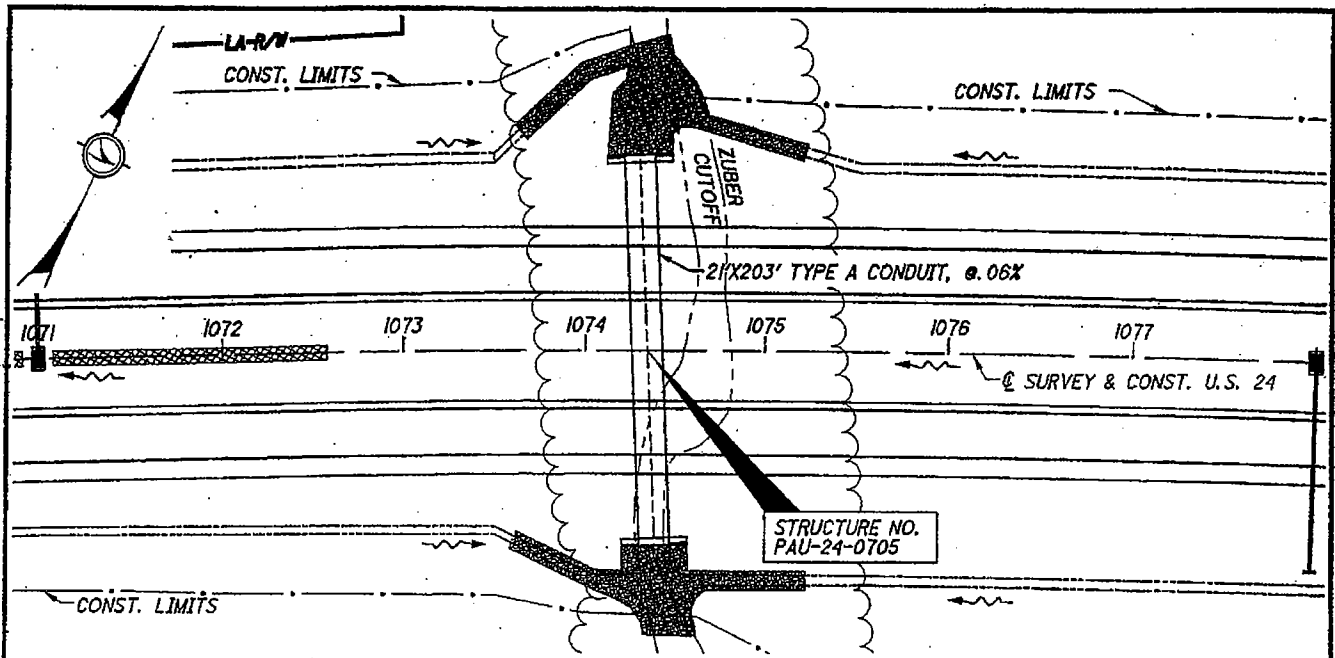
**IMPACT AT
 OUTFALL 35
 NORTH CREEK**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

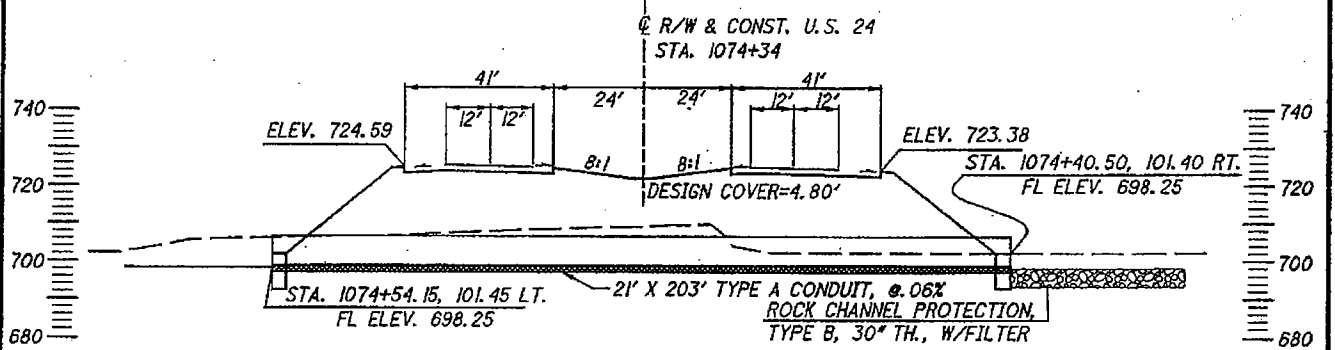
U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004

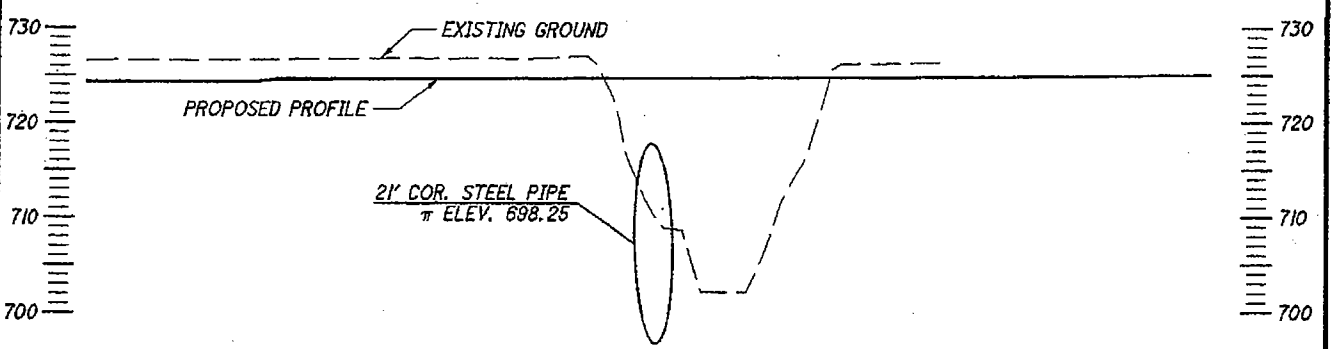
Figure 33



PLAN



CULVERT PROFILE



CROSS-SECTION

APPROXIMATE PLAN SCALE: 1"=100'
APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=50'
APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=100'



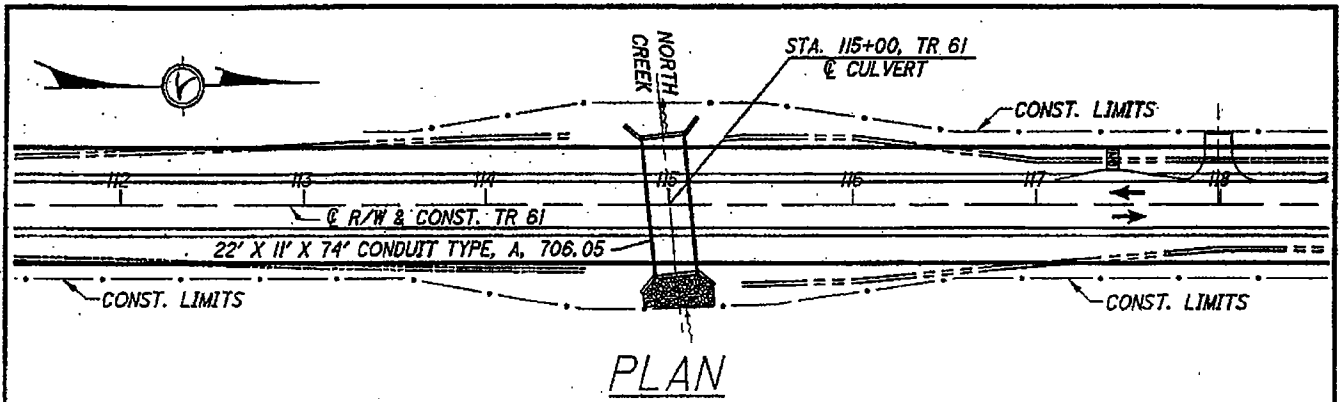
**IMPACTS AT
STREAM CROSSING 30/OH-64
ZUBER CUTOFF**

OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULDING COUNTY
PAU-24-0.00 PID 24334

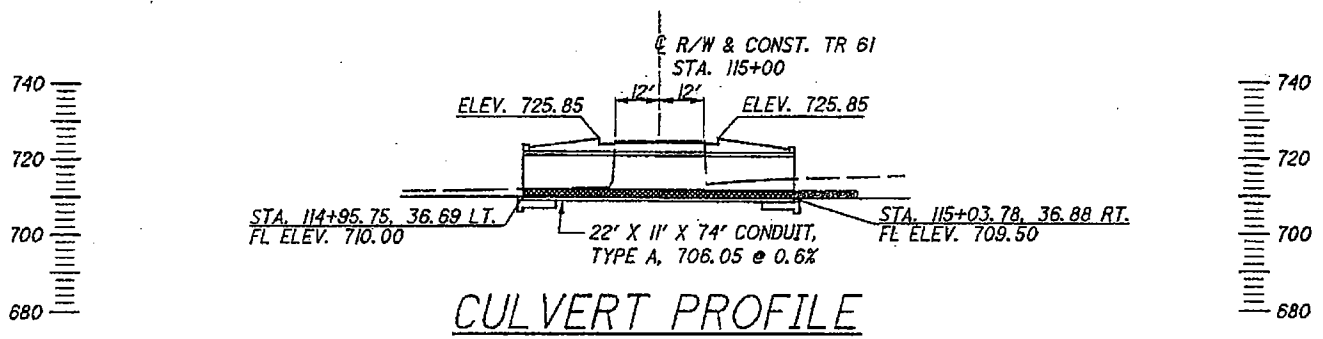
U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application

Date: 10-19-2004

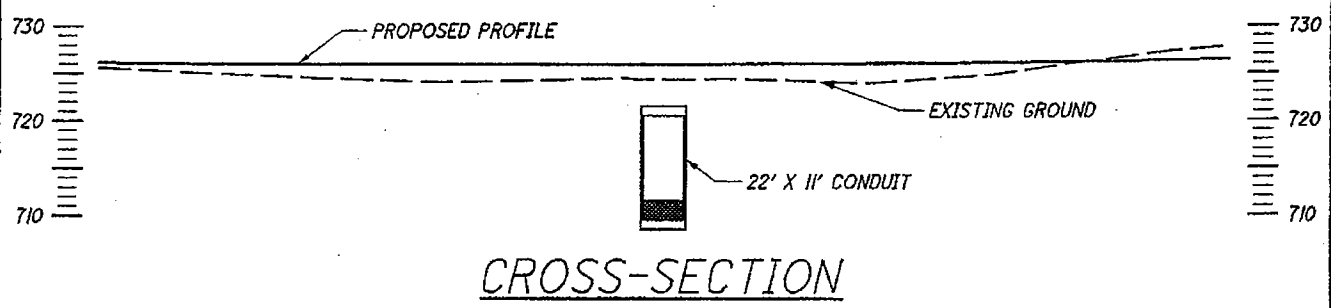
Figure 34



PLAN



CULVERT PROFILE



CROSS-SECTION

APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=50'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=100'



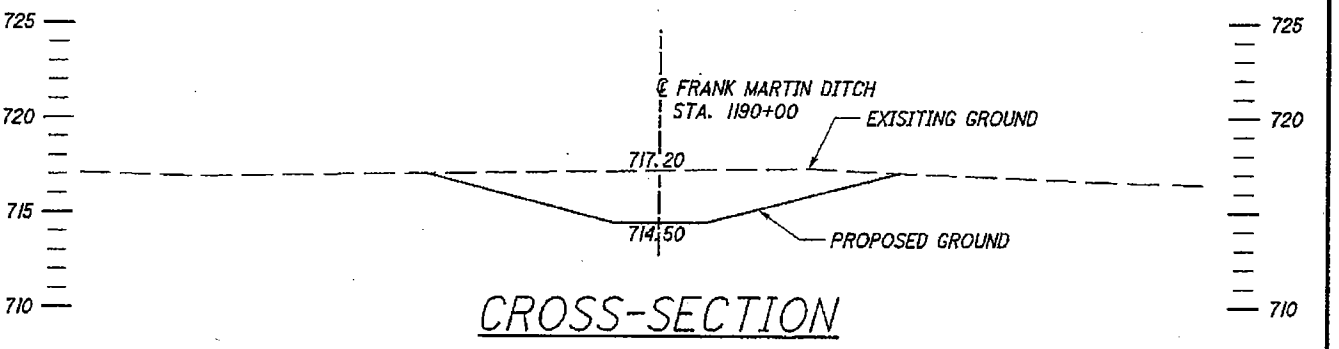
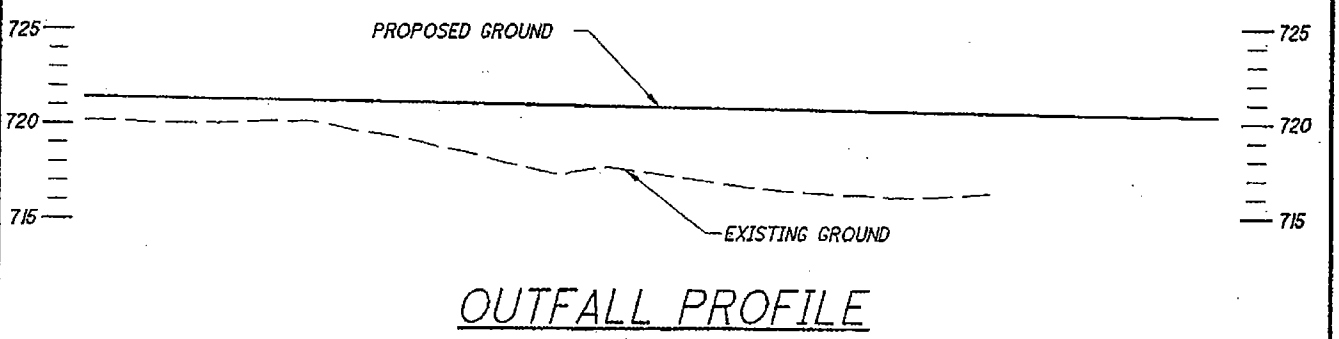
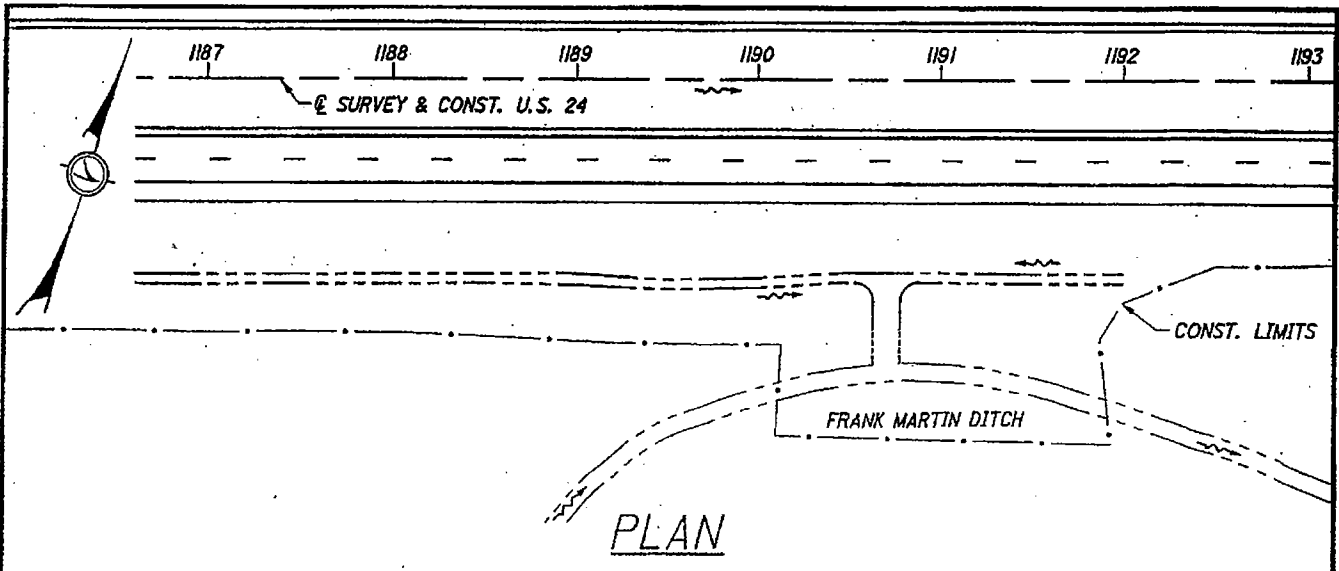
**IMPACT AT
 STREAM CROSSING 32
 NORTH CREEK**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004

Figure 35



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=10'



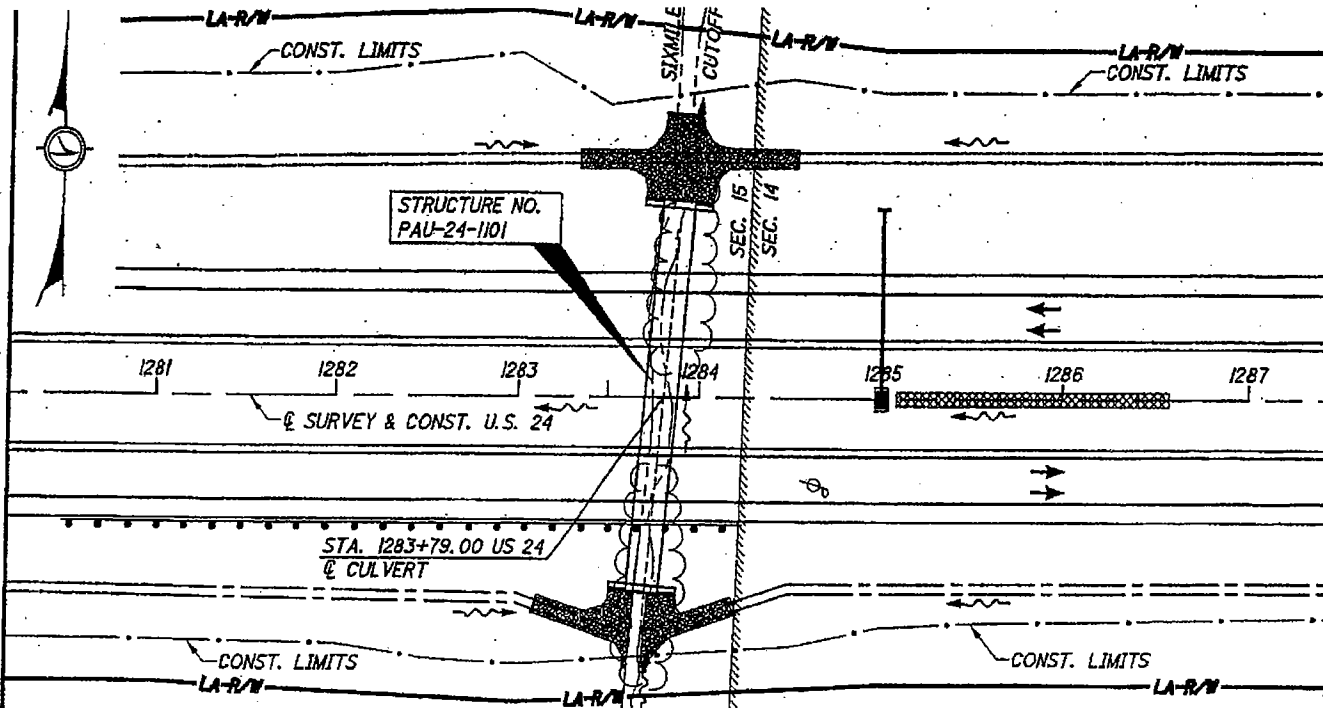
**IMPACT AT OUTFALL 28/ OH-80
 FRANK MARTIN DITCH**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

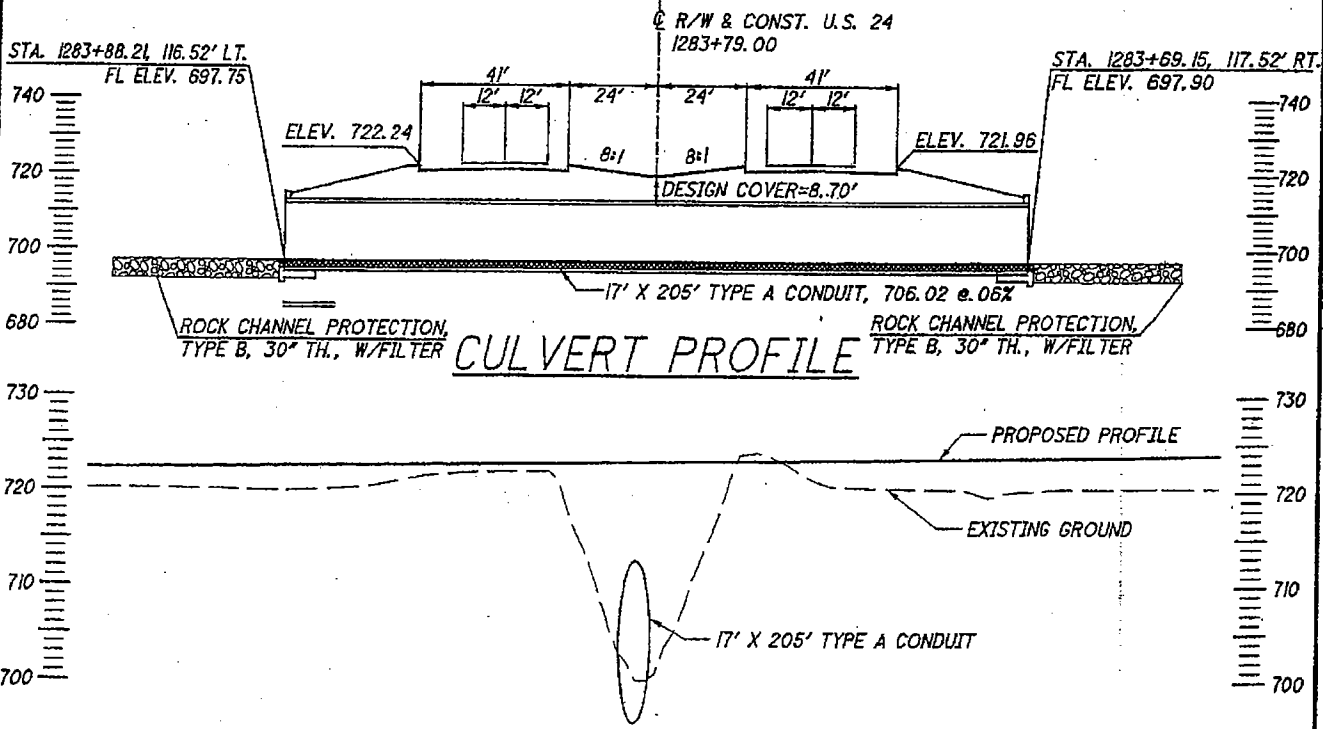
U.S. Army Corps of
 Engineers 404 Permit
 and OSPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004

Figure 36



PLAN



CROSS-SECTION

APPROXIMATE PLAN SCALE: 1" = 100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1" = 50'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1" = 100'



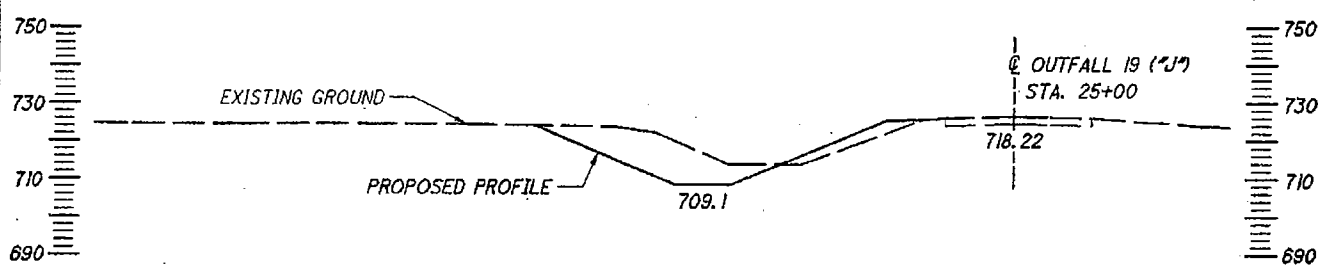
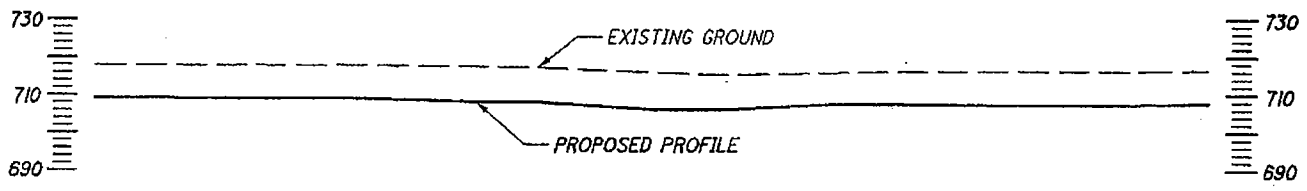
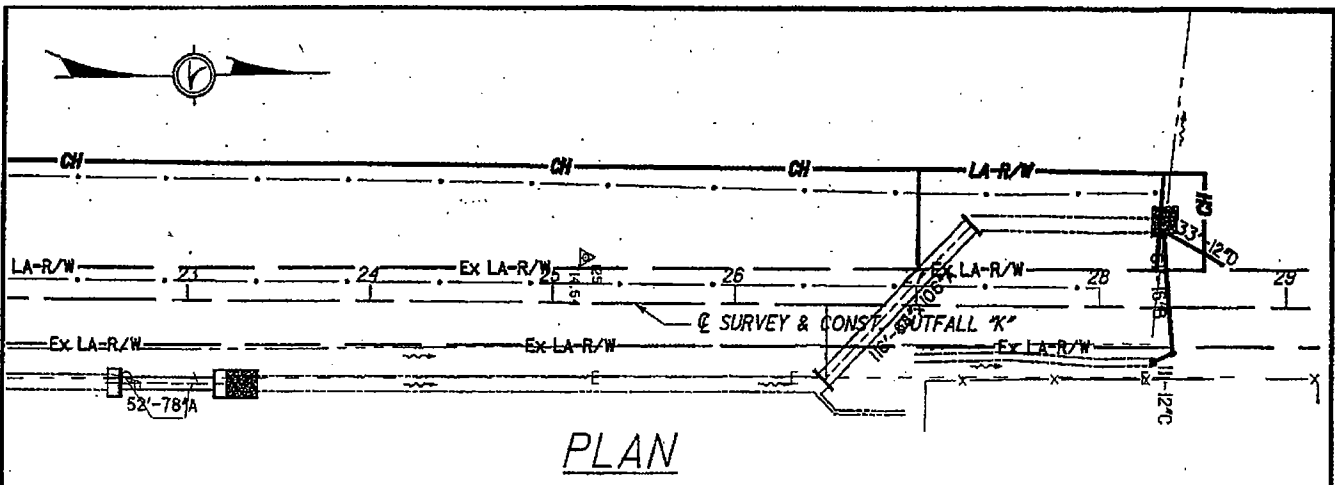
**IMPACTS AT
 STREAM CROSSING 25/ OH-84
 SIXMILE CUTOFF**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004

Figure 37

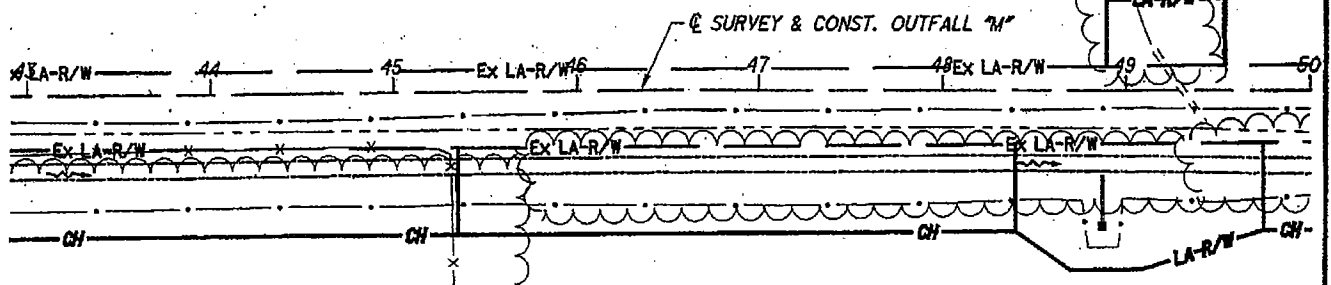


APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=20'

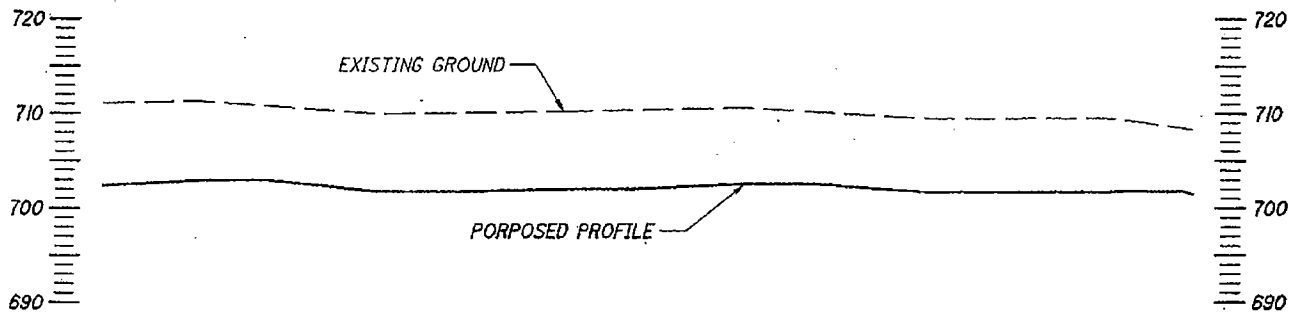


**IMPACT AT
 OUTFALL 19
 UNNAMED TRIBUTARY**
 OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

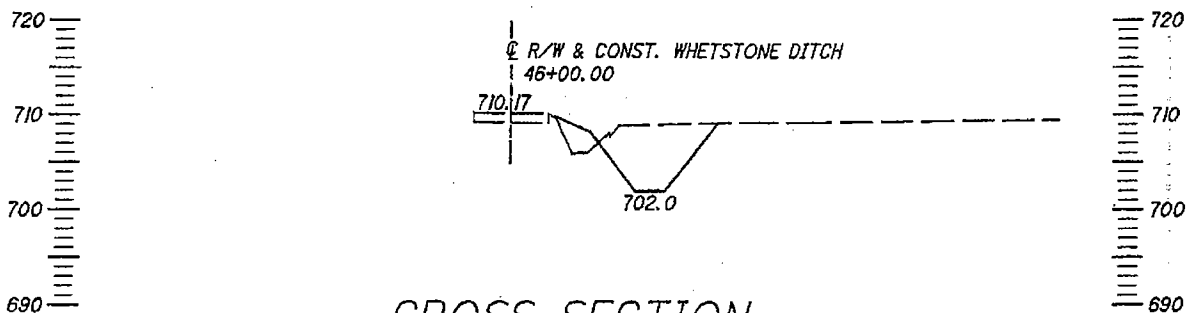
U.S. Army Corps of
 Engineers 404 Permit
 and OSPA Section 401
 Water Quality
 Certification
 Application
 Date: 10-19-2004
 Figure 38



PLAN



CULVERT PROFILE



CROSS-SECTION

APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=20'



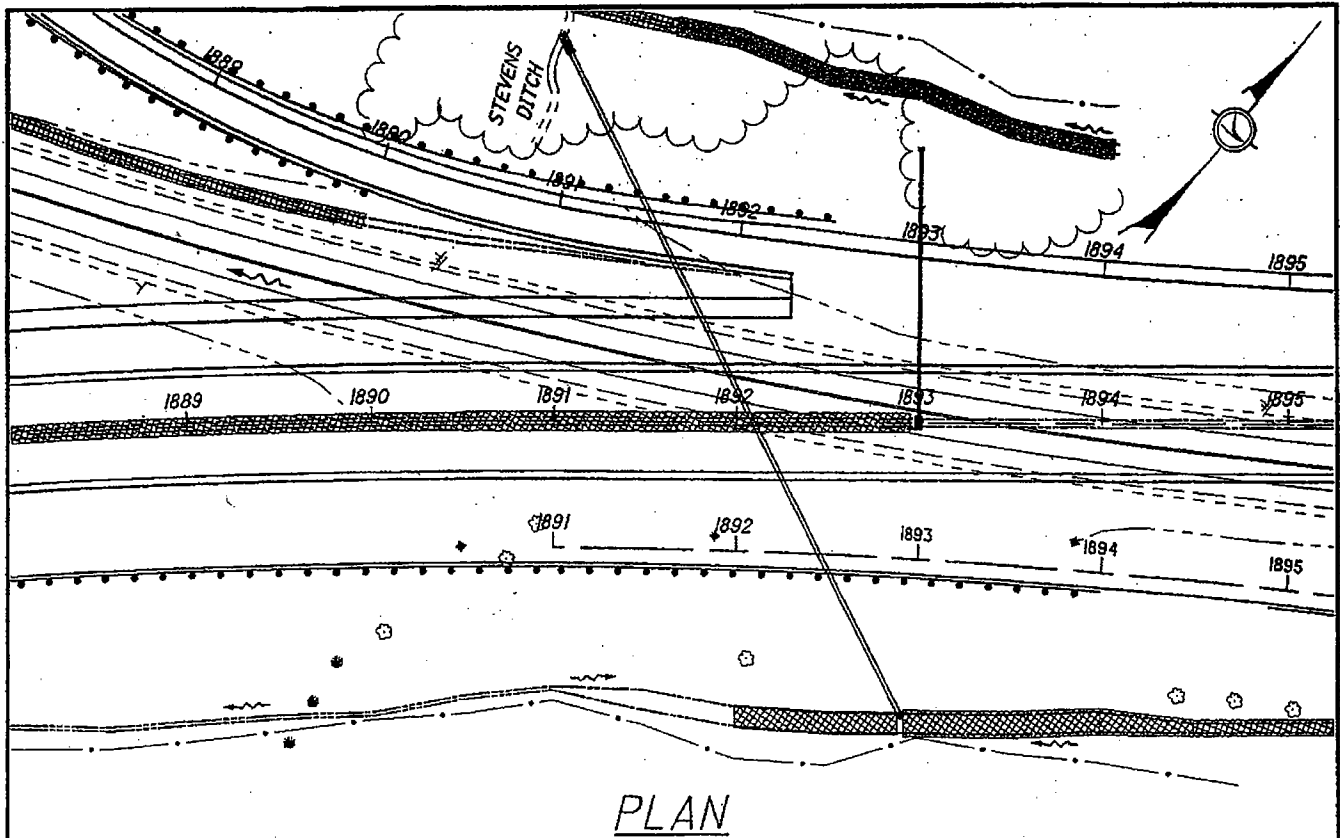
**IMPACT AT
OUTFALL 15**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004

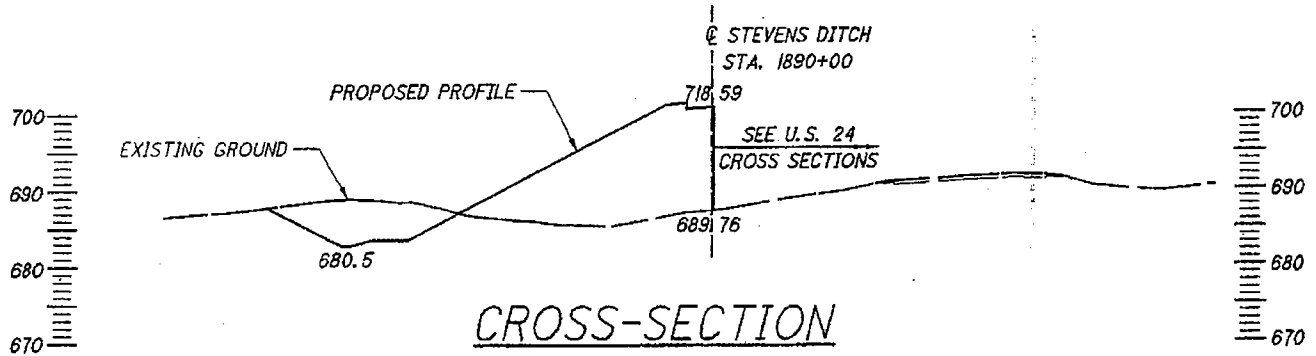
Figure 39



PLAN



CULVERT PROFILE



CROSS-SECTION

APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=50'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=50'



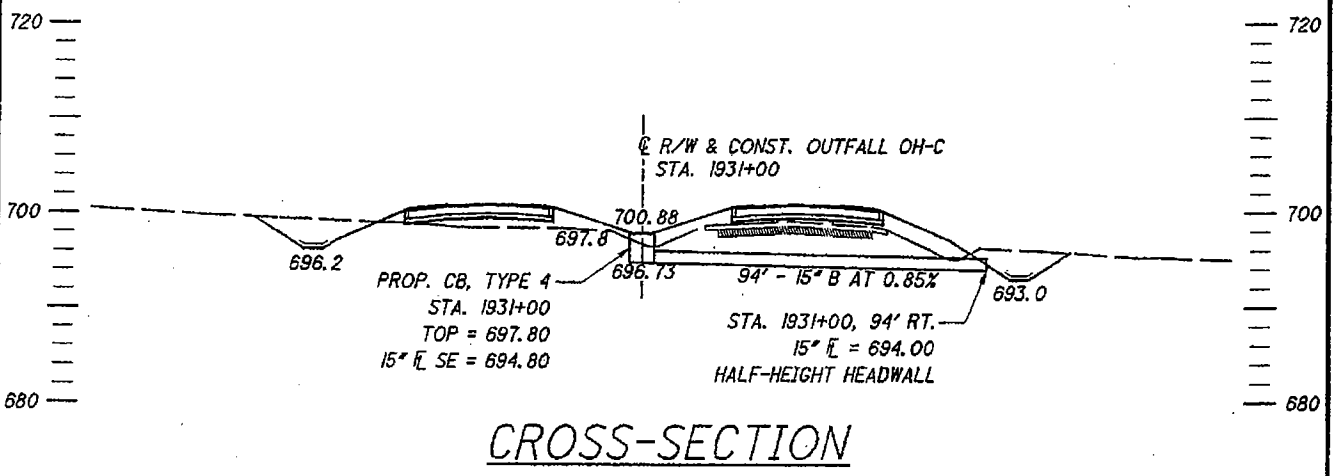
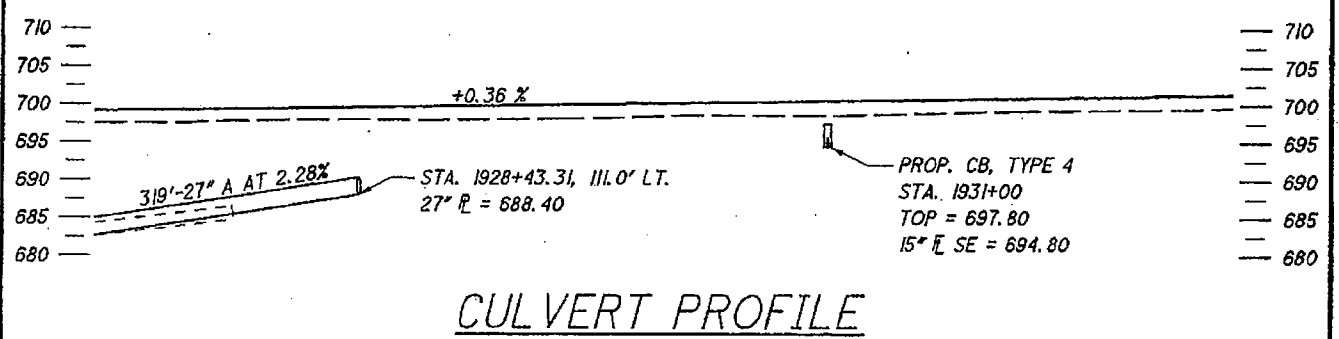
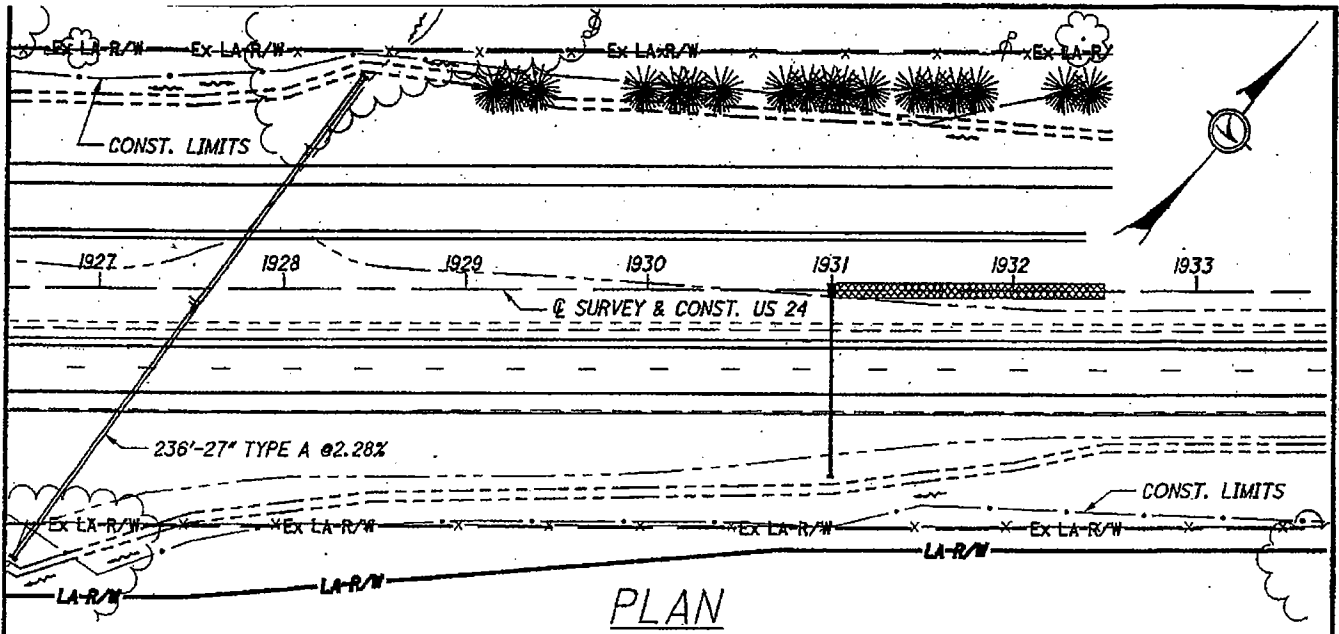
**IMPACT AT
 OH-37
 STEVENS DITCH**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004

Figure 41



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"= 50'



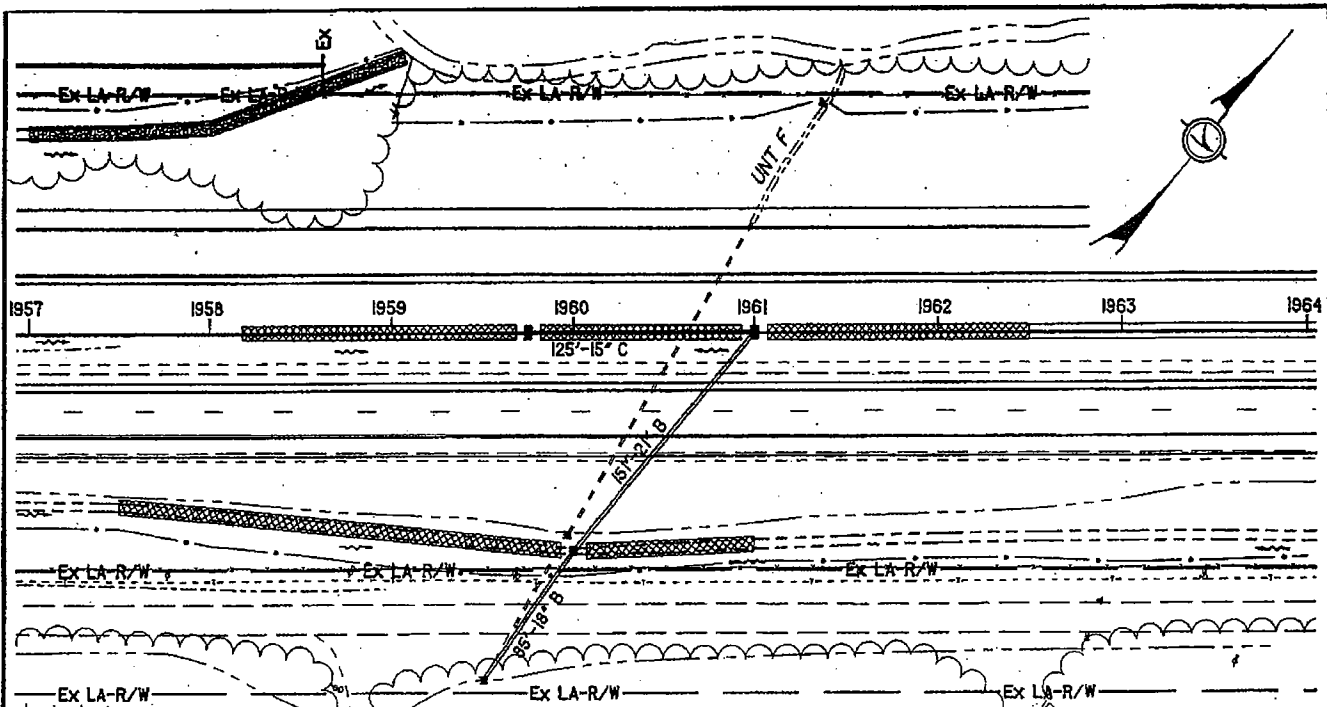
**IMPACTS TO STREAM
CROSSING AREA OH-C**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

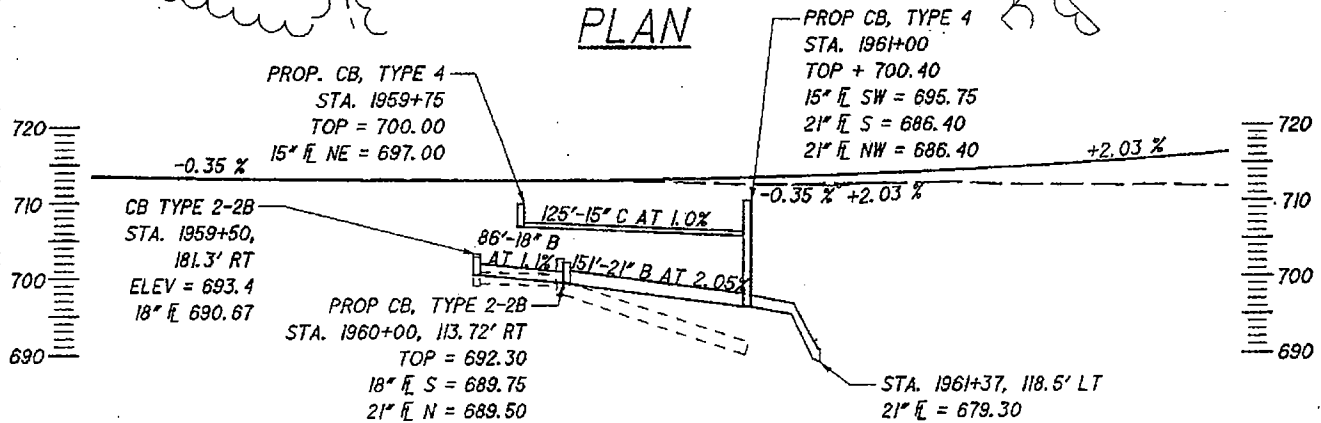
U.S. Army Corps of
 Engineers 404 Permit
 and OEPA Section 401
 Water Quality
 Certification
 Application

Date: 10-19-2004

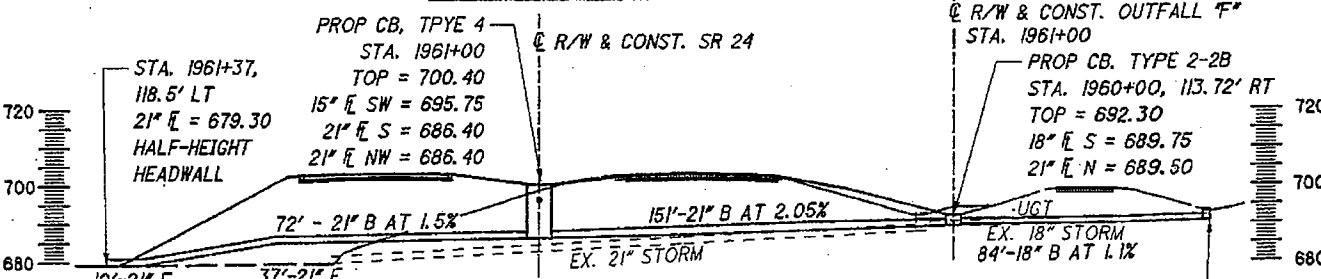
Figure 42



PLAN



OUTFALL PROFILE



CROSS-SECTION

APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=50'



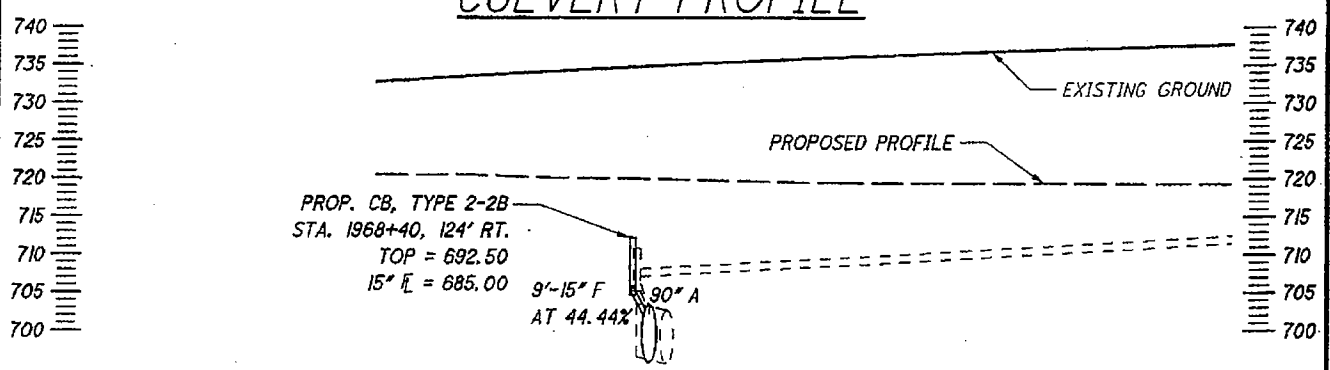
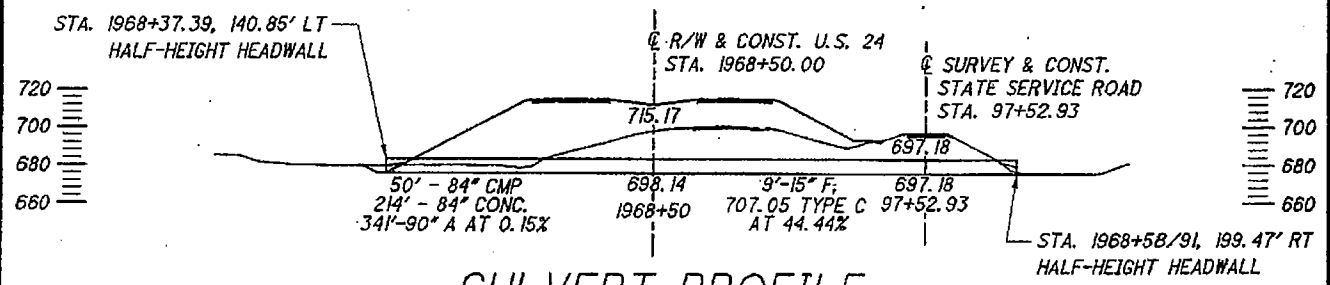
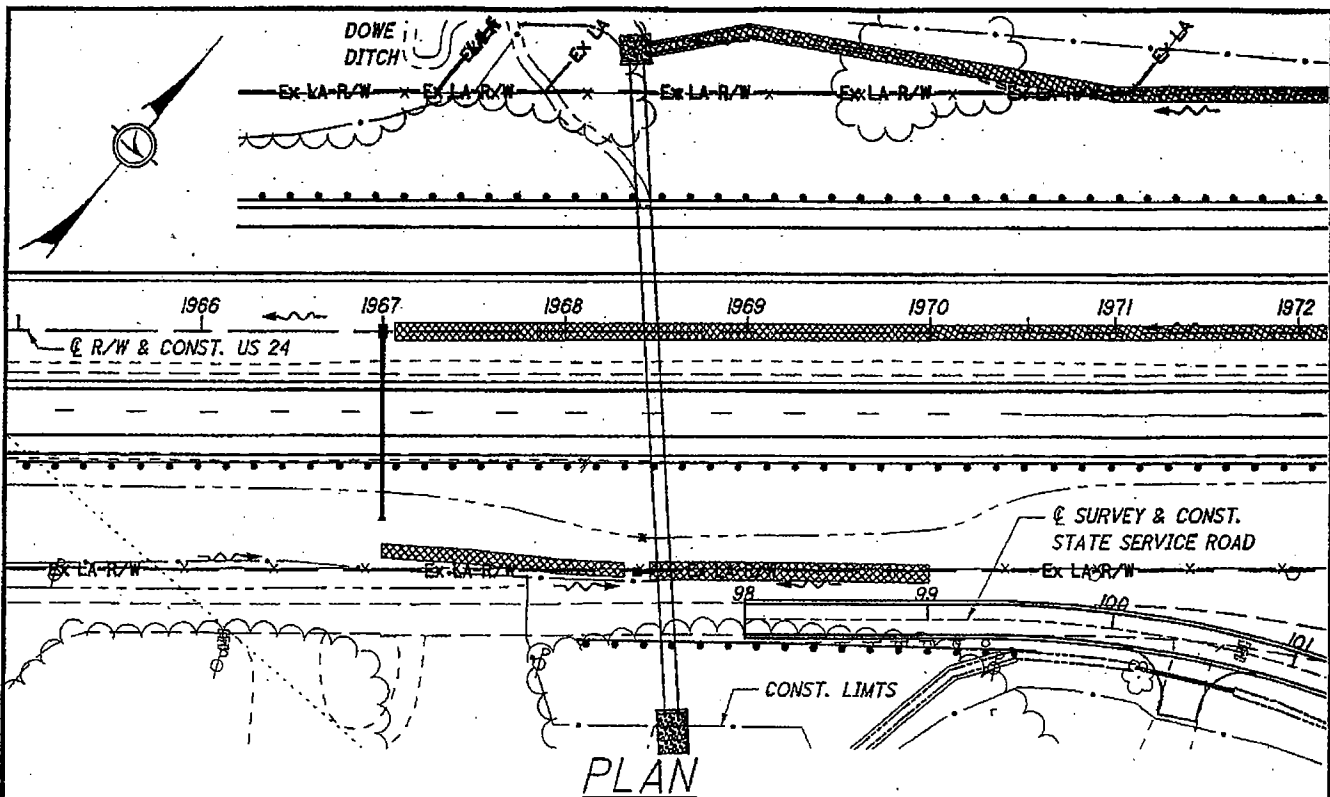
IMPACTS TO STREAM CROSSING AREA OH-F

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application

Date: 10-19-2004

Figure 43



APPROXIMATE PLAN SCALE: 1"=100'
 APPROXIMATE PROFILE HORIZONTAL SCALE: 1"=100'
 APPROXIMATE CROSS-SECTION HORIZONTAL SCALE: 1"=50'



**IMPACT AT STREAM
 CROSSING AREA 39
 DOWE DITCH**

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application

Date: 10-19-2004

Figure 44

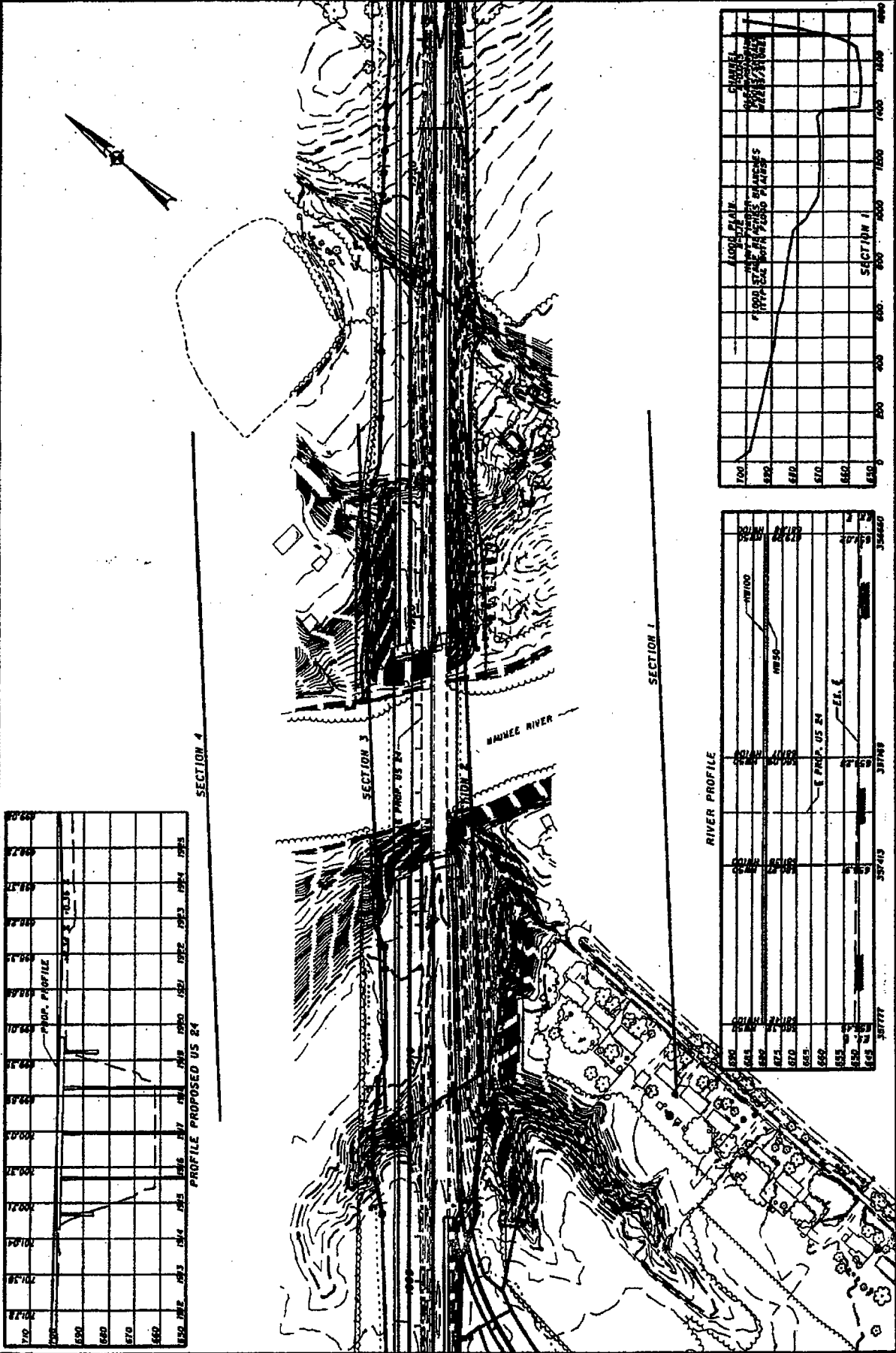
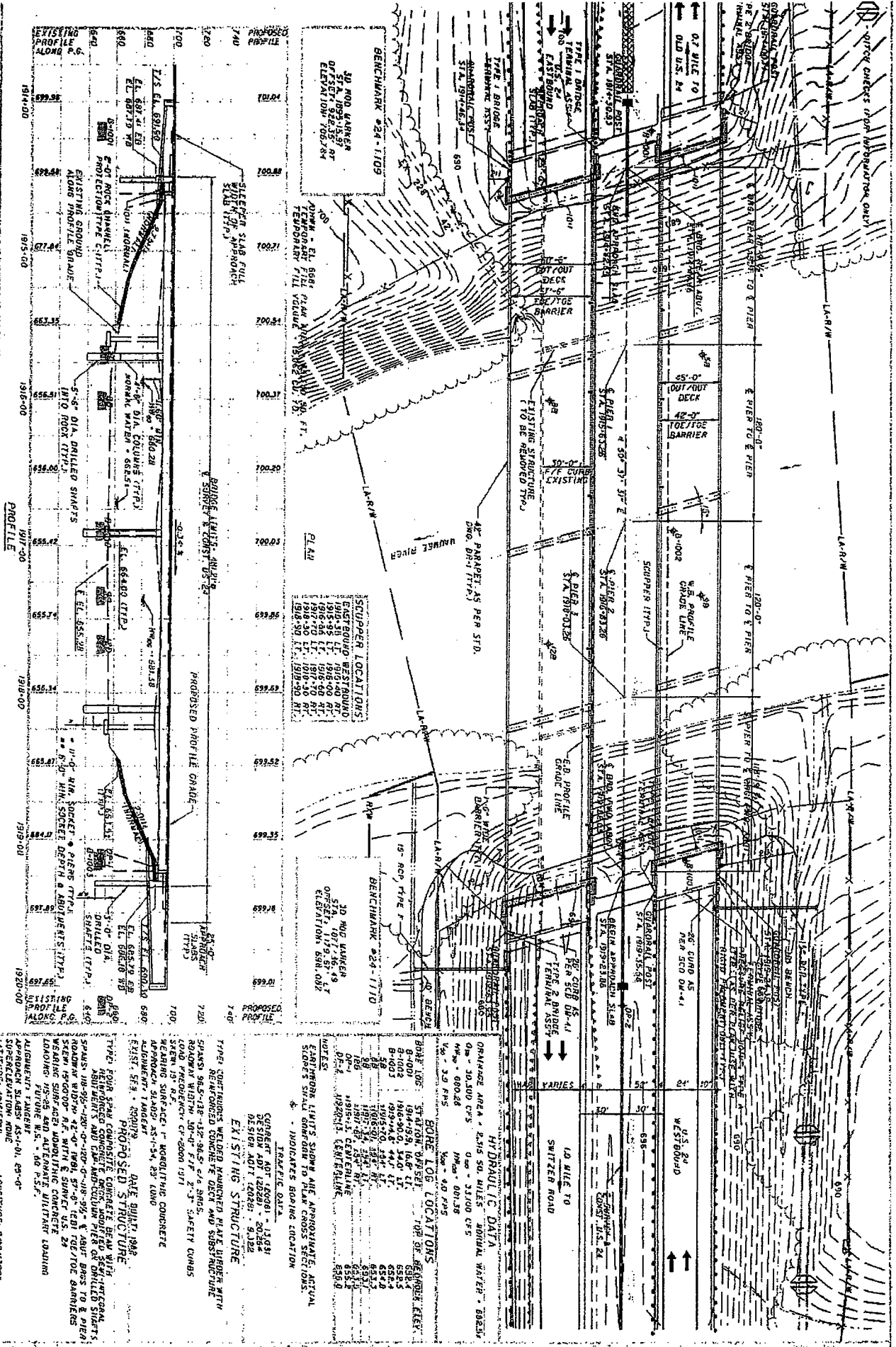


Figure 45

Figure 46



SCOUR-PIER LOCATIONS

PIER NO.	SCOUR DEPTH (FT.)
1	198-35
2	198-35
3	198-35
4	198-35
5	198-35
6	198-35
7	198-35
8	198-35
9	198-35
10	198-35
11	198-35
12	198-35
13	198-35
14	198-35
15	198-35
16	198-35
17	198-35
18	198-35
19	198-35
20	198-35
21	198-35
22	198-35
23	198-35
24	198-35
25	198-35
26	198-35
27	198-35
28	198-35
29	198-35
30	198-35

HYDRAULIC DATA

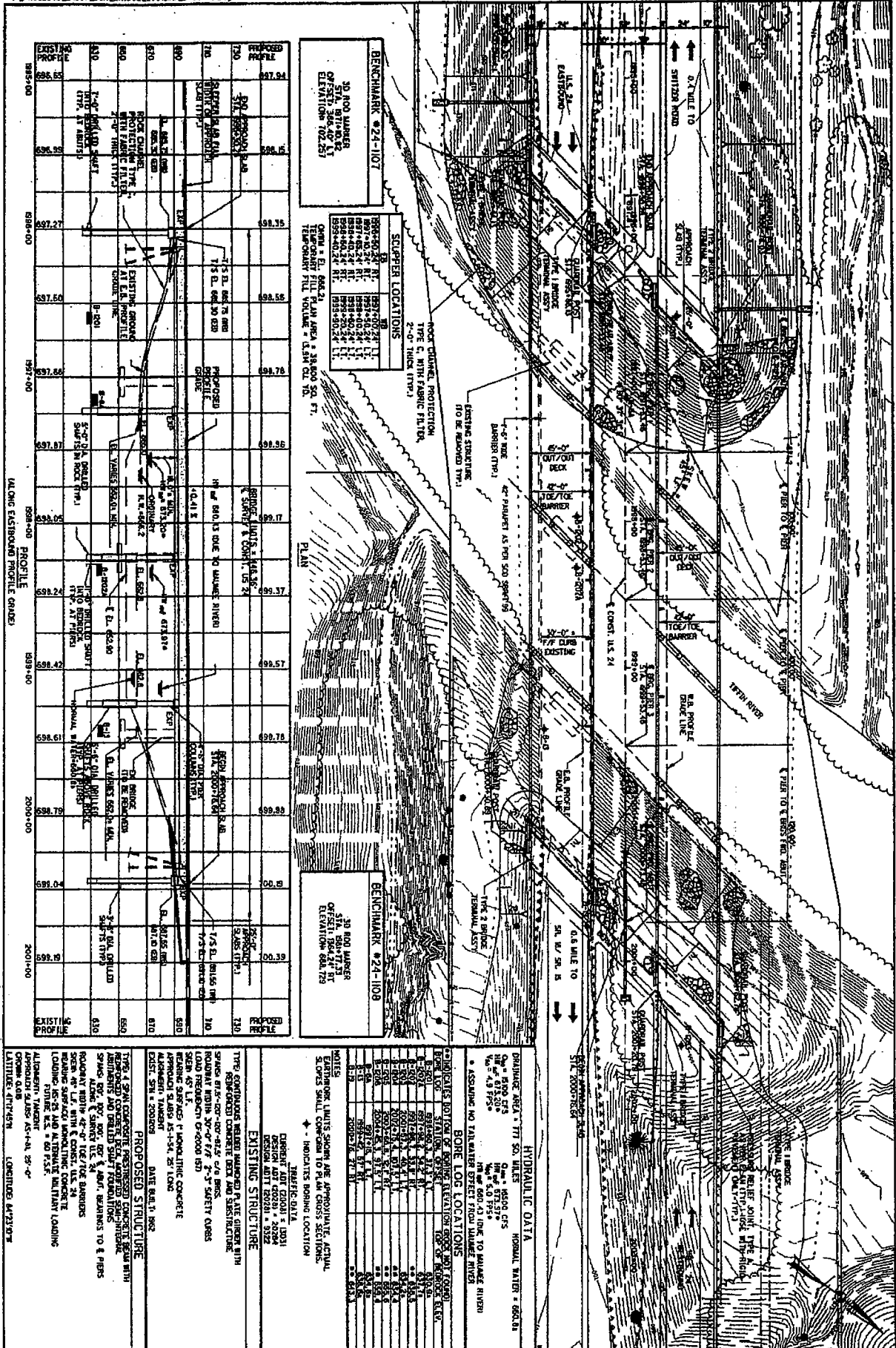
ORANGE AREA - 2.15 SQ MILES - NORMAL WATER - 10825
 Q = 30,500 CFS
 H₁ = 680.28
 H₂ = 680.28
 V₁ = 3.9 FPS
 V₂ = 4.0 FPS

DATE: 01/19/05
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 DESIGNED BY: [Name]

DEF-24-7.99
 PID 24337

BRIDGE NO. DEF-24-0827 L&R
 U.S. 24 OVER MAUMEE RIVER

01/19/05
 Parsons Brinckerhoff Ohio, Inc.
 6235 Enterprise Court
 Dublin, Ohio 43019



<p>DATE: 11/11/04 DESIGN: ADT (2004) * 2024 DESIGN: ADT (2004) * 2024 DESIGN: ADT (2004) * 2024</p>	<p>BRIDGE NO. DEF-24-0881 L & R US 24 OVER TYPHIN RIVER</p>	<p>DEFIANCE COUNTY STA. 1996+50.28 STA. 2000+76.64</p>	<p>DESIGNED: DGB</p>	<p>DATE: 2-10-05</p>
			<p>CHECKED: MJD</p>	<p>SCALE: 1/2" = 1'-0"</p>
<p>SITE PLAN</p>		<p>ENGINEER: EDWIN & BALDWIN ASSOCIATES, INC. ENGINEERS AND SURVEYORS 1111 W. MAIN ST., DEPT. 200 TOLEDO, OHIO 44002-4000</p>		

Figure 47

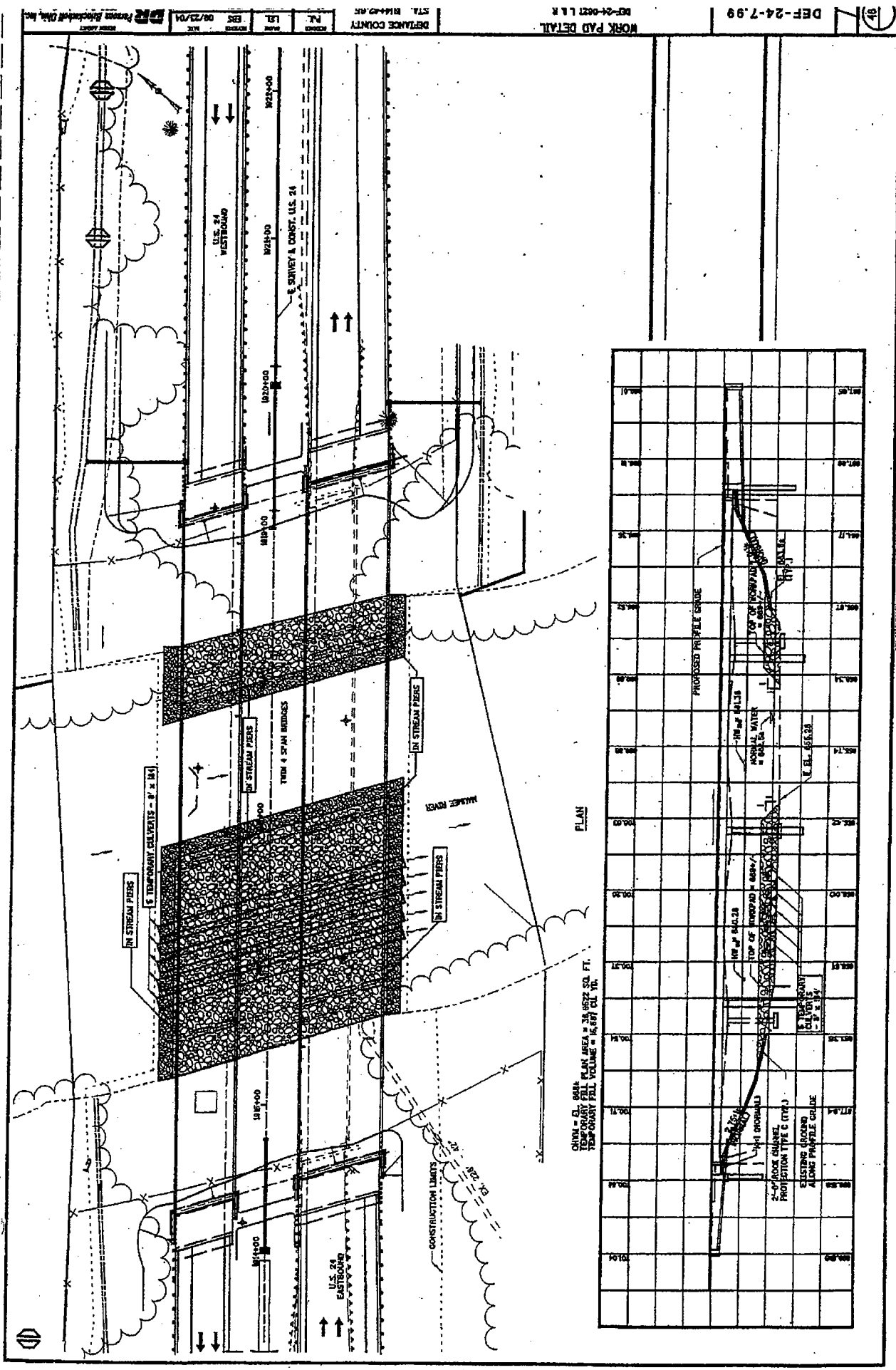


Figure 48

APPENDIX B - WETLAND AND STREAM IMPACT TABLES

- TABLE A - STREAMS AFFECTED BY THE PROPOSED PROJECT
- TABLE B - WETLANDS AFFECTED BY THE PROPOSED PROJECT
- TABLE C - NATURE OF IMPACTS FOR WETLANDS AND STREAMS FOR THE PROPOSED PROJECT
- TABLE D - SUMMARY OF IMPACTS BY ALTERNATIVE
- TABLE E - STREAM MITIGATION FOR THE PROPOSED PROJECT
- TABLE F- WETLAND MITIGATION FOR THE PROPOSED PROJECT

Table B
Jurisdictional Wetlands Affected by the Proposed Project

ROW	ROW ID	ROW NAME	ROW TYPE	ROW STATUS	ROW ISOLATION	ROW VEGETATION	ROW AREA (AC)	ROW PERCENTAGE	ROW COMMENTS	ROW TOTAL
L-5	1308168.68	Maumee River	Forested	Non-Isolated	Palustrine forested broad leaved deciduous	41	1.24 (0.28)	1,050	0% Impacted	
RC-10	1408497.75	Maumee River	Non-Forested	Non-Isolated	Palustrine scrub-shrub broad-leaved deciduous/ Palustrine emergent persistent	37.5	2.13 (0.40)	1,800	2.9%	
Wetland B	1412260.13	Maumee River	Forested	Non-Isolated	Palustrine forested broad leaved deciduous/ Palustrine emergent persistent	48.5	0.89 (0.34)	6,150	19%	
W-4 (A)	1421128.28	Maumee River	Forested	Non-Isolated	Palustrine forested broad leaved deciduous/ Palustrine scrub-shrub broad-leaved deciduous	65.5	1.41 (0.47)	3,450	38%	
W-4 (F)	1422449.63	Maumee River	Non-Forested	Non-Isolated	Palustrine emergent persistent	55.5	0.25 (0.15)	2,850	33%	
W-4 (I)	1423500.33	Maumee River	Non-Forested	Non-Isolated	Palustrine emergent persistent	55.5	10.87 (7.00)	1,200	60%	
OH-5	1425289.30	Maumee River	Forested	Non-Isolated	Palustrine forested broad leaved deciduous/ Palustrine emergent persistent	56.5	91.39 (0.52)	5,250	64%	
RC-5	1423389.27	Maumee River	Non-Forested	Non-Isolated	Palustrine scrub-shrub broad-leaved deciduous/ Palustrine emergent persistent	69.5	3.24 (0.50)	4,500	0.6%	
RC-2	1431957.82	Maumee River	Non-Forested	Non-Isolated	Palustrine scrub-shrub broad-leaved deciduous/ Palustrine emergent persistent	46	1.08 (0.13)	3,000	28%	
R-4	1432607.44	Maumee River	Forested	Non-Isolated	Palustrine forested broad leaved deciduous	46	17.23 (6.90)	800	12%	
RC-1	1437830.16	Maumee River	Non-Forested	Non-Isolated	Palustrine Scrub-Shrub Palustrine emergent persistent	73.5	2.72 (0.16)	3,150	34%	
R-1 (A)	1458851.50	Maumee River	Forested	Non-Isolated	Palustrine forested broad leaved deciduous/ Palustrine scrub-shrub broad-leaved deciduous/ Palustrine emergent persistent/ Riverine perennial emergent	73.5	64.27 (2.83)	0	6%	
R-1 (B)	1441597.35	Maumee River	Forested	Non-Isolated	Palustrine forested broad leaved deciduous	45	0.86 (0.13)	2,700	14%	
R-1 (C)	1441164.32	Maumee River	Forested	Non-Isolated	Palustrine forested broad leaved deciduous	39.5	0.05 (0.04)	2,250	80%	
R-1 (F)	1441869.60	Maumee River	Non-Forested	Non-Isolated	Palustrine scrub-shrub broad-leaved deciduous/ Palustrine emergent persistent	14	0.16 (0.00)	2,700	60%	
R-1 (G)	1442702.18	Maumee River	Non-Forested	Non-Isolated	Palustrine emergent persistent	32	0.69 (0.56)	800	100%	
S-4	1441893.45	Maumee River	Forested	Non-Isolated	Palustrine forested broad leaved deciduous	73	19.75 (0.12)	0	.6%	

33,897%
349%
180
-34
66%

provided

Table C
Nature of Proposed Activities by Impacted Feature for the Preferred Alternative
A. STREAMS

Site Feature	Approx. Station Location	Proposed Structure or Action	Excavation Below OHW		Fill Below OHW		Length of Channel Disturbed (feet)	Excavation/Fill Below OHW Volume (CY)	Length of Channel Disturbed	Excavation/Fill Below OHW Volume (CY)
			Volume (CY)	Area (SF)	Volume (CY)	Area (SF)				
44 North Creek	1+70	Outfall	63	68	N/A	N/A	25	N/A	N/A	N/A
42 North Creek	10+20	Outfall	44	46	N/A	N/A	25	N/A	N/A	N/A
41 North Creek	26+10	Culvert	379	136	392	141	75	392	N/A	N/A
	26+10	Additional	302	60	302	60	134	302	N/A	N/A
OH-58 North Creek	916+00	Culvert	2,741	140	2,745	141	525	2,745	N/A	N/A
	916+00	Additional	310	63	310	63	134	310	N/A	N/A
OH-58a North Creek	124+00	Culvert	671	112	722	120	162	722	N/A	N/A
	124+00	Additional	210	65	210	65	88	210	N/A	N/A
60 North Creek	944+90	Culvert	977	105	1,202	129	252	1,202	N/A	N/A
	944+90	Additional	440	73	440	73	162	440	N/A	N/A
35 North Creek	10+00	Outfall	74	96	N/A	N/A	25	N/A	N/A	N/A
	1074+25	Culvert	2,370	315	2,408	320	203	2,408	N/A	N/A
OH-64 Zuber Cutoff	1074+25	Additional	447	101	447	101	120	447	N/A	N/A
	115+00	Culvert	745	272	745	272	74	745	N/A	N/A
32 North Creek	115+00	Additional	194	70	194	70	75	194	N/A	N/A
	1190+00	Outfall	30	51	N/A	N/A	20	N/A	N/A	N/A
28/OH-80 Sixmile Cutoff	1283+90	Culvert	2,446	324	2,847	377	204	2,847	N/A	N/A
	1283+90	Additional	429	127	429	127	91	429	N/A	N/A
19 UNT	66+25	Outfall	2	210	N/A	N/A	25	N/A	N/A	N/A
	49+25	Additional	866	23,534	93	1,409	998	93	N/A	N/A

Table C
 Nature of Proposed Activities by Impacted Feature for the Preferred Alternative
 A. STREAMS

Site/Feature	Approx. Station Location	Proposed Structure or Action	Existing Channel Disturbed Due to Highway Fill Channel Change or Channel Protection		Proposed Structure or Action		Existing Channel Disturbed Due to Temporary Sealing			
			Length of Channel Disturbed (feet)	Excavation Below OHW Volume (CY)	Excavation Below OHW Area (SF)	Fill Below OHW Volume (CY)	Fill Below OHW Area (SF)	Length of Channel Disturbed	Excavation Below OHW Volume (CY)	Excavation Below OHW Area (SF)
13 Steven's Ditch	65+00	Outfall	25	3	630	N/A	N/A	N/A	N/A	N/A
OH-37 Steven's Ditch	1892+00	Prop Culvert	469	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1881+00	Relocated	2,837	3,731	13,498	412	39,712	N/A	N/A	N/A
	4761+25	Exist. Culvert	236	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Maumee River	1917+00	Bridged	225	0	0	780	7,740	225	8,450	21,780
OH-C UNT*	1928+00	Culvert	130	0	0	102	2,565	N/A	N/A	N/A
OH-F UNT*	1961+00	Culvert	165	0	0	36	810	N/A	N/A	N/A
OH-39 Dowe Ditch	1968+50	Culvert	215	0	0	212	4,950	N/A	N/A	N/A
Tiffin River	1999+00	Bridged	225	0	0	477	3,060	225	2,865	11,052

Table C
 Nature of Proposed Activities by Impacted Wetlands for the Preferred Alternative
 E. JURISDICTIONAL WETLANDS

Activity	Wetland Type	Wetland Code	Area (Acres)	Volume (Cubic Yards)	Depth (Feet)	Volume (Cubic Yards)	Depth (Feet)	Volume (Cubic Yards)	Depth (Feet)
L-6	Palustrine forested broad-leaved deciduous	0.29	1,568	CUT/FILL	1,568	0.29	0.00		
RC-10	Palustrine scrub-shrub broad-leaved deciduous/ Palustrine emergent persistent	0.40	38	CUT/FILL	234	0.17	0.23		
Wetland 8	Palustrine forested broad-leaved deciduous/ Palustrine emergent persistent	0.34	7	CUT/FILL	392	0.25	0.09		
W-4 (A)	Palustrine forested broad-leaved deciduous/ Palustrine scrub-shrub broad-leaved deciduous	0.47	191	CUT/FILL	459	0.40	0.07		
W-4 (F)	Palustrine emergent persistent	0.15	85	CUT/FILL	136	0.14	0.01		
W-4 (I)	Palustrine emergent persistent	7.00	4,652	CUT/FILL	4,771	5.84	1.16		
OH-6	Palustrine forested broad-leaved deciduous/ Palustrine emergent persistent	0.52	401	CUT	0	0.25	0.27		
RC-5	Palustrine scrub-shrub broad-leaved deciduous/ Palustrine emergent persistent	0.90	18	CUT/FILL	12	0.02	0.88		
RC-2	Palustrine scrub-shrub broad-leaved deciduous/ Palustrine emergent persistent	0.13	7	CUT	0	0.00	0.13		
R-4	Palustrine forested broad-leaved deciduous	5.90	7,633	CUT	0	4.73	1.17		
RC-1	Palustrine Scrub-Shrub Broad-leaved Deciduous/ Palustrine emergent persistent	0.16	0	N/A	0	0.00	0.16		
R-1 (A)	Palustrine forested broad-leaved deciduous/ Palustrine scrub-shrub broad-leaved deciduous/ Palustrine emergent persistent/Riverine potential emergent	2.83	1,069	CUT/FILL	2,474	2.20	0.63		
R-1 (B)	Palustrine forested broad-leaved deciduous	0.13	54	CUT/FILL	60	0.07	0.06		
R-1 (C)	Palustrine forested broad-leaved deciduous	0.04	0	FILL	65	0.04	0.00		
R-1 (F)	Palustrine scrub-shrub broad-leaved deciduous/ Palustrine emergent persistent	0.09	14	CUT/FILL	103	0.07	0.02		
R-1 (G)	Palustrine emergent persistent	0.56	79	CUT/FILL	558	0.40	0.16		
S-4	Palustrine forested broad-leaved deciduous	0.12	36	CUT/FILL	9	0.03	0.09		

USACE and Pe and OEPA 401 Water Quality Certification Application
 PAU/DEF-24-0-0-0-00
 PID No. 18904
 US 24 Ohio/Indiana Line to Defiance, Ohio
 January 24, 2005

Table C
Nature of Proposed Activities by Impacted Feature for the Minimal Degradation Alternative
C. WHOLE PROJECT SUMMARY OF ACTIVITIES

Total Project Linear Stream Disturbances		Total Project Excavation				Total Project Fill			Total Project Area Impact		
Total Length Disturbed Due to Proposed Structures, Highway Fill, Channel Change or Channel Protection (feet)	Length Disturbed Due to Temporary Crossing (feet)	Net Length Disturbed (feet)	Stream Excavated (cu yds)	Non-Isolated Wetland Excavated (cu yds)	Total Excavation (cu yds)	Stream Filled (standard roadfill, channel protection, temp crossing, & other materials) (cu yds)	Non-Isolated Wetland Fill (cu yds)	Total Fill (cu yds)	Total Stream Area (acres)	Non-Isolated Impacted Wetland Area (acres)	Total Project Area Impacted (acres)
			Volume	Volume	Volume	Volume	Volume	Volume	Area	Area	Area
7,944	450	8,394	17,434	15,852	33,286	15,505	10,841	26,346	2.35	20.03	22.38

USACE 404 Permit and CEQA 401 Water Quality Certification Application
 PAU/DEF-24-0.00/0.00
 PID No. 18904
 US 24 Ohio/Indiana Line to Defiance, Ohio
 January 24, 2005

Table D
Proposed Lowering of Water Quality by the Preferred, Minimal and Non-Degradation Alternatives

Alternative	Expected Impacts by Alternative					
	Direct Stream Impacts (ft ²)	Aquatic Habitat (QHEI)/Use Designation/Stream Flow	Aquatic Biota	R&E Species (1)	Interesting Plant/Animals (Riparian Area)	Wetlands
Preferred	9,904	Yes	Yes	No	Yes	Yes
Minimal	7,944	Yes	Yes	No	Yes	Yes
Non-Degradation	Unknown	Yes	No	No	No	No

[1] Impact footprint of the Preferred Alternative includes areas upstream and/or downstream of proposed structures where energy and erosion control components (channel protection) are required to achieve pre-construction stream velocity, water surface elevation and channel stability conditions; no impact to stream flow patterns are expected.

**Table E
 Proposed Stream Mitigation for the Preferred and Antidegradation Alternatives**

Stream Name	Impacted Length	Type of Mitigation	Watershed (D101RUS)		CPEI Score	HFEI Score	Mitigated Length	
			Impacted	Mitigated			On-Site	Off-Site
44, North Creek	25	Preservation/Enhancement	4100005	4100005	23.75-27	N/A	25	0
42, North Creek	25	Preservation/Enhancement	4100005	4100005	23.75-27	N/A	25	0
41, North Creek	209	Preservation/Enhancement	4100005	4100005	23.75-27	N/A	209	0
OH-58, North Creek	659	Preservation/Enhancement	4100005	4100005	23.75-27	N/A	659	0
OH-58a, North Creek	250	Preservation/Enhancement	4100005	4100005	23.75-27	N/A	250	0
60, North Creek	414	Preservation/Enhancement	4100005	4100005	23.75-27	N/A	414	0
35, North Creek	25	Preservation/Enhancement	4100005	4100005	23.75-27	N/A	25	0
30/OH-64, Zuber Cutoff	323	Preservation/Enhancement	4100005	4100005	54.75	N/A	323	0
32, North Creek	149	Preservation/Enhancement	4100005	4100005	23.75-27	N/A	149	0
28/OH-80, Sixmile Cutoff	20	Preservation/Enhancement	4100005	4100005	32	N/A	20	0
25/OH-84, Sixmile Cutoff	295	Preservation/Enhancement	4100005	4100005	32	N/A	295	0
19, UNT*	25	Preservation/Enhancement	4100005	4100005	54.2	33	25	0
15, UNT W of Ashwood	998	Preservation/Enhancement	4100005	4100005	55.25	N/A	998	0
13, Steven's Ditch	25	Preservation/Enhancement	4100005	4100005	42	N/A	25	0
OH-37, Steven's Ditch	3,542	Preservation/Enhancement	4100005	4100005	42	N/A	3,542	0
Maumee River	225	Preservation/Enhancement	4100005	4100005	55.25	N/A	225	0
OH-C, UNT*	130	Preservation/Enhancement	4100005	4100005	N/A	N/A	130	0
OH-F, UNT*	165	Preservation/Enhancement	4100005	4100005	N/A	27	165	0
OH-39, Dowe Ditch	215	Preservation/Enhancement	4100006	4100005	53	N/A	215	0
Tiffin River	225	Preservation/Enhancement	4100006	4100005	52.75	N/A	225	0

**Table F
 Proposed Jurisdictional Wetland Mitigation for the Minimal Degradation Alternative**

Wetland ID	Impacted Area	Type of Wetland (Isolated/Non-Isolated)	Watershed (8 Digit HUC)		ORAM V. 2.0 Score	Ohio EPA Category	Mitigated Area	
			Unimpacted	Mitigated			On-Site	Off-Site
L-6	0.29	Non-Isolated	04100005	04100005	41	Modified 2	0.29	N/A
RC-10	0.40	Non-Isolated	04100005	04100005	37.5	Modified 2	0.40	N/A
Wetland 8	0.34	Non-Isolated	04100005	04100005	48.5	2	0.34	N/A
RC-5	0.90	Non-Isolated	04100005	04100005	55.5	2	0.90	N/A
W-4 (A)	0.47	Non-Isolated	04100005	04100005	55.5	2	0.47	N/A
W-4 (F)	0.15	Non-Isolated	04100005	04100005	55.5	2	0.15	N/A
W-4 (I)	7.00	Non-Isolated	04100005	04100005	55.5	2	7.00	N/A
OH-6	0.52	Non-Isolated	04100005	04100005	55.5	2	0.52	N/A
RC-2	0.13	Non-Isolated	04100005	04100005	46	2	0.13	N/A
R-4	5.90	Non-Isolated	04100005	04100005	46	2	5.90	N/A
RC-1	0.16	Non-Isolated	04100005	04100005	73.5	3	0.16	N/A
R-1 (A)	2.83	Non-Isolated	04100005	04100005	73.5	3	2.83	N/A
R-1 (B)	0.13	Non-Isolated	04100005	04100005	45	2	0.13	N/A
R-1 (C)	0.04	Non-Isolated	04100005	04100005	39.5	Modified 2	0.04	N/A
R-1 (F)	0.09	Non-Isolated	04100005	04100005	14	1	0.09	N/A
R-1 (G)	0.56	Non-Isolated	04100005	04100005	32	Modified 2	0.56	N/A
S-4	0.12	Non-Isolated	04100005	04100005	73	3	0.12	N/A

* Assumes a 1:1 mitigation ratio based upon the preservation of Category 3 Wetlands located at the Plummer Property

APPENDIX C - CONCEPTUAL WETLAND AND STREAM MITIGATION PLAN

**Wetland and Stream Mitigation for the
USACE 404 Permit Application, Ohio EPA 401 Water Quality Certification
Application and Ohio EPA Isolated Wetland Permit Application
PAU/DEF-24-0.00/0.00 PID No. 18904**

Wetland Mitigation:

In order to comply with the wetland mitigation requirements for the PAU/DEF 0.00/0.00 project, ODOT has selected a potential wetland and stream mitigation site, known as the Plummer Property, located in the SE 1/4 of Section 29 and the N 1/2 of Section 32, Defiance Township, Defiance County (Exhibit 1).

The Plummer Property, which is located south of the existing US 24/SR 424 intersection, east of Krouse Road and north of the Maumee & Western Railroad, consists of two parcels, identified as 291-WD and 291-WD1 (Exhibit 2). Parcel 291-WD occupies 42 acres, which includes 33 acres of mature woodland, 7.6 acres of forested, Category 3 wetland, 4,328 feet of undisturbed streambed (Stevens Ditch and an unnamed tributary) and nine acres of agricultural land. The parcel also contains a small pond at the most downstream reach of Stevens Ditch.

Parcel 291-WD1 occupies 121 acres south of 291-WD. This portion of the property contains 92 acres of mature deciduous woodland, including 53 acres of forested Category 3 wetlands, and 29 acres of agricultural land. The northern portion of this wetland/upland complex drains into the wetlands located on Parcel 291-WD and eventually into Stevens Ditch. The southern portion of the parcel appears to drain to the south, towards the Maumee & Western railroad. Approximately 26 acres of the farmed portion of the property lies west of and adjacent to the 92-acre woodland. The remaining 3 acres of farmland lies on the east side of the woodlot.

Use of the Plummer property as a mitigation site for PAU/DEF 0.00/0.00 offers an opportunity to:

- Preserve approximately 61 acres of forested Category 3 wetlands and 72 acres of mature, forested, upland buffer;
- Restore approximately 24 acres of wetlands; and
- Preserve approximately 4,328 feet of undisturbed stream channel, including 3,268 feet of Stevens Ditch and 1,060 feet of unnamed tributary.

Characterization of Wetland Restoration Site:

As part of this wetland mitigation plan, ODOT proposes to restore approximately 26 acres of wetlands on farmland located west of the woodland on Parcel 291-WD1 within the existing woodlot. Several factors make this portion of Parcel 291-WD1 suitable for wetland restoration. First, the Defiance County Soil Survey indicates that this portion of the property contains two predominant soil types:

1. Paulding clay (Pa); and
2. Roselms silty clay on 0 to 3 percent slopes (RsA)(Exhibit 2).

Paulding clay is hydric. Roselms silty clay on 0 to 3 percent slopes is non-hydric, but is known to contain hydric inclusions of Paulding soils on broad flats.

Table 1 contains a comparison of Paulding clay to Roselms silty clay, to illustrate their similarities. Both soils vary only slightly with respect to the percent clay content and percent organic matter within the uppermost seven to nine inches of the soil profile, as well as the depth of the seasonal high water table. Because of its lower position in the landscape, Paulding clay tends to have slightly more organic matter and a wider range of clay content in the surface layer of the soil. The seasonal high water table is also deeper in Roselms silty clay, again, due to the higher position of Roselms silty clay in the landscape. Below seven to nine inches, both soils have similar clay contents and identical permeabilities, making them similarly suited as soils for the development of wetlands on the property. Both soils also have perched seasonal high water tables, due to their low permeabilities.

**Table 1
Comparison of Paulding Clay and Roselms Silty Clay, 0-3 percent slopes**

Soil Type	Depth (inches)	Clay Content (percent)	Permeability (inches/hour)	Organic Matter (percent)	High Water Table
Paulding clay (Pa)	0-7	40-65	0.06-0.2	3-5	+1.0 - 0.5 feet Perched Jan. - April
	7-33	60-80	<0.06		
	33-60	60-75	<0.06		
Roselms silty clay, 0-3 percent slopes (RsA)	0-9	40-50	0.06-0.2	2-3	1.0 - 2.5 feet Perched Jan. - April
	9-32	60-80	<0.06		
	32-60	60-75	<0.06		

Second, existing topography on the proposed wetland restoration site is relatively flat, with elevations varying from about 709 to 711 feet above mean sea level (Exhibit 4). The highest elevations occur along the southern end of the parcel. The lowest elevations occur in the northernmost corner of the site, in a shallow ravine that carries surface runoff northward to Stevens Ditch. The flat topography and the low-permeability soils combine to create drainage problems on the site. In fact, runoff and percolation of surface water is so slow that systematic tiling is not effective. A review of records at the Defiance Soil and Water Conservation District Office revealed no records of systematic tiling on the property (personal communication from Jeff Ankney, May 24, 2004). Instead of tiling, landowners have excavated several shallow swales to carry water off the farm field and into Stevens Ditch.

Due to the flat nature of the area, insufficient topographic information currently exists on a USGS topographic map of the site, which displays 5-foot contours, to allow for a detailed estimation of the contributing watershed area to the agricultural field. However, in the adjacent wooded area to the east, 53 of the 92 acres of land were determined to be wetland by The Mannik & Smith Group, Inc. This equates to approximately 58 percent of the total woodland area on Parcel 291-WD1. The USGS topographic map of the site does suggest that the topography of the agricultural field is similar to the adjacent woodland (Exhibit 1). The Defiance County Soil Survey also suggests that the soils are similar in terms of soil type. These similarities, combined with the known drainage problem on the site, suggest that wetlands can be successfully restored by disrupting the drainage swales that currently exist on the site.

Table 2 contains a summary of wetland impacts in Ohio, as well as the required on-site mitigation ratios and the number of acres required if preservation is used for mitigation of wetland impacts. Based on this information, approximately 37 acres of Category 3 wetlands will need to be preserved. Since as many as 53 acres of Category 3 wetlands exist in Parcel 291-WD1 and eight acres exist in Parcel 291-WD, the use of the Plummer property will provide adequate Category 3 wetland for preservation.

**Table 2
Summary of Isolated and Non-Isolated Wetland Impacts and
Required Acreage for Preservation**

Wetland Type	Category	Acres Impacted	On-Site Mitigation Ratio	Preservation Acreage Required
Forested	3	2.95	2.5:1	8.85
Forested	2	8.63	2.0:1	17.26
Non-forested	3	0.16	2.0:1	0.32
Non-forested	2	10.20	1.5:1	10.20
Non-forested	1	0.11	1.5:1	0.11
	-	22.05	-	36.74

^a Based on the following formula:

$$p = [(lmr - 1) \times 2] \times n, \text{ where}$$

p = minimum number of acres of wetlands required to be preserved

lmr = left side of on-site mitigation ratio

n = number of acres impacted

In addition to preserving approximately a minimum of 36.74 acres of Category 3 wetlands, ODOT will be required to restore at least 22.05 acres of wetlands. Approximately 26 acres of wetlands can be successfully restored on the agricultural portion of the property and within the existing woodland (via the creation of vernal pools).

Conceptual Wetland Design:

The wetland restoration site will be developed by regrading the existing agricultural field located west of Parcel 291-WD1 to capture and hold surface water on the parcel (Exhibits 3 and 4). The shallow drainage swales that currently exist on the field will be eliminated and shallow depressional areas will be created throughout the site. Shallow berms will be placed along the perimeter of the site, where necessary, to ensure that enough water is retained to develop a diverse wetland habitat on the property.

During construction, topsoil will be removed from the site and stockpiled in an upland location. Subsoil excavated from the site will be utilized for construction of berms. Excess soil will be removed from the site. Topsoil will be placed back onto the site after the subgrade has been graded to the desired elevations. One outflow structure will be placed at the northern corner of the property, in an earthen berm, to regulate water levels in the wetland.

Vegetation will be planted in order to potentially create a Category 3 wetland that satisfies the mitigation requirements for the project. Species selected for the project will be native to the area

and will be similar to those found in wetlands located in the adjacent woodlot and other high quality wetlands throughout the project area.

Vernal pools will also be created within the woodlot adjacent to existing Category 3 wetlands. Vernal pools with a maximum depth of 1 foot will be excavated in several strategically placed areas in the western half of the woodlot.

Erosion control and other Best Management Practices will be utilized during construction to minimize silt-laden runoff from leaving the site. For example, the wetland seed mix will contain an annual cover crop to minimize erosional losses immediately after construction. Woody vegetation will help anchor the soil and increase not only the possibility of success but speed up the development of the community.

Based on the mitigation credits proposed for HAN/WAY-3.0-3.0/0.00, we have assumed that 1:1 credit (credit:area impacted) will be given to new wetland acreage, including vernal pool creation, 0.5:1 credit will be given for preservation of Category 3 wetlands and 0.25:1 credit will be given for forested upland buffer protection. Table 3 provides a summary of potential wetland mitigation credits that are available at the Plummer property, when both parcels are considered for preservation

Table 3
Summary of Proposed Mitigation Credits

Mitigation Type	Acres	Ratio	Proposed Mitigation Credits
Wetland Creation	26	1:1	26
Wetland Preservation	61	0.5:1	30.5
Upland Buffer	72	0.25:1	18
Totals	159		74.5

Project Development:

Due to the presence of sufficient hydrology, suitable soil conditions and its proximity to a large (92 acres), mature woodland complex containing Category 3 wetlands and undisturbed stream channel, we predict that the proposed wetland restoration site will mature into a Category 3 mitigation wetland. Upon approval of this conceptual wetland mitigation plan by the regulatory agencies, final construction plans and specifications will be developed and incorporated into the highway construction plans for PAU/DEF 0.00/0.00.

Wetland Mitigation Monitoring:

Beginning the first year after completion of the wetland construction of the Plummer Pooled Wetland Mitigation Site, USACE will monitor the wetland success/failure through the reporting of water levels, plant material establishment/survival, and color photographs from permanent photo locations established during the first year of monitoring.

Vegetation monitoring at the Plummer Mitigation Site will follow those methods described in the most current version of the Ohio EPA, Field Manual for the Vegetation Index of Biotic Integrity for Wetlands (Ohio EPA Technical Report WET 2004/9).

Summary:

For this project, ODOT will be required to mitigate approximately 22.05 acres of wetland impacts (20.03 acres of non-isolated wetlands and 2.02 acres of isolated wetlands). Based on existing conditions at the Plummer Property, a wetland mitigation plan has been developed that will achieve the following wetland mitigation goals:

- Preservation of approximately 61 acres of forested Category 3 wetlands (53 acres in Parcel 291-WD and eight acres in Parcel 291-WD1) and 72 acres of mature, forested, upland buffer; and
- Restoration of 26 acres of palustrine forested wetlands on what is now agricultural land

In addition to providing ample opportunity for wetland mitigation, preservation of Parcel 291-WD1 will allow for preservation of approximately 4,328 feet of undisturbed stream channel, including 3,268 feet of Stevens Ditch and 1,060 feet of unnamed tributary.

Stream Mitigation:

The general approach to reducing impacts to surface waters is to avoid and minimize impacts to the greatest extent possible, then to compensate for any unavoidable impacts. This project impacts a total of 7,944 feet of jurisdictional stream channel. Replacement ratios will be based on the quality and length of stream being impacted.

Avoidance to all surface waters would not be possible. Therefore, impacts to streams and rivers will be minimized during design and construction. Mitigation measures for stream impacts will include:

- Implementation of an Erosion and Sediment Control Plan.
- Construction of stormwater detention/treatment facilities to minimize the impact from highway contaminants on surface water quality.
- Properly sized and engineered culverts for stream crossings to minimize impacts attributed to flood height and flood duration.
- Culverted stream crossings, which are properly sized and engineered to provide unobstructed, continuous flow for fish and macroinvertebrates.
- Perpendicular stream crossings.
- Stream enhancement techniques such as creation of pool and riffle zones, planting stream-shading vegetation, construction of low-flow channels and pools and placing boulders and channel deflectors in unavoidable stream relocations.
- Utilization of BMP's in accordance with ODOT's *Construction and Materials Specifications* (2002).
- Use of conservation easements.

- Utilization of an environmental monitor during construction.
- Property acquisition for stream channel preservation.

Table 4 provides a summary of the proposed stream mitigation credits proposed for the construction of this project.

**Table 4
Proposed On-Site Stream Mitigation**

Proposed Mitigation Type	Length (ft)	Ratio	Proposed Credits (ft)
2-Stage Natural Channel Design	2,025	1:1	2,025
Preservation on Plummer Property	4,328	1:1	4,328
Conservation Easement on Maumee River (Smith Parcel)	4,932.02	1:1	4,932.02
Conservation Easement on Maumee River (Forrest Parcel)	273.7	1:1	273.7
Total Credits			11,558.72

ODOT has proposed a total of 11,558.72 feet of on-site stream mitigation to compensate for the 7,944 feet of jurisdictional stream impact resulting from this project. This equates to a 1.5:1 mitigation of these resources. More details of the proposed stream mitigation is provided below.

On-Site Natural Channel Design (Stevens Ditch):

The Preferred and Minimal Degradation Alternatives for the project include the incorporation of an on-site, two-stage natural channel design for a relocated portion of Stevens Ditch. Stevens Ditch is an Ohio EPA designated Warmwater Habitat (WWH) stream. This stream attained a QHEI score of 60.5 (July 2003), indicating Warmwater Habitat potential. It is a USGS mapped perennial stream. Proposed stream mitigation measures in this vicinity include the following:

Design Criteria: Rosgen (1999) stream classification and delineation criteria collected from an unmodified reach of Stevens Ditch located at the southwest end of the proposed relocated channel segment (just upstream of relocation) was used as the design goal for the constructed channel, since the stream at this location best represented the natural (non-disturbed), meandering and stable conditions of this feature in the project vicinity. Rosgen information for the existing channel is included in this Conceptual Stream and Wetland Mitigation Plan.

Design Features: Design features to be incorporated into the constructed channel for Stevens Ditch are presented on conceptual plans shown in the Conceptual Stream and Wetland Mitigation Plan in Exhibits 5 and 6. Key features include the following:

- Construction of 2,025 feet of a natural two-stage channel,
- Construction of gradual sloping "benches" (10:1 to 24:1 slopes) along the channel to provide for bankfull width; these gradual slopes will provide areas for hydrophytic vegetation to become established and habitat for biotic communities; vegetation planting along these slopes (see below) will also provide channel stability, cover and
- Construction of riffle habitat at several locations along the constructed channel length (based on Newbury riffle design methodology),

- Use of erosion protection along outer banks at meander locations for channel stability, and
- The planting of native trees, shrubs and seeding along the constructed channel banks and benches; riparian planting will include four tree species (red maple, pin oak, American sycamore, black willow), one shrub (buttonbush) and will include seeding gradual sloping "bench" areas with ODOT low growing slope mix (ODOT CMS Supplement Spec 870, 3A); overtime, riparian replanting will provide cover and shading for the constructed channel and will provide bank stability and erosion protection.

Other Stream Mitigation (all impacted streams):

- a. Plummer Parcel Fee Simple Acquisition: The Plummer Property, which is located south of the existing US 24/SR 424 intersection, east of Krouse Road and north of the Maumee & Western Railroad, consists of two parcels, identified as 291-WD and 291-WD1 (Exhibits 1 and 2). Parcel 291-WD occupies 42 acres, which includes 33 acres of mature woodland, 7.6 acres of forested, Category 3 wetland, 4,328 feet of undisturbed streambed (Stevens Ditch and an unnamed tributary) and nine acres of agricultural land. The parcel also contains a small pond at the most downstream reach of Stevens Ditch.

Parcel 291-WD1 occupies 121 acres south of 291-WD. This portion of the property contains 92 acres of mature deciduous woodland, including 53 acres of forested Category 3 wetlands, and 29 acres of agricultural land. The northern portion of this wetland/upland complex drains into the wetlands located on Parcel 291-WD and eventually into Stevens Ditch. The southern portion of the parcel appears to drain to the south, towards the Maumee & Western railroad. Approximately 26 acres of the farmed portion of the property lies west of and adjacent to the 92-acre woodland. The remaining 3 acres of farmland lies on the east side of the woodlot. Use of the Plummer property as a mitigation site for PAU/DEF 0.00/0.00 offers an opportunity to:

- Preserve approximately 61 acres of forested Category 3 wetlands and 72 acres of mature, forested, upland buffer;
- Restore approximately 26 acres of wetlands; and
- Preserve approximately 4,328 feet of undisturbed stream channel, including 3,268 feet of Stevens Ditch and 1,060 feet of unnamed tributary.

- b. Purchase of Conservation Easements from Willing Sellers: ODOT is currently negotiating the purchase of conservation easements from two willing sellers. This will effectively preserve, in perpetuity, a portion of the Maumee River riparian corridor, in Paulding County, Ohio (See Figure 8). The two conservation easements are described as follows:

1. Smith Parcel: The "Smith" conservation easement will consist of 4,932.02 lineal feet of riparian corridor located along the east bank of the Maumee River. The total area of the easement is 34.8 acres and consists of wooded riparian corridor and agricultural land, as indicated in Figure 8. The minimum width of this easement is 100 feet from the edge of the stream into the property, although the majority of the easement will be 400 feet wide, from the edge of the river into the property.

2. The "Forrest" conservation easement will consist of a 100 foot wide, 273.7-foot long segment of riparian corridor located along the east bank of the Maumee River, north of and adjacent to the "Smith" conservation easement. The total area for this easement will be 0.3 acre. Like the Smith conservation easement, this area will be preserved in perpetuity.

Together, the Smith and Forrest conservation easements will allow ODOT to preserve 5,205.72 lineal feet of riparian corridor along the State Scenic Maumee River. Combining this total with the amount of stream channel that ODOT will preserve on the Plummer Property (4,328 feet of stream channel) and the two-stage natural channel design (2,025 feet) raises the amount of preserved stream channel/riparian corridor to a total of 11,558.72 feet.

**Wetland and Stream Mitigation for the
USACE 404 Permit Application, Ohio EPA 401 Water Quality Certification
Application and Ohio EPA Isolated Wetland Permit Application
PAU/DEF-24-0.00/0.00 PID No. 18904**

Wetland Mitigation:

In order to comply with the wetland mitigation requirements for the PAU/DEF 0.00/0.00 project, ODOT has selected a potential wetland and stream mitigation site, known as the Plummer Property, located in the SE 1/4 of Section 29 and the N 1/2 of Section 32, Defiance Township, Defiance County (Exhibit 1).

The Plummer Property, which is located south of the existing US 24/SR 424 intersection, east of Krouse Road and north of the Maumee & Western Railroad, consists of two parcels, identified as 291-WD and 291-WD1 (Exhibit 2). Parcel 291-WD occupies 42 acres, which includes 33 acres of mature woodland, 7.6 acres of forested, Category 3 wetland, 4,328 feet of undisturbed streambed (Stevens Ditch and an unnamed tributary) and nine acres of agricultural land. The parcel also contains a small pond at the most downstream reach of Stevens Ditch.

Parcel 291-WD1 occupies 121 acres south of 291-WD. This portion of the property contains 92 acres of mature deciduous woodland, including 53 acres of forested Category 3 wetlands, and 29 acres of agricultural land. The northern portion of this wetland/upland complex drains into the wetlands located on Parcel 291-WD and eventually into Stevens Ditch. The southern portion of the parcel appears to drain to the south, towards the Maumee & Western railroad. Approximately 26 acres of the farmed portion of the property lies west of and adjacent to the 92-acre woodland. The remaining 3 acres of farmland lies on the east side of the woodlot.

Use of the Plummer property as a mitigation site for PAU/DEF 0.00/0.00 offers an opportunity to:

- Preserve approximately 61 acres of forested Category 3 wetlands and 72 acres of mature, forested, upland buffer;
- Restore approximately 24 acres of wetlands; and
- Preserve approximately 4,328 feet of undisturbed stream channel, including 3,268 feet of Stevens Ditch and 1,060 feet of unnamed tributary.

Characterization of Wetland Restoration Site:

As part of this wetland mitigation plan, ODOT proposes to restore approximately 26 acres of wetlands on farmland located west of the woodland on Parcel 291-WD1 within the existing woodlot. Several factors make this portion of Parcel 291-WD1 suitable for wetland restoration. First, the Defiance County Soil Survey indicates that this portion of the property contains two predominant soil types:

1. Paulding clay (Pa); and
2. Roselms silty clay on 0 to 3 percent slopes (RsA)(Exhibit 2).

Paulding clay is hydric. Roselms silty clay on 0 to 3 percent slopes is non-hydric, but is known to contain hydric inclusions of Paulding soils on broad flats.

Table 1 contains a comparison of Paulding clay to Roselms silty clay, to illustrate their similarities. Both soils vary only slightly with respect to the percent clay content and percent organic matter within the uppermost seven to nine inches of the soil profile, as well as the depth of the seasonal high water table. Because of its lower position in the landscape, Paulding clay tends to have slightly more organic matter and a wider range of clay content in the surface layer of the soil. The seasonal high water table is also deeper in Roselms silty clay, again, due to the higher position of Roselms silty clay in the landscape. Below seven to nine inches, both soils have similar clay contents and identical permeabilities, making them similarly suited as soils for the development of wetlands on the property. Both soils also have perched seasonal high water tables, due to their low permeabilities.

Table 1
Comparison of Paulding Clay and Roselms Silty Clay, 0- 3 percent slopes

Soil type	Depth (inches)	Clay Content (Percent)	Permeability (Inches/hour)	Organic Matter (percent)	High Water Table
Paulding clay (Pa)	0-7	40-65	0.06-0.2	3-5	+1.0 - 0.5 feet Perched Jan. - April
	7-33	60-80	<0.06		
	33-60	60-75	<0.06		
Roselms silty clay, 0-3 percent slopes (RsA)	0-9	40-50	0.06-0.2	2-3	1.0 - 2.5 feet Perched Jan. - April
	9-32	60-80	<0.06		
	32-60	60-75	<0.06		

Second, existing topography on the proposed wetland restoration site is relatively flat, with elevations varying from about 709 to 711 feet above mean sea level (Exhibit 4). The highest elevations occur along the southern end of the parcel. The lowest elevations occur in the northernmost corner of the site, in a shallow ravine that carries surface runoff northward to Stevens Ditch. The flat topography and the low-permeability soils combine to create drainage problems on the site. In fact, runoff and percolation of surface water is so slow that systematic tiling is not effective. A review of records at the Defiance Soil and Water Conservation District Office revealed no records of systematic tiling on the property (personal communication from Jeff Ankney, May 24, 2004). Instead of tiling, landowners have excavated several shallow swales to carry water off the farm field and into Stevens Ditch.

Due to the flat nature of the area, insufficient topographic information currently exists on a USGS topographic map of the site, which displays 5-foot contours, to allow for a detailed estimation of the contributing watershed area to the agricultural field. However, in the adjacent wooded area to the east, 53 of the 92 acres of land were determined to be wetland by The Mannik & Smith Group, Inc. This equates to approximately 58 percent of the total woodland area on Parcel 291-WD1. The USGS topographic map of the site does suggest that the topography of the agricultural field is similar to the adjacent woodland (Exhibit 1). The Defiance County Soil Survey also suggests that these two areas are similar to one another with respect to soil type. These similarities, combined with the known drainage problem on the site, suggest that wetlands can be successfully restored by disrupting the drainage swales that currently exist on the site.

Table 2 contains a summary of wetland impacts in Ohio, as well as the required on-site mitigation ratios and the number of acres required if preservation is used for mitigation of wetland impacts. Based on this information, approximately 37 acres of Category 3 wetlands will need to be preserved. Since as many as 53 acres of Category 3 wetlands exist in Parcel 291-WD1 and eight acres exist in Parcel 291-WD, the use of the Plummer property will provide adequate Category 3 wetland for preservation.

Table 2
Summary of Isolated and Non-Isolated Wetland Impacts and
Required Acreage for Preservation

Wetland Type	Category	Average Impacted	On-Site Mitigation Ratio	Preservation Acres Required
Forested	3	2.95	2.5:1	8.85
Forested	2	8.63	2.0:1	17.26
Non-forested	3	0.16	2.0:1	0.32
Non-forested	2	10.20	1.5:1	10.20
Non-forested	1	0.11	1.5:1	0.11
	-	22.05	-	36.74

^a Based on the following formula:

$$p = [(lmr - 1) \times 2] \times n, \text{ where}$$

p = minimum number of acres of wetlands required to be preserved

lmr = left side of on-site mitigation ratio

n = number of acres impacted

In addition to preserving approximately a minimum of 36.74 acres of Category 3 wetlands, ODOT will be required to restore at least 22.05 acres of wetlands. Approximately 26 acres of wetlands can be successfully restored on the agricultural portion of the property and within the existing woodland (via the creation of vernal pools).

Conceptual Wetland Design:

The wetland restoration site will be developed by regrading the existing agricultural field located west of Parcel 291-WD1 to capture and hold surface water on the parcel (Exhibits 3 and 4). The shallow drainage swales that currently exist on the field will be eliminated and shallow depressional areas will be created throughout the site. Shallow berms will be placed along the perimeter of the site, where necessary, to ensure that enough water is retained to develop a diverse wetland habitat on the property.

During construction, topsoil will be removed from the site and stockpiled in an upland location. Subsoil excavated from the site will be utilized for construction of berms. Excess soil will be removed from the site. Topsoil will be placed back onto the site after the subgrade has been graded to the desired elevations. One outflow structure will be placed at the northern corner of the property, in an earthen berm, to regulate water levels in the wetland.

Vegetation will be planted in order to potentially create a Category 3 wetland that satisfies the mitigation requirements for the project. Species selected for the project will be native to the area

and will be similar to those found in wetlands located in the adjacent woodlot and other high quality wetlands throughout the project area.

Vernal pools will also be created within the woodlot adjacent to existing Category 3 wetlands. Vernal pools with a maximum depth of 1 foot will be excavated in several strategically placed areas in the western half of the woodlot.

Erosion control and other Best Management Practices will be utilized during construction to minimize silt-laden runoff from leaving the site. For example, the wetland seed mix will contain an annual cover crop to minimize erosional losses immediately after construction. Woody vegetation will help anchor the soil and increase not only the possibility of success but speed up the development of the community.

Based on the mitigation credits proposed for HAN/WAY-3.0-3.0/0.00, we have assumed that 1:1 credit (credit:area impacted) will be given to new wetland acreage, including vernal pool creation, 0.5:1 credit will be given for preservation of Category 3 wetlands and 0.25:1 credit will be given for forested upland buffer protection. Table 3 provides a summary of potential wetland mitigation credits that are available at the Plummer property, when both parcels are considered for preservation

**Table 3
Summary of Proposed Mitigation Credits**

Mitigation Type	Acres	Ratio	Proposed Mitigation Credits
Wetland Creation	26	1:1	26
Wetland Preservation	61	0.5:1	30.5
Upland Buffer	72	0.25:1	18
Totals	159		74.5

Project Development:

Due to the presence of sufficient hydrology, suitable soil conditions and its proximity to a large (92 acres), mature woodland complex containing Category 3 wetlands and undisturbed stream channel, we predict that the proposed wetland restoration site will mature into a Category 3 mitigation wetland. Upon approval of this conceptual wetland mitigation plan by the regulatory agencies, final construction plans and specifications will be developed and incorporated into the highway construction plans for PAU/DEF 0.00/0.00.

Wetland Mitigation Monitoring:

Beginning the first year after completion of the wetland construction of the Plummer Pooled Wetland Mitigation, the project owner will submit annual monitoring reports for the first 3 years to the Ohio EPA and USACE. The monitoring reports will document wetland success/failure through the reporting of water levels, plant material establishment/survival, and color photographs from permanent photo locations established during the first year of monitoring.

Vegetation monitoring at the Plummer Mitigation Site will follow those methods described in the most current version of the Ohio EPA, Field Manual for the Vegetation Index of Biotic Integrity for Wetlands (Ohio EPA Technical Report WET 2004/9).

Summary:

For this project, ODOT will be required to mitigate approximately 22.05 acres of wetland impacts (20.03 acres of non-isolated wetlands and 2.02 acres of isolated wetlands). Based on existing conditions at the Plummer Property, a wetland mitigation plan has been developed that will achieve the following wetland mitigation goals:

- Preservation of approximately 61 acres of forested Category 3 wetlands (53 acres in Parcel 291-WD and eight acres in Parcel 291-WD1) and 72 acres of mature, forested, upland buffer; and
- Restoration of 26 acres of palustrine forested wetlands on what is now agricultural land

In addition to providing ample opportunity for wetland mitigation, preservation of Parcel 291-WD1 will allow for preservation of approximately 4,328 feet of undisturbed stream channel, including 3,268 feet of Stevens Ditch and 1,060 feet of unnamed tributary.

Stream Mitigation:

The general approach to reducing impacts to surface waters is to avoid and minimize impacts to the greatest extent possible, then to compensate for any unavoidable impacts. This project impacts a total of 7,944 feet of jurisdictional stream channel. Replacement ratios will be based on the quality and length of stream being impacted.

Avoidance to all surface waters would not be possible. Therefore, impacts to streams and rivers will be minimized during design and construction. Mitigation measures for stream impacts will include:

- Implementation of an Erosion and Sediment Control Plan.
- Construction of stormwater detention/treatment facilities to minimize the impact from highway contaminants on surface water quality.
- Properly sized and engineered culverts for stream crossings to minimize impacts attributed to flood height and flood duration.
- Culverted stream crossings, which are properly sized and engineered to provide unobstructed, continuous flow for fish and macroinvertebrates.
- Perpendicular stream crossings.
- Stream enhancement techniques such as creation of pool and riffle zones, planting stream-shading vegetation, construction of low-flow channels and pools and placing boulders and channel deflectors in unavoidable stream relocations.
- Utilization of BMP's in accordance with ODOT's *Construction and Materials Specifications* (2002).
- Use of conservation easements.

- Utilization of an environmental monitor during construction.
- Property acquisition for stream channel preservation.

Table 4 provides a summary of the proposed stream mitigation credits proposed for the construction of this project.

**Table 4
Proposed On-Site Stream Mitigation**

Proposed Mitigation Type	Length (ft)	Ratio	Proposed Credits (ft)
2-Stage Natural Channel Design	2,025	1:1	2,025
Preservation on Plummer Property	4,328	1:1	4,328
Conservation Easement on Maumee River (Smith Parcel)	4,932.02	1:1	4,932.02
Conservation Easement on Maumee River (Forrest Parcel)	273.7	1:1	273.7
Total Credits			11,558.72

ODOT has proposed a total of 11,558.72 feet of on-site stream mitigation to compensate for the 7,944 feet of jurisdictional stream impact resulting from this project. This equates to a 1.5:1 mitigation of these resources. More details of the proposed stream mitigation is provided below.

On-Site Natural Channel Design (Stevens Ditch):

The Preferred and Minimal Degradation Alternatives for the project include the incorporation of an on-site, two-stage natural channel design for a relocated portion of Stevens Ditch. Stevens Ditch is an Ohio EPA designated Warmwater Habitat (WWH) stream. This stream attained a QHEI score of 60.5 (July 2003), indicating Warmwater Habitat potential. It is a USGS mapped perennial stream. Proposed stream mitigation measures in this vicinity include the following:

Design Criteria: Rosgen (1999) stream classification and delineation criteria collected from an unmodified reach of Stevens Ditch located at the southwest end of the proposed relocated channel segment (just upstream of relocation) was used as the design goal for the constructed channel, since the stream at this location best represented the natural (non-disturbed), meandering and stable conditions of this feature in the project vicinity. Rosgen information for the existing channel is included in this Conceptual Stream and Wetland Mitigation Plan.

Design Features: Design features to be incorporated into the constructed channel for Stevens Ditch are presented on conceptual plans shown in the Conceptual Stream and Wetland Mitigation Plan in Exhibits 5 and 6. Key features include the following:

- Construction of 2,025 feet of a natural two-stage channel,
- Construction of gradual sloping "benches" (10:1 to 24:1 slopes) along the channel to provide for bankfull width; these gradual slopes will provide areas for hydrophytic vegetation to become established and habitat for biotic communities; vegetation planting along these slopes (see below) will also provide channel stability, cover and
- Construction of riffle habitat at several locations along the constructed channel length (based on Newbury riffle design methodology),

- Use of erosion protection along outer banks at meander locations for channel stability, and
- The planting of native trees, shrubs and seeding along the constructed channel banks and benches; riparian planting will include four tree species (red maple, pin oak, American sycamore, black willow), one shrub (buttonbush) and will include seeding gradual sloping "bench" areas with ODOT low growing slope mix (ODOT CMS Supplement Spec 870, 3A); overtime, riparian replanting will provide cover and shading for the constructed channel and will provide bank stability and erosion protection.

Other Stream Mitigation (all impacted streams):

- a. Plummer Parcel Fee Simple Acquisition: The Plummer Property, which is located south of the existing US 24/SR 424 intersection, east of Krouse Road and north of the Maumee & Western Railroad, consists of two parcels, identified as 291-WD and 291-WD1 (Exhibits 1 and 2). Parcel 291-WD occupies 42 acres, which includes 33 acres of mature woodland, 7.6 acres of forested, Category 3 wetland, 4,328 feet of undisturbed streambed (Stevens Ditch and an unnamed tributary) and nine acres of agricultural land. The parcel also contains a small pond at the most downstream reach of Stevens Ditch.

Parcel 291-WD1 occupies 121 acres south of 291-WD. This portion of the property contains 92 acres of mature deciduous woodland, including 53 acres of forested Category 3 wetlands, and 29 acres of agricultural land. The northern portion of this wetland/upland complex drains into the wetlands located on Parcel 291-WD and eventually into Stevens Ditch. The southern portion of the parcel appears to drain to the south, towards the Maumee & Western railroad. Approximately 26 acres of the farmed portion of the property lies west of and adjacent to the 92-acre woodland. The remaining 3 acres of farmland lies on the east side of the woodlot. Use of the Plummer property as a mitigation site for PAU/DEF 0.00/0.00 offers an opportunity to:

- Preserve approximately 61 acres of forested Category 3 wetlands and 72 acres of mature, forested, upland buffer;
- Restore approximately 26 acres of wetlands; and
- Preserve approximately 4,328 feet of undisturbed stream channel, including 3,268 feet of Stevens Ditch and 1,060 feet of unnamed tributary.

- b. Purchase of Conservation Easements from Willing Sellers: ODOT is currently negotiating the purchase of conservation easements from two willing sellers. This will effectively preserve, in perpetuity, a portion of the Maumee River riparian corridor, in Paulding County, Ohio (See Figure 8). The two conservation easements are described as follows:



1. Smith Parcel: The "Smith" conservation easement will consist of 4,932.02 lineal feet of riparian corridor located along the east bank of the Maumee River. The total area of the easement is 34.8 acres and consists of wooded riparian corridor and agricultural land, as indicated in Figure 8. The minimum width of this easement is 100 feet from the edge of the stream into the property, although the majority of the easement will be 400 feet wide, from the edge of the river into the property.

2. The "Forrest" conservation easement will consist of a 100 foot wide, 273.7-foot long segment of riparian corridor located along the east bank of the Maumee River, north of and adjacent to the "Smith" conservation easement. The total area for this easement will be 0.3 acre. Like the Smith conservation easement, this area will be preserved in perpetuity.



Together, the Smith and Forrest conservation easements will allow ODOT to preserve 5,205.72 lineal feet of riparian corridor along the State Scenic Maumee River. Combining this total with the amount of stream channel that ODOT will preserve on the Plummer Property (4,328 feet of stream channel) and the two-stage natural channel design (2,025 feet) raises the amount of preserved stream channel/riparian corridor to a total of 11,558.72 feet.

Rosgen Stream Reference Field Data Forms

Sample 1
TABLE 5-3. Reference reach field data form for stream classification.

REFERENCE REACH FIELD FORM STREAM CHANNEL CLASSIFICATION LEVEL II		STREAM TYPE: <u>Ce</u>	
STREAM NAME: <u>Steven's Ditch</u>	DRAINAGE AREA: <u>1.8</u> mi^2	BASIN NAME: <u>HAUNGE QUINN</u>	
OBSERVERS: <u>SVE WWS</u>	(07562)	DATE: <u>11/30/64</u>	
LOCATION: <u>Approx. 2 miles West of Defiance on US 24 Twp. 4N</u>	Rge. <u>HE</u>	Sec. <u>29 & 28</u>	Qtr. <u></u>
Bankfull WIDTH <u>17.87</u> Ft. (W _{bf})	Bankfull MAX. DEPTH <u>2.56</u> Ft. (d _{max})	Channel SLOPE <u>0.01</u> Ft/Ft	%
Bankfull Mean DEPTH <u>2.16</u> Ft. (d _m)	Flood Prone Area WIDTH <u>121.36</u> Ft. (W _{fp})	Valley SLOPE <u></u> Ft/Ft	%
WIDTH/DEPTH Ratio <u>8.27</u>	ENTRENCHMENT Ratio <u>6.8</u>	SINUOSITY (Stream Dist/Valley Dist.) <u>1.3</u>	
Channel MATERIALS: (Pebble Count)	D15 <u></u> mm	D34 <u></u> mm	D50 <u></u> mm
	D84 <u></u> mm	D95 <u></u> mm	
			

Sample 2
 TABLE 5-3. Reference reach field data form for stream classification.

REFERENCE REACH FIELD FORM		STREAM TYPE: <u>C6</u>	
STREAM CHANNEL CLASSIFICATION LEVEL II			
STREAM NAME: <u>Stover's Ditch</u>	DRAINAGE AREA: <u>1.3/11.2</u>	BASIN NAME: <u>Howes River</u>	
OBSERVERS: <u>ME WWS (NSB)</u>		DATE: <u>11/30/64</u>	
LOCATION: <u>Approx. 2 miles West of Defiance, Cass Co. MS 24</u>	Twp. <u>4 N</u>	Rge. <u>4 E</u>	Sec. <u>29 22 A</u> Qtr. <u></u>
Bankfull WIDTH <u>20.5</u> Ft. (W _{bf})	Bankfull MAX. DEPTH <u>3.25</u> Ft. (d _{max})	Channel SLOPE <u>0.21</u> FU/FT	% <u></u>
Bankfull Mean DEPTH <u>2.56</u> Ft. (d _m)	Flood Prone Area WIDTH <u>104.76</u> Ft. (W _{fp})	Valley SLOPE <u></u> FU/FT	% <u></u>
WIDTH/DEPTH Ratio <u>8.0</u>	ENTRENCHMENT Ratio <u>5.12</u>	SINUOSITY (Stream Dist/Valley Dist.) <u>1.3</u>	
Channel MATERIALS: (Pebble count) D15 <u></u> mm	D34 <u></u> mm	D50 <u></u> mm	D64 <u></u> mm
			

Sample 3

TABLE 5-3. Reference reach field data form for stream classification.



REFERENCE REACH FIELD FORM STREAM CHANNEL CLASSIFICATION LEVEL II		STREAM TYPE: <u>CC</u>	
STREAM NAME: <u>Steven's Ditch</u>		BASIN NAME: <u>Hatchee R. Dist.</u>	
OBSERVERS: <u>JTC & WWS (NSG)</u>		DATE: <u>11/30/04</u>	
LOCATION: <u>Approx. 2 miles West of DeBary on US 24</u>		Sec. <u>29</u> Twp. <u>4N</u> Rge. <u>4E</u> Qtr.	
Bankfull WIDTH <u>17.22</u> Ft. (W _{bf})	Bankfull MAX. DEPTH <u>3.44</u> Ft. (d _{max})	Channel SLOPE <u>0.01</u> Ft/Ft	Valley SLOPE _____ Ft/Ft
Bankfull Mean DEPTH <u>2.8</u> Ft. (d _{mf})	Flood Prone Area WIDTH <u>28.24</u> Ft. (W _{fp})	Valley SLOPE _____ Ft/Ft	SINDSOSITY (Stream Disc/Valley Dist.) <u>1.3</u>
WIDTH/DEPTH Ratio <u>6.15</u>	ENTRENCHMENT Ratio <u>6.13</u>	D15 _____ mm	D60 _____ mm
Channel MATERIALS: (Pebble Count)	D15 _____ mm	D84 _____ mm	D95 _____ mm
			

TABLE 5-3. Reference reach field data form for stream classification.

Sample 4

REFERENCE REACH FIELD FORM
STREAM CHANNEL CLASSIFICATION LEVEL II

STREAM NAME: Staten's Ditch DRAINAGE AREA: 1.81 sq. mi. BASIN NAME: Manasse River

OBSERVERS: W & WWS (MS6) DATE: 11/30/04

LOCATION: Approx. 2 miles West of Defiance on US 24 Twp. 4N Rge. 4E Sec. 24 Qtr. 01

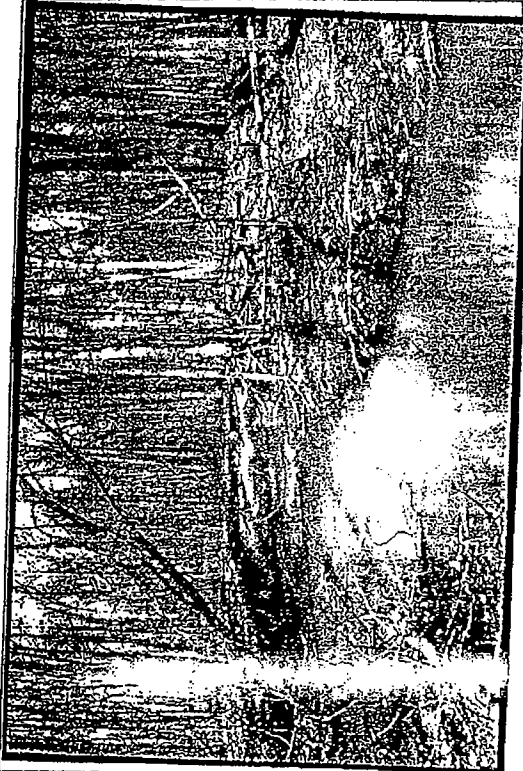
Bankfull WIDTH 18.7 FL (W_{bf}) Bankfull MAX. DEPTH 2.72 Ft. (d_{max}) Channel SLOPE 0.01 F/FT %


Bankfull Mean DEPTH 2.57 Ft. (d_{av}) Flood Prone Area WIDTH 91.84 Ft. (W_{fp}) Valley SLOPE F/FT %

WIDTH/DEPTH Ratio 7.4 ENTRENCHMENT Ratio 4.9 SINUOSITY (Stream Dist./Valley Dist.) 1.3

Channel MATERIALS: (Pebble Count) D15 mm D50 mm D84 mm D95 mm

STREAM TYPE: C0





LEVEL II: THE MORPHOLOGICAL DESCRIPTION

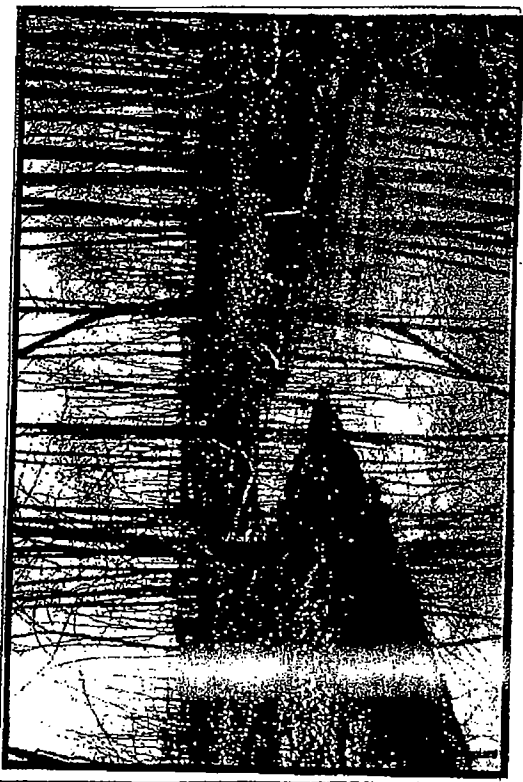
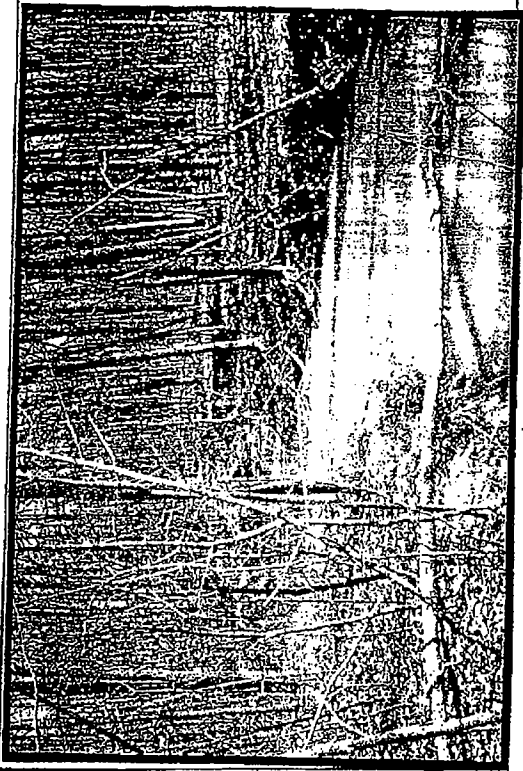
TABLE 5-3. Reference reach field data form for stream classification.

REFERENCE REACH FIELD FORM
STREAM CHANNEL CLASSIFICATION LEVEL II

STREAM TYPE: C6

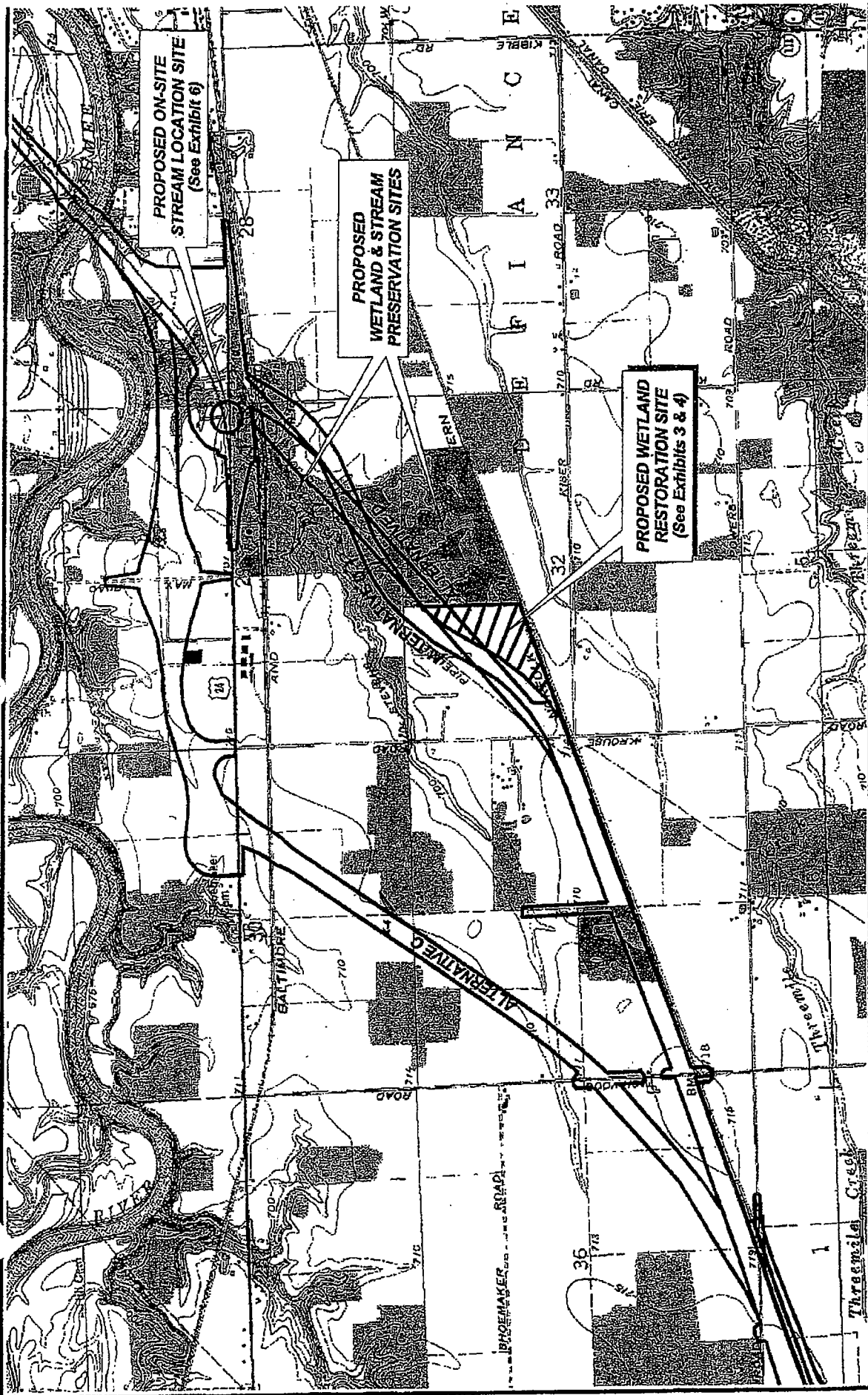
STREAM NAME: Stearns's Ditch DRAINAGE AREA: 1.81 ^{mi²} BASIN NAME: NOJUMEE BASIN
 OBSERVERS: ALF & VLS (MSG) DATE: 11/30/04
 LOCATION: Approx. 2 miles West of DEARBORN on US 24 TWP. 4N Rge. 4E Sec. 29 ²⁸ Qtr.

Bankfull WIDTH 22.14 Ft. (W_{bf}) Bankfull MAX. DEPTH 3.02 Ft. (d_{max}) Channel SLOPE 0.01 FUFT %
 Bankfull Mean DEPTH 2.82 Ft. (d_{av}) Flood Prone Area WIDTH 24.44 Ft. (W_{FP}) Valley SLOPE _____ FUFT %
 WIDTH/DEPTH Ratio 7.85 ENTRENCHMENT Ratio 5.6 SINUOSITY (Stream Dist/Valley Dist) 1.3
 Channel MATERIALS: (Fobble Count) D15 _____ mm D34 _____ mm D50 _____ mm D84 _____ mm D95 _____ mm

EXHIBITS

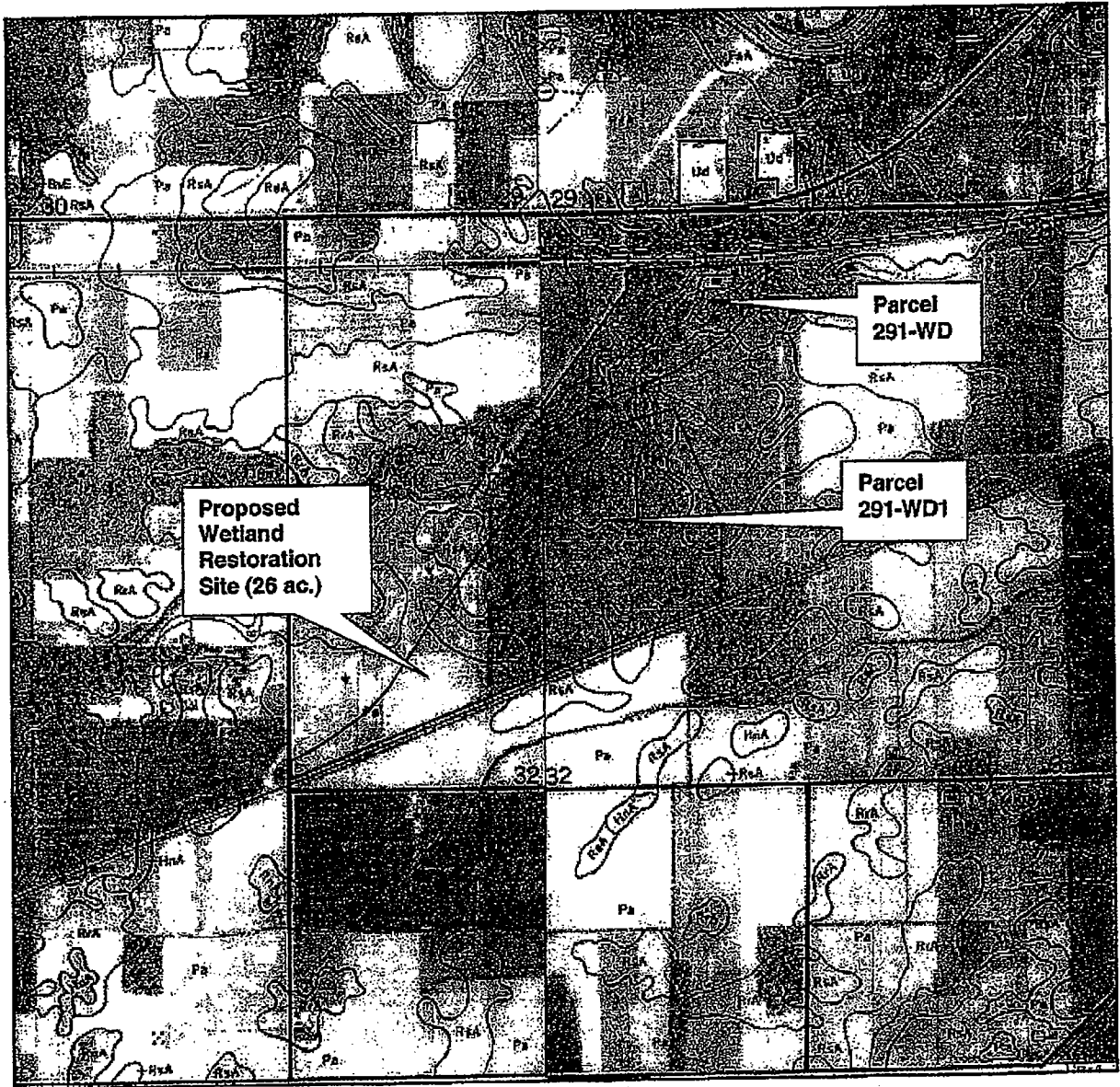
Project # P201A1E3C - J
2005/12/projects/ami/p201a1e3c/uses/usesce B4W.apr



N
1:240

EXHIBIT 1
PROPOSED ON-SITE STREAM AND WETLAND MITIGATION
SITE LOCATIONS FOR PAU/DEF 24-0-00

Mannik & Smith
Group
1800 Indian Wood Circle
Mansfield, Ohio 43337
(419) 851-2222
Fax: (419) 851-5555
Civil Engineering, Surveying and Environmental Consulting
TOLEDO • HONROE • DETROIT



LEGEND



Approximate
Parcel
Boundary

P201A1E3B 7/1, 2005

Mannik & Smith
 The Group
 1800 Indian Wood Circle
 Maumee, Ohio 43537
 (419) 891-2222
 Fax: (419) 891-1595
 Civil Engineering, Surveying and Environmental Consulting
 TOLEDO ♦ MONROE ♦ DETROIT

Exhibit 2
 Defiance County Soil Survey
 Natural Resource Conservation Service
 1984



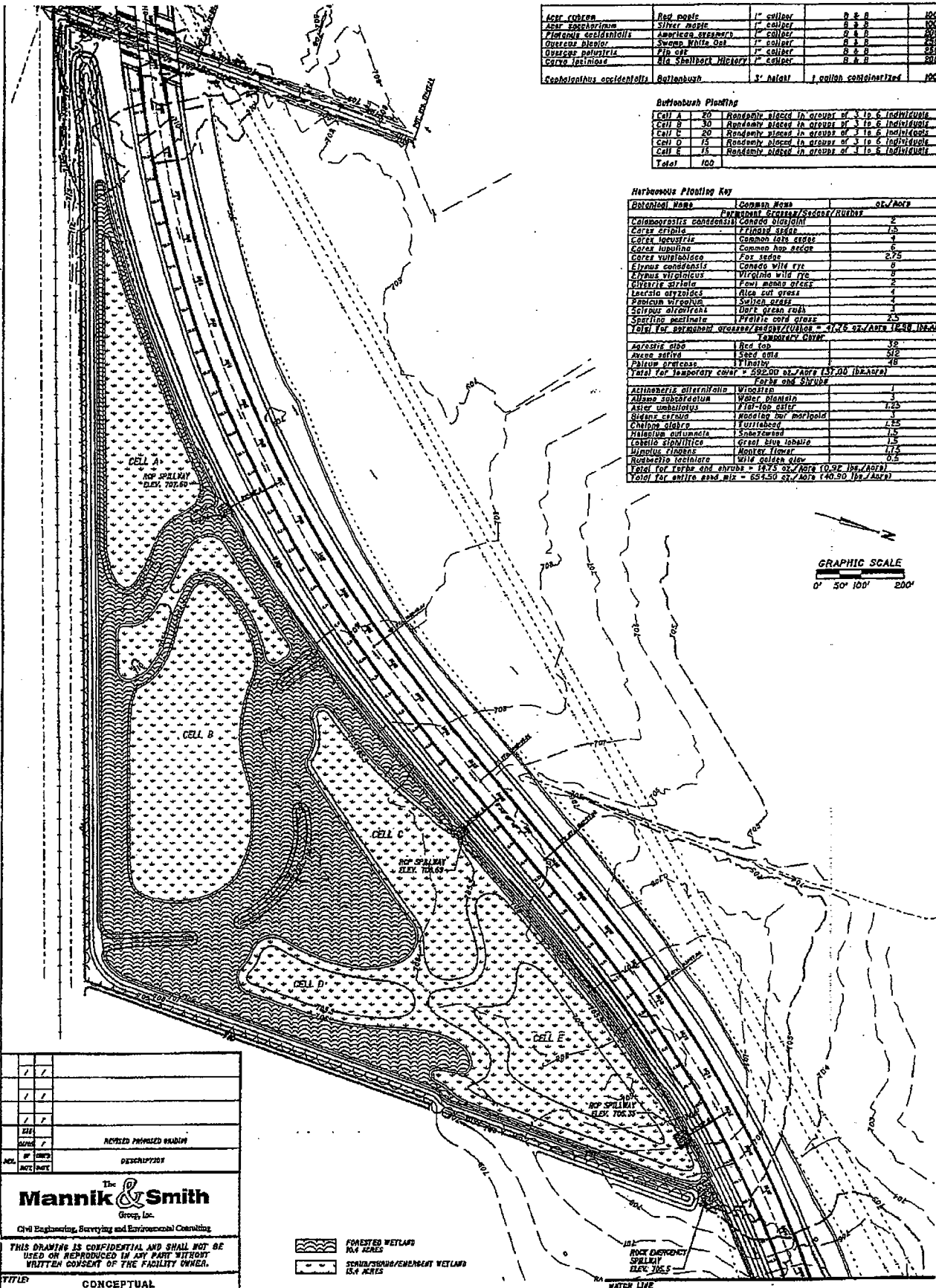
<i>Acer rubrum</i>	Red maple	1" caliper	0 & 0	100
<i>Acer saccharinum</i>	Silver maple	1" caliper	0 & 0	100
<i>Platanus occidentalis</i>	American sycamore	1" caliper	0 & 0	100
<i>Quercus bicolor</i>	Swamp White Oak	1" caliper	0 & 0	100
<i>Quercus petraea</i>	Pin oak	1" caliper	0 & 0	100
<i>Quercus prinus</i>	White Oak	1" caliper	0 & 0	100
<i>Coccolobus virginicus</i>	Blackberry	1" caliper	0 & 0	100
<i>Coccolobus virginicus</i>	Blackberry	1" caliper	0 & 0	100

Burfordbush Planting

Cell A	20	Randomly placed in groups of 3 to 6 individuals
Cell B	30	Randomly placed in groups of 3 to 6 individuals
Cell C	20	Randomly placed in groups of 3 to 6 individuals
Cell D	15	Randomly placed in groups of 3 to 6 individuals
Cell E	15	Randomly placed in groups of 3 to 6 individuals
Total	100	

Herbaceous Planting Key

Botanical Name	Common Name	Planting Spacing/Notes/Rate	sq. ft./acre
<i>Chamaecrista canadensis</i>	Canada vetch		2
<i>Carex crinita</i>	Fringed sedge		1.5
<i>Carex lasiocarpa</i>	Common late sedge		4
<i>Carex lupulina</i>	Common hop sedge		6
<i>Carex vulpinoidea</i>	Fox sedge		2.75
<i>Elymus canadensis</i>	Canada wild rye		0
<i>Elymus virginicus</i>	Virginia wild rye		2
<i>Liveria strigata</i>	Small marsh grass		2
<i>Ischaemum angustifolium</i>	Slender sedge		4
<i>Panicum virginicum</i>	Switch grass		4
<i>Scirpus americanus</i>	Hard grass sedge		4
<i>Scirpus americanus</i>	Hard grass sedge		4
<i>Spartina patens</i>	Yellow sedge		2.5
Total for permanent grasses/sedges/rhizomes = 31.25 sq. ft./acre (12.50 lbs./acre)			
Temporary Cover			
<i>Aegagropogon</i>	Red top		35
<i>Alisma spicatum</i>	Spiked water plantain		20
<i>Polygonum orientale</i>	Flourish		40
Total for temporary cover = 95.00 sq. ft./acre (37.50 lbs./acre)			
Forbs and Shrubs			
<i>Alternanthera versicolor</i>	Wingstem		1
<i>Alisma subcordatum</i>	Water plantain		1
<i>Asier umbellatus</i>	Flor-top aster		1.25
<i>Bidens bipinnata</i>	Wooded bow marigold		1
<i>Chamaecrista</i>	Lespedeza		1
<i>Helianthus autumnalis</i>	Shobshob		1.5
<i>Lobelia spicata</i>	Great blue lobelia		1.5
<i>Rudbeckia hirta</i>	Black-eyed susan		1.5
<i>Rudbeckia hirta</i>	Black-eyed susan		1.5
<i>Rudbeckia hirta</i>	Black-eyed susan		1.5
Total for forbs and shrubs = 16.50 sq. ft./acre (6.56 lbs./acre)			
Total for entire seed mix = 64.75 sq. ft./acre (25.36 lbs./acre)			



REV.	DATE	DESCRIPTION

The Mannik & Smith Group, Inc.
 Civil Engineering, Surveying and Environmental Consulting

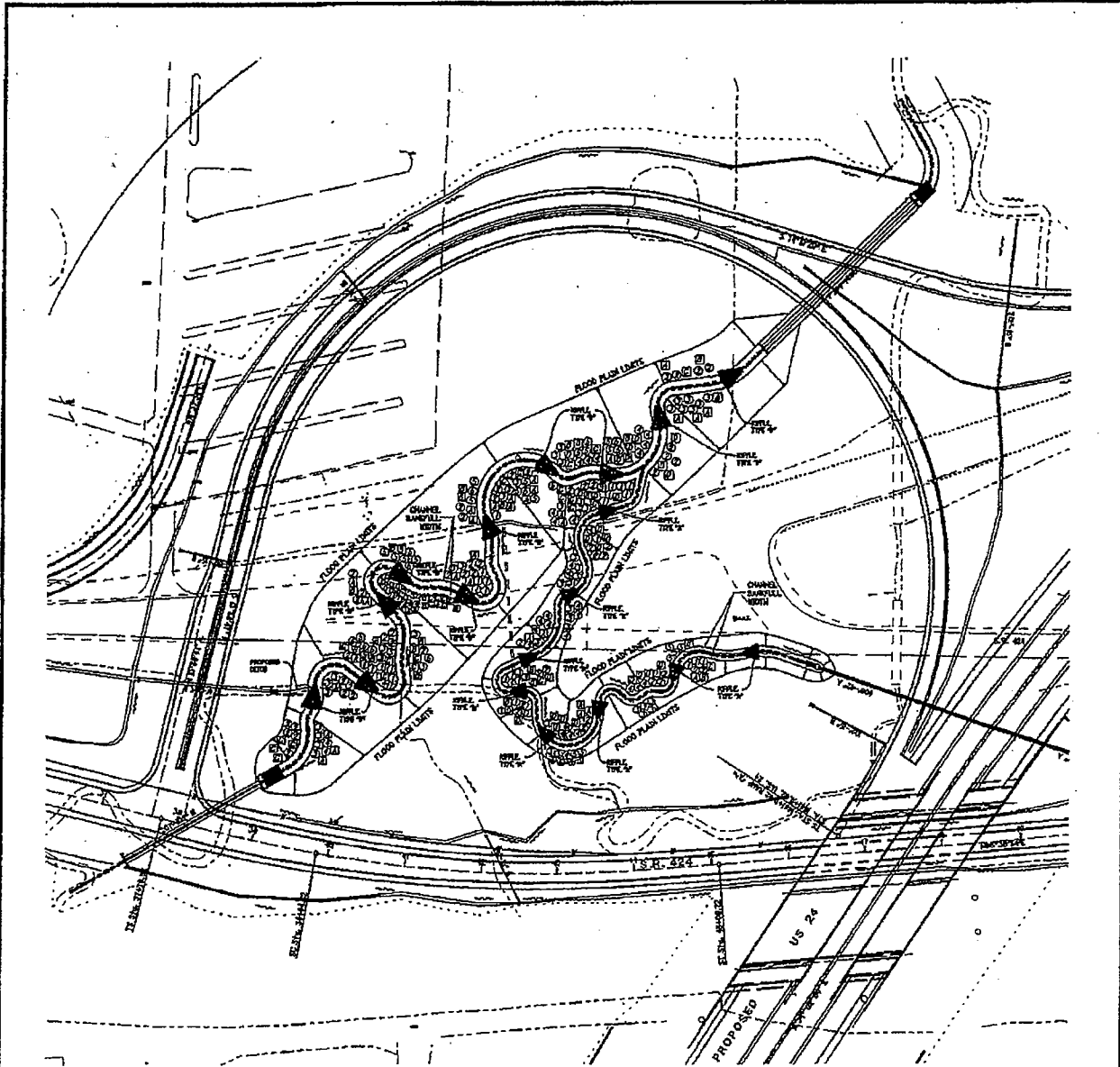
THIS DRAWING IS CONFIDENTIAL AND SHALL NOT BE USED OR REPRODUCED IN ANY MANNER WITHOUT WRITTEN CONSENT OF THE FACILITY OWNER.

TITLE: CONCEPTUAL WETLANDS RESTORATION PLAN PROPOSED PLANTING

DATE: 02/20/01	BY: JLS	CHECKED: JLS	SCALE: AS SHOWN
PROJECT NO: 01-001	SHEET NO: 4	TOTAL SHEETS: 4	DATE PLOTTED: 02/20/01

FORESTED WETLAND 10.4 ACRES
 SEMI/TRANS/EMERGENT WETLAND 15.4 ACRES



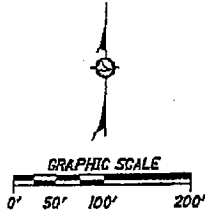


FOR RIFFLE DETAILS,
SEE SHEET _____

Relocated Ditch Riparian Planting Schedule

KEY	BOTANICAL NAME/COMMON NAME	SIZE	CONDITION	QUANTITY
(A)	<i>Acer rubrum</i> /Red maple	1" caliper	B & B	35
(B)	<i>Pteris caudata</i> /American Oystervine	1" caliper	B & B	20
(C)	<i>Salix nigra</i> /Black willow	1" caliper	B & B	25
(D)	<i>Quercus prinus</i> /Pin oak	1" caliper	B & B	30
(E)	<i>Cephaelis occidentalis</i> /Butcherbush	3" height	1 gallon containerized	40
(F)	<i>Cornus alternifolia</i> /Red-osier dogwood	3" height	1 gallon containerized	65
(G)	<i>Sambucus racemosa</i> /Elderberry	3" height	1 gallon containerized	65
(H)	<i>Viburnum lentago</i> /Nannyberry	3" height	1 gallon containerized	30
(I)	<i>Cornus amomum</i> /Silky dogwood	3" height	1 gallon containerized	35

- Lay Gravel Slope for Ditch (75:1, 3:1) - Plant along slope



ON-SITE STREAM RELOCATIONS MITIGATION LANDSCAPING PLAN

OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24
PAU/DEF-24-0.00 PID 18904

U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application

Date: 1-21-05

Exhibit 6

**APPENDIX D - LOCAL GOVERNMENT AGENCY, CONSERVATION GROUPS, AND
PARK DISTRICTS CONTACTED TO IDENTIFY POTENTIAL LOCAL
WATERSHED ASSISTANCE PROJECTS**

**Local Government Agency, Conservation Groups, and Park Districts Contacted
To Identify Potential Local Watershed Assistance Projects**

Paulding County

**Paulding County Commissioners
Paulding County Courthouse
115 North Williams Street
Paulding, Ohio 45879-1298
(419) 399-8215**

**Denise Lang, Local
Natural Resource Conservation Service (NRCS)
800B East Perry Street
Paulding, Ohio 45879-1278
(419) 399-3841 x-111
denise.lang@oh.usda.gov**

**Liz Pessefall
Paulding Soil and Water Conservation District
315 C North Walnut Street
Paulding, Ohio 45879-1278
(419) 399-3841 x-113
liz-pessefall@oh.nacdnet.org**

**Mark R. Stockman, P.E., P.S.
Paulding County Engineer
115 North Williams Street, Room B-2
Paulding, Ohio 45879
(419) 399-2366**

Defiance County

**Defiance County Commissioners
Defiance County Courthouse
500 Court Street, Suite A
Defiance, Ohio 43512
(419) 782-4761**

**Mike Weaver
NRCS
06879 Evansport Road, Suite F
Defiance, Ohio 43512
(419) 782-8751**

James Harris
Defiance Soil and Water Conservation District
06879 Evansport Road, Suite C
Defiance, Ohio 43512
(419) 782-8751

Gaylon Davis, P.E., P.S.
Defiance County Engineer
County Courthouse Annex
500 Second Street
Defiance, Ohio 43512
(419) 782-4751

Henry County

Henry County Commissioners
Henry County Courthouse
660 North Perry Street
Napoleon, Ohio 43545
(419) 592-4876

Eric Shank
NRCS
2260 North Scott Street
Napoleon, Ohio 43545
(419) 592-2926 X-3

Barbara Shambarger
Henry Soil and Water Conservation District
2260 North Scott Street
Napoleon, Ohio 43545
(419) 592-2926 X-3

Bob George, District Administrator
Henry County SWCD
2260 North Scott Street
Napoleon, Ohio 43545

Randolf Germann, P.E., P.S.
Henry County Engineer
660 North Perry Street
Napoleon, Ohio 43545
(419) 592-2976

Regional/Area National Resource Conservation Service Offices (NRCS)

Maumee Valley Resource Conservation and Development
06879 Evansport Road, Suite E
Defiance, OH 43512

John Wilson, Regional NRCS
943 East 5th Street
Marysville, Ohio 43040
(937) 642-5871

Paul Chester, Area NRCS
7868 C.R. 140
Findlay, Ohio 45840
(419) 422-5438

Duane Riefhman
1185 Professional Drive
Van Wert, Ohio 45891
(419) 238-9591

Ohio Department of Natural Resources (ODNR)

Steve Harvey, NW Regional Preserve Manager
NW Region, Division of Natural Areas & Preserves
26093 CR F
Archbold, Ohio 43502

Gregg Maxfield, District Manager
ODNR, Division of Forestry
952 Lima Avenue, Box B
Findlay, Ohio 45840

Bob Vargo, NW Assistant Regional Scenic Rivers Manager
1435 Township Road 38W
Tiffin, Ohio 44883
(419) 981-6319
bobvargo@bright.net

Robert McCall, OSU Watershed Agent
1219 W. Main Cross
Findlay, Ohio 45840-2349

Jim Lopshire, OSU Natural Resources Agent
503 Fairgrounds Drive
Paulding, Ohio 45879-0087
(419) 399-8225, Fax-(419)399-5590
jlopshire@postoffice.ag.ohio-state.edu

Park Districts/Area State Parks

Doug Dunakin
Paulding County Park District
16728 Road 275
Antwerp, Ohio 45813
(419) 258-4951
edson@bright.net

Mike McCann
Defiance County Park District
1927 South Jefferson
Defiance, OH 43512

Jerry VanZile, Manager
Independence Dam State Park
26246 Harrison Lake Road
Fayette, Ohio 43521
(419) 784-3263, (419) 237-1503

Bob Bowman, Manager
Mary Jane Thurston State Park
1-466 S.R. 65
McClure, Ohio 43534
(419) 832-7662

John Jaeger
Metropark District of the Toledo Area
5100 W. Central Avenue
Toledo, Ohio 43615-2100
(419) 535-3050 x-142

Conservation/Conservancy Groups

Virg Meyer
Antwerp Conservation Club
4037 Road 192
Antwerp, Ohio 45813
(419) 258-5692

Northwest Ohio Rivers Council
709 Corwin Street
Defiance, OH 43512
419-782-8551

Anne Keefe, Program Biologist
Ducks Unlimited, Inc.
9834 Twp. Rd. 255
Findlay, Ohio 45840
(419) 387-7926, (419) 429-8304, Fax- (419) 387-7898,
akeefe@ducks.org

Steve Repaskey, Regional Director
Northern Ohio Ducks Unlimited
2516 County Road #253

Kathy Kos, Regional Biologist
Great Lakes Regional Office, Ducks Unlimited

331 Metty Drive, Suite 4
Ann Arbor, Michigan 48103

Dennis Guilford, Pheasants Forever
600 East High Street
Hicksville, OH 43526

Troy Zeller, Pheasants Forever
13531 Road 232
Paulding, Ohio 45879
(419) 399-3170

Wayne Crowe, Pheasants Forever
13475 T.R. 146
Forest, Ohio 45843

Jim Ulrey, Pheasants Forever
403 West Montford Ave.
Ada, Ohio 45810
(419) 634-2285

Dave Courtad, Pheasants Forever
4757 T.R. 55
Upper Sandusky, Ohio 43351

Jim Inglis, Regional Wildlife Biologist
Pheasants Forever
1821 Township Highway 49
Upper Sandusky, Ohio 43351
(419) 209-0851
jinglis@pheasantsforever.org

Carl Stuard, National Wild Turkey Federation
9763 T.R. 27
Forest, Ohio 45843
(419) 365-5567

Clark Lynn Army, District Manager
Maumee Watershed Conservancy District
1464 Pine Hurst Drive
Defiance, Ohio 43512
(419) 782-8746
Fax: (419) 782-6207

Terry Siedel
The Nature Conservancy
6375 Riverside Drive, Suite 50
Dublin, Ohio 43017

Don Schmenk, Forest Manager
Maumee State Forest

3390 County Road D
Swanton, Ohio 43558

Don Kyle, President
Black Swamp Audubon Society
P.O. Box 7086
Defiance, Ohio 43512
don.kyle@pioneer.com

Jan Hunter, Green Ribbon Initiative
C/O Black Swamp Conservancy
115 West Front Street, P.O. Box 332
Perrysburg, Ohio 43552-0332
(419) 872-5263

Tim Schetter, Executive Director
Black Swamp Conservancy
115 West Front Street
Perrysburg, Ohio 43552-0332
(419) 872-5263, Fax (419) 872-8197
bsc@wcnet.org

Heritage/Historical Groups

Dick Kudner, President
Maumee Valley Heritage Corridor
5100 W. Central Avenue
Toledo, Ohio 43615
(419) 535-3057 x-134, 144
webmaster@maumeevalleyheritagecorridor.org

L. Neal Brady, Executive Director
The Miami-Erie Canal Corridor Association
P.O. Box 722
St. Marys, Ohio 45885
meccadirector@bright.net

Tiffin River Scenic and Historic Association
PO Box 648
Stryker, OH 43557
419-636-9269

Robert Corbett
North Country Trail Association
229 East Main Street
Lowell, Michigan 49331
888-454-6282

Planning Organizations

Maumee Valley Planning Organization

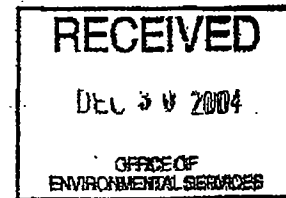
**197 Island Parkway
Defiance, OH 43512**

**Anthony Reams, President
Toledo Metropolitan Area Council of Governments
300 Dr. Martin Luther King Jr. Drive
Toledo, Ohio 43697-9508**

APPENDIX E - AGENCY COORDINATION LETTERS



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



REPLY TO
ATTENTION OF:

December 28, 2004

Regulatory Branch

SUBJECT: Department of the Army Application No. 1999-02122(4)

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

Dear Mr. Hill:

I am writing to you in regard to your request for a wetland delineation verification and a jurisdictional determination for the proposed preferred alternative right-of-way for the new Route 24 limited access road project, PID 24334, located in Paulding and Defiance Counties, Ohio.

On January 9, 2001, the U.S. Supreme Court issued a ruling that affected the Corps of Engineers authority to regulate isolated, non-navigable, intrastate waters under the Clean Water Act (Solid Waste Agency of Northern Cook County v. the U.S. Army Corps of Engineers, No. 99-1178). Specifically, the case involved statutory and constitutional challenges to the assertion of Clean Water Act jurisdiction over isolated, non-navigable, intrastate waters where use of the site by migratory birds established the necessary interstate commerce connection. The U.S. Supreme Court found that use of the site by migratory birds alone is not sufficient to establish Federal jurisdiction over isolated wetlands, and that such areas are not waters of the United States and are not subject to regulation under Section 404 of the Clean Water Act.

In light of the recent Supreme Court decision, I have reviewed various maps and the administrative record for the project. Based on this review, I have determined that the following wetlands within the proposed right-of-way are isolated, non-navigable, intrastate waters that are not subject to regulation under Section 404 of the Clean Water Act: L-8(A), L-8(B), No-15, W-4(B), W-4(C), W-4(D), W-4(E), W-4(G), W-4(H), 1, 2, 3, and 4. Accordingly, you do not need Department of the Army authorization to commence with work within those wetlands.

Based on those same criteria, the following wetlands remain subject to Federal jurisdiction: L-9(B), L-6, 10, 9, 9a, 8; RC-10, RC-14(B), W-4(A), W-4(F), W-4(I), OH-6, RC-1, RC-2, RC-5,

Regulatory Branch

SUBJECT: Department of the Army Application No. 1999-02122(4)

R-4, S-4, R-1(A), R-1(B), R-1(C), R-1(F), and R-1(G).

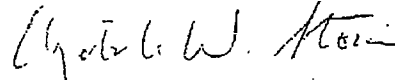
I am hereby verifying the Federal wetland boundary within the proposed right-of-way only, as shown on the attached wetland delineation maps dated November 20, 2004. This verification was confirmed on 11/29/2004 and will remain valid for a period of five (5) years from the date of this correspondence. At the end of this period, a new wetland delineation will be required if a project has not been completed on this property and additional impacts are proposed for waters of the United States.

I encourage you to contact the appropriate state and local governmental agencies, including the Ohio Environmental Protection Agency (OEPA), to insure that the proposed work complies with their requirements. You can reach the OEPA Division of Surface Water at (614) 644-2001.

A copy of this letter has been forwarded to: Ms. Jennifer Graf, Parsons Brinkerhoff Ohio, Inc., and Mr. Art Coleman, Ohio Environmental Protection Agency.

Questions pertaining to this matter should be directed to Elizabeth W. Stone at (716) 879-4363, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207, or by e-mail at: elizabeth.w.stone@usace.army.mil

Sincerely,



Elizabeth W. Stone
Project Manager, Regulatory Branch



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
6950 Americana Parkway, Suite H
Reynoldsburg, Ohio 43068-4132

(614) 469-6923/FAX (614) 469-6919
February 2, 1999

REC Received

FEB 4 1999

# MEC	

Mr. Brian P. Swartz
Midwest Environmental Consultants, Inc.
1800 Indian Wood Circle
Maumee, Ohio 43537

RE: Upgrading of U. S. Route 24 in Defiance and Paulding Counties, Ohio.

Dear Mr. Swartz:

This responds to your January 26, 1999 letter requesting our endangered species comments on the proposal referenced above. We do not have site specific information on any unique or rare plant or animal communities in the areas of the possible alternatives.

This technical assistance letter is submitted in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act, of 1973, as amended, and is consistent with the intent of the National Environmental Policy Act of 1969, and the U. S. Fish and Wildlife Service's Mitigation Policy. It does not, however, constitute the report of the Secretary of the Interior under Section 2(b) of the Fish and Wildlife Coordination Act, nor does it represent the review comments of the Department of the Interior on any forthcoming environmental document.

ENDANGERED SPECIES COMMENTS: To facilitate compliance with Section 7(c) of the Endangered Species Act of 1973, as amended, we are providing you the following list of endangered (E), threatened (T), or proposed (PT or PE) species which may be present in the referenced area:

- Indiana bat (E), Defiance and Paulding Counties
- clubshell mussel (E), Defiance County
- copperbelly water snake (T), Defiance County

ADDITIONAL COMMENTS

Two divisions of the Ohio Department of Natural Resources, the Division of Wildlife (614-265-6300) and the Division of Natural Areas and Preserves (614-265-6472), maintain lists of plants and animals of concern to the State of Ohio. If you have not already done so, please contact each of the above two agencies to obtain project comments or site-specific information on State listed species. In addition, the

Ohio Environmental Protection Agency (OEPA; 614-728-3393; 614-728-3388) will sometimes make available lists of fish and invertebrate species found in many of Ohio's rivers and streams.

Sincerely



Kent E. Krocnemeyer

Supervisor

cc: DOW, Wildlife Environmental Section, Columbus, OH
ODNR, Division of Real Estate and Land Management, Columbus, OH



IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE
BLOOMINGTON FIELD OFFICE (ES)
620 South Walker Street
Bloomington, IN 47403-2121
(812) 334-4261 FAX (812) 334-4273

MEMO Received

February 24, 1999

1536

Brian P. Swartz
Midwest Environmental Consultants, Inc.
1800 Indian Wood Circle
Maumee, Ohio 43537

Dear Mr. Swartz:

This responds to your letter of January 26, 1999 requesting U.S. Fish and Wildlife Service (FWS) information regarding federally listed species, plant communities and animal concentrations in Allen County, Indiana.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et. seq.) and are consistent with the intent of the National Environmental Policy Act of 1969, the Endangered Species Act of 1973, and the U. S. Fish and Wildlife Service's Mitigation Policy.

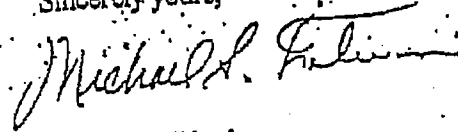
Endangered Species

Allen County, including the proposed project area, is within the range of the federally endangered Indiana bat (*Myotis sodalis*) and federally threatened bald eagle (*Haliaeetus leucocephalus*). Two federally endangered mussel species, *Pleurobema clava* and *Epioblasma obliquata*, have recently been reported in Allen County but not within the project area as defined on the maps you provided our office.

In addition, many wetland communities, including Palustrine emergent and Palustrine forested wetlands, exist within the project area. Please refer to the enclosed National Wetland Inventory maps, Fort Wayne East, Cedarville, Grabbill, Hicksville, Woodburn North and Woodburn South Quadrangles, for their locations.

For further discussion, please contact Barbara Hosler at (812) 334-4261 extension 209.

Sincerely yours,



Michael S. Litwin
Acting Supervisor

cc: Liz McCloskey, USFWS, Northern Indiana Sub-Office, Warsaw, IN

A STUDY OF THE MUSSELS (UNIONIDAE) OF THE MAUMEE RIVER AND
TRIBUTARIES FROM DEFIANCE, OHIO TO FORT WAYNE, INDIANA

Alternative Study for U. S. Rt. 24 Project

By

Michael A. Hoggarth, Ph.D.
Department of Life and Earth Sciences
Otterbein College
Westerville, Ohio 43081

and

Museum of Biological Diversity
The Ohio State University
Columbus, Ohio 43212

For

Midwest Environmental Consultants
1800 Indian Wood Circle
Maumee, Ohio 43537

3 October 1999

TABLE OF CONTENTS

	Page
Executive Summary.....	3
Introduction.....	4
Materials and Methods.....	5
Results.....	6
Endangered Species.....	7
Impacts.....	8
Literature Cited.....	9
Table 1 - Federal, Ohio and Indiana significant species.....	12
Table 2 - Mussels collected during this study.....	13
Figure 1 - Map of the project area (west).....	15
Figure 2 - Map of the project area (Indiana/Ohio boarder).....	16
Figure 3 - Map of the project area (west of Defiance, Ohio).....	17
Figure 4 - Map of the project area (in Defiance, Ohio).....	18
Photograph 1 - Photograph 8.....	19

~~Executive Summary~~
Executive Summary

The purpose of this report is to describe the mussel fauna (family Unionidae) of the Maumee River and selected tributaries from Defiance, Ohio to Ft. Wayne, Indiana. The rivers, creeks and ditches potentially impacted by the relocation of U. S. Rt. 24 include the Maumee and Tiffin rivers in Ohio, Gar Creek, Indiana, Grover Ditch, Indiana, Litzenberg Ditch, Indiana, Marsh Ditch, Indiana, Viland Ditch, Indiana, South Creek, Ohio, North Creek, Ohio, Zuber Cutoff, Ohio, Dowe Ditch, Ohio, and Steven's Ditch, Ohio. These rivers, creeks and ditches were found to support mussel communities during preliminary reconnaissance or provide permanent flow conditions.

The current study of the mussel community at this site was performed on 4-6 September, 1999. Sampling for mussels occurred within each stream listed above from the entire length of stream potentially impacted by the relocation of U. S. Rt. 24. In each case, the entire length of stream potentially impacted was walked (for all small streams) or canoed (for the two rivers). The Maumee River was sampled at three locations and South Creek was sampled at two locations.

All available habitat was searched for living mussels at each site. When found, all living mussels were field identified, counted, and returned to the river. Dead shells were collected to voucher the collections. These shells have been deposited at The Ohio State University, Museum of Zoology (Museum of Biological Diversity). Hand collecting, including noodling and the use of a glass bottom bucket, was employed during this study.

A total of 27 species of mussels was found during the current study. Included in this total were two federally endangered species; the clubshell (*Pleurobema clava*) and the northern riffleshell (*Epioblasma torulosa rangiana*). Neither species was found alive or as a freshly dead shell. Neither species occurs in the impact area today. Additional state significant species found in study area were the purple pimpleback (*Cyclonaias tuberculata*), round pigtoe (*Pleurobema sintoxia*), pondhorn (*Unio merus tetralasmus*), fawnsfoot (*Truncilla donaciformis*), deerto (*Truncilla truncata*), round hickorynut (*Obovaria subrotunda*), and black sandshell (*Ligumia recta*). Only the purple pimpleback, the round pigtoe, and the deerto were found as extant populations during this study. None of the small ditches or creeks examined supported extant populations of state significant species or diverse communities of mussels. The Maumee and Tiffin rivers supported diverse communities, however these communities were different communities than they historically had supported. Of the 17 species of mussels found in the Tiffin River only seven were found as extant populations. Of the 21 species found in the Maumee River, only 14 were found as extant populations. These river supported large populations of the deerto (Ohio special concern species) and smaller populations of the purple pimpleback (Ohio special concern species) and the round pigtoe (Ohio special concern species).

Both direct and indirect impacts will occur due to this project. Some mussels will be buried or crushed during instream work performed during the construction phase of this project. The smaller streams and ditches will be restored to their pre-impact community structure more slowly than the rivers, although more specimens and more species will be impacted in the larger rivers.

Has date
before
month

None of
the mussels
common
names
are
Capt.
Science
says
as long
as coas.

Introduction

Freshwater mussels are the most endangered of all of our aquatic organisms (Neves, 1993). In Ohio, 14 of the 79 recognized species of mussels are listed as endangered by the U.S. Fish and Wildlife Service (18%). Another 21 Ohio species are listed as endangered species in the state with others listed as threatened and of special concern. Nearly half of Ohio's species are in danger of being lost. In Indiana, ten of 75 species are federally listed as endangered (13%), ten additional species are presumed extirpated, and five others are listed as endangered in the state. Nine other species are state listed as special concern (Indiana does not use threatened as a category).

Surveys designed to identify the existence, numeric abundance, and distribution of the mussel fauna of the Ohio and Indiana have become increasingly important as this fauna has declined. Meyer (1974), Hoggarth (1986, 1990a, 1990b, 1991, 1992a, 1995-1996), Cummings et al. (1987, 1988), Watters (1988, 1990, 1992, 1998a, 1998b), Hoggarth et al. (1995, in press), and Anderson (1991) have surveyed many of the stream systems of these two states. These studies have lead to three conclusions; 1) many of our river systems support a different mussel community today than they did 100 to 200 years ago, 2) those streams which still support their original mussel fauna support fewer individuals and at least one third to one half of the species present are rare and/or endangered, and 3) few streams support as diverse a mussel community as they once supported. The Maumee River has been found to support a much different fauna today than historically, and its tributaries generally support fewer individual mussels although they have retained a greater diversity of mussel species (Hoggarth, 1986; Watters, 1988, 1998b; Anderson, 1991).

Many factors have contributed to the decline in population number and distribution of these animals. Chief among these are water pollution, sedimentation, habitat destruction, the construction of impoundments, and more recently, zebra mussels (Starrett 1971, Fuller 1974, Neves 1987). Each of these affects mussels in slightly different ways and combined they have reduced some populations by more than 90 % of their original size and dispersion. In one way or another, each of these alterations to natural streams have negatively impacted mussel populations, including mussel populations in Ohio and Indiana.

The current study was performed to examine the mussel communities which might be impacted by the widening and/or relocation of U. S. Rt. 24 from Defiance, Ohio to Ft. Wayne, Indiana. Preliminary assessment includes the possibility of many alignments. The lower Maumee River near Defiance, Ohio, and the lower Tiffin River near Defiance, Ohio will be impacted by this construction project. Proposed alternatives cross other tributaries of the Maumee River in Indiana and Ohio and therefore, an assessment of these streams is also necessary.

The primary objective of this study was to locate potential habitat for rare and/or endangered species known to have occurred in this area. A secondary objective was to locate and map the distribution of the mussels in the Maumee River and its tributaries composition in the area. An attempt was made to sample all of the available habitat located during this study for living mussels.

The Maumee River once supported a diverse mussel fauna including current state and federal endangered species. Table 1 lists the state significant and federally endangered species known to have occurred in the Maumee River and its tributaries in the study area. Two federally endangered species, the clubshell (*Pleurobema clava*) and the northern riffleshell (*Epioblasma torulosa rangiana*) are known from this river (U. S. Fish and Wildlife Service, 1993). Other state significant species known from this river include the purple pimpleback (*Cyclonaias tuberculata*), round pigtoe (*Pleurobema sintoxia*), pondhorn (*Unio merus tetralasmus*), fawnsfoot (*Truncilla donaciformis*), deertoe (*Truncilla truncata*), round hickorynut (*Obovaria subrotunda*), and black sandshell (*Ligumia recta*). An objective of this study was to determine if any of these species, or suitable habitat for these species, occur in the project area.

Should we add that riffleshell is not county listed?

Materials and Methods

Fifteen areas were sampled during this study. Figures 1 - 4 show each of the ^{sites} where sampling for mussels occurred during this study. Site 1 was located on Gar Creek, Indiana at the existing U. S. Rt. 24 bridge (Figure 1). Site 2 was approximately 1 mile east of Five Points on Grover Ditch, Indiana (Figure 1). Marsh Ditch, Indiana was Site 3 (Figure 2) while Site 4 was on Viland Ditch, Indiana (Figure 2); and Site 5 was on Litzenberg Ditch at the Indiana - Ohio state line (Figure 2). Site 6 was on South Creek, Ohio at the junction of S. R. 49 and Doctor Road while Site 7 was on North Creek, Ohio between S. R. 49 and Barker Road (Figure 2). Site 8 was on South Creek, Ohio south of Harman Road and Site 9 was on Zuber Cutoff, Ohio near Knoxdale (Figure 2). Sites 10, 11, and 12 were on the Maumee River, Ohio. Photographs 1 and 2 show the Maumee River at Site 10. Site 10 was the uppermost site (Figure 3), with Site 11 the intermediate site and Site 12 located at the existing U. S. Rt. 24 bridge (Figure 4). Site 13 was on Dowd Ditch, Ohio (Figure 4) and Site 14 was on the Tiffin River, Ohio at the existing U. S. Rt. 24 bridge. Site 15 was on Steven's Ditch, Ohio near existing U. S. Rt. 24 (Figure 4).

Living mussels and dead shells were collected from all available habitat at each site. Where possible, habitat structure was examined by wading into the river, ditch or creek. A viewer was used in shallow water and ^{wading} ~~nodding~~ was employed in deeper water. Middens (mostly muskrat middens) were excavated where ever they were found (Photograph 3). All sampling was performed on 4-6 September, 1999 during low water conditions and all living unionids found were returned to the river following identification. A canoe was used in the Tiffin and Maumee rivers to access all of the river areas which might potentially be impacted by this project. Dead shells were collected and taken to the laboratory for identification. These shells were counted and determined to be freshly dead (less than one year old) or weathered or subfossil shells (greater than 20 years old). The freshly dead shells were included with living mussels to indicate an extant population of the mussel at the site while weathered and subfossil shells were counted together and indicated only historical records for these species.

Should put in the * here?

Results

Table 1 identifies the state significant species of freshwater mussels collected from the vicinity of the U. S. Rt. 24 project. Of these species, only the purple pimpleback (*C. tuberculata*) (Photograph 5) and the deerto (*T. truncata*) (Photographs 3 & 4) were found alive or as freshly dead shells. These two species are the only state significant species of mussels thought to currently exist in the corridor of this study. The purple pimpleback was fairly common upstream of the U. S. Rt. 24 bridge over the Tiffin River (Figure 4 and Table 2) and at the lowermost site on the Maumee River (Site 12 at the existing U. S. Rt. 24 bridge). This species was found in stable sand and gravel substrate in one to two feet of water. The deerto was extremely abundant at all sites on the Maumee River (Figures 3 & 4 and Table 2) but was also collected from the lower Tiffin River. It could be found in all types of habitats from silt and sand to cobble and boulders. Dead shells of this species were often very abundant in muskrat middens along the banks of the Maumee River (Photograph 3).

Table 2 demonstrates that 27 species of mussels were collected during the current study. All of the tributaries examined supported (or used to support) populations of three or fewer species while the Maumee and Tiffin rivers support a more abundant fauna. Two streams (ditches) examined were devoid of mussels; Grover Ditch in Indiana, and Dowe Ditch in Ohio. Both ditches had a permanent flow regime, but both were noticeably polluted by failing septic systems. Organic pollution of this type usually reduces oxygen levels to such a low level, especially during the summer months, that any mussel that does become established in the stream is lost to asphyxiation. Neither ditch could support mussels given their current level of water quality.

Of the remaining streams and ditches examined, all but Marsh Ditch, Indiana supported populations of living mussels. Gar Creek, Indiana, Viland Ditch, Indiana, Litzenberg Ditch, Indiana, South Creek, Ohio, North Creek, Ohio, Zuber Cutoff, Ohio, and Steven's Ditch, Ohio supported from one to three species. In some cases, the stream was completely dry except for a bridge pool where the living or freshly dead shells were found (South and North creeks). In other cases, the stream had a permanent flow regime, but provided habitat for only a limited number of species, usually headwaters species such as the creek slippershell (*Anodontoides ferussacianus*) and the lilliput shell (*Toxolasma parvus*). The largest number of living mussels collected from any of the tributary streams examined during this study came from Steven's Ditch. Here the common floater (*Pyganodon grandis*) is abundant in the pool upstream of the railroad tracks south of existing U. S. Rt. 24, in Defiance. However, the stream upstream of this ponded area was dry in early September during this study.

Only the Maumee and Tiffin rivers supported a diverse mussel community within the study area (Table 2). Even in these rivers, however, it was apparent that the community present today was much different than the community present 100 or 200 years ago. *E. t. rangiana* (Photograph 8) have been extirpated from the two rivers. The only evidence of their former abundance is the large number of old

dead, weathered and subfossil shells of these species. Still the Maumee River does support a large and diverse fauna of mussels.

Of the three sites examined for mussels on the Maumee River, Site 11 (see Figure 3 and Table 2) supported the widest variety of mussel species and the largest populations of these species. A total of 19 species of mussels was collected at this site. Five of these species were only of historic interest (the threeridge - *Amblema plicata*, the purple pimpleback - *C. tuberculata*, the clubshell - *P. clava*, the spike - *Elliptio dilatata*, the round hickorynut - *Obovaria subrotunda*, and rainbow shell - *Villosa iris*) since they were collected only as weathered or subfossil shells. Still one specimen of the round pigtoe (*Pleurobema sintoxia*) was found along with hundreds of specimens of the deertoe (*T. truncata*). These two species are of special concern in Ohio. Other common species at this site were the white heelsplitter (*Lasmigona complanata*), the pimpleback (*Quadrula pustulosa*), the mapleleaf (*Quadrula quadrula*), the fragile papershell (*Leptodea fragilis*), and the pink heelsplitter (*Potamilus alatus*). None of these species are particularly rare in the state, and some, such as the white heelsplitter, the fragile papershell, and the pink heelsplitter appear to be increasing their numbers throughout Ohio as a response to the slower water and more abundant fine sediments found in our rivers today.

Sites 10 and 12 on the Maumee River (Figures 3 & 4) supported similar communities of mussels (Table 2). Those species which were most abundant at Site 11 were the dominant species at these two sites as well, however the Wabash pigtoe (*Fusconaia flava*) was more abundant at Site 10 and Site 12 than at Site 11. The only other significant difference, was the occurrence of the purple pimpleback at the existing U. S. Rt. 24 bridge crossing over the Maumee River. Otherwise, the communities of mussels at all three sites was fairly uniform. NO S.N.

The Tiffin River once supported a diverse unionid fauna, as the large number of species collected at Site 14 indicates (Table 2). However, many of these species were only found as old dead shells. Of the 17 species of mussels found in the Tiffin River in the vicinity of the U. S. Rt. 24 bridge, only seven were found to have extant populations in the river. The occurrence of a rather large population of the purple pimpleback (*C. tuberculata*), upstream of the existing bridge, was unexpected. In this case, the individuals were found in stable sand and gravel substrate near the center of the channel. Otherwise, the mussel community of the lower Tiffin River was dominated by species often found in modified habitats. Only a few individuals were found from the existing bridge, downstream, where the river is backed up behind the dam on the Maumee River in Defiance.

Endangered Species

As proposed this project will have no impact on federal or state listed endangered mussel species. Although shells of the clubshell (*P. clava*) and the northern riffleshell (*E. t. rangiana*) were found in the Maumee River and/or Tiffin River, no freshly dead shells or living individuals were found. It is apparent that these species no longer occur in the Maumee and Tiffin rivers at these sites. The U. S. Fish and Wildlife Service (1993) concluded that these species were extirpated from both rivers. why?
2 or 3

species, only the deerto (*T. truncata*) and the purple pimpleback (*C. tuberculata*) were found alive. The round pigtoe (*P. sintoxia*) was found as a dead shell at Site 11 on the Maumee River. The deerto was found to occur in both the Maumee River (where it was the dominant species collected) and in the Tiffin River. The purple pimpleback was an abundant, but not overly common species, in the lower Tiffin River and was found in the Maumee River at Site 12. No other state significant species of mussel occur as extant populations in these rivers. Old dead shells of the following species were found; *Pleurobema sintoxia* (round pigtoe - Ohio special concern) from the Maumee and Tiffin river at Site 10 and Site 14, *Unio merus tetralasmus* (pondhorn - Ohio threatened) from North Creek, *Truncilla donaciformis* (fawnsfoot - Ohio threatened) from the Tiffin River, and *Ligumia recta* (black sandshell - Ohio threatened) (Photograph 6) from the Maumee River. *Obovaria subrotunda* (round hickorynut - Indiana special concern) was found in the Maumee River in Ohio but it is not listed in Ohio.

Impacts

Freshwater mussels are essentially immobile. Most species, once they detach from their fish host, fall to the bottom of a stream or lake and then remain in the same place throughout the remainder of their life. Construction projects, with instream work, impact these mussels if they are found in the path of the construction. These impacts are of two types; direct impacts (burying and crushing) and indirect impacts (siltation). Marking and Bill (1980) have reported that the downstream relocation of sediment tends to bury mussels and clog their gills. Burying kills the mussels outright with silt on the gills reduces gas exchange and interferes with feeding. Both direct and indirect impacts to the mussel communities of the Maumee and Tiffin rivers and the creeks and ditches are expected as a result of this project.

The major source of impact on the mussel communities of the smaller streams and ditches examined during this study will be direct. Mussels in these habitats will be buried or crushed during the construction phase of this project. The species which occur in these habitats within the study area are not overly sensitive to siltation impacts and so no secondary impacts are anticipated. However, if existing bridge pools and the other permanent water habitats found during this study are modified (including channelization), then the mussels living in these pools will be lost. Furthermore, since the species which occur in these reaches of stream are headwater species, not currently found in the Maumee River in the study area (the Maumee River at their mouths is too large), it is not anticipated that these species would have access to the stream after the construction has been completed and therefore these populations will not recover.

The mussel community within the Tiffin River will only be slightly impacted by the proposed project because the majority of the mussels found in this river were found approximately 200 meters upstream of the existing bridge. From the bridge to the mouth of the river, the Tiffin River is impounded by a dam on the Maumee River in Defiance. This reach of stream supported only a few individual mussels. Therefore, since the majority of impact here will be at the existing bridge downstream, no significant impact to the mussel community will result from this portion of the proposed project. If the alignment were to shift upstream to include the reach of stream where the purple

pimplebacks (*C. tuberculata*) were collected, then there would be a significant impact as this may be the last remaining population of this species in the river (Personal Communication 1999).

The Maumee River has a diverse mussel community within the project area, although it has a much different community than it once did. Still the river does support populations of the deertoie (*T. truncata*) and, in its lower reaches, the purple pimpleback (*C. tuberculata*). Of the three sites examined, the uppermost reach of river (Site 10, Figure 3) and the lowermost site (at the existing U. S. Rt. 24 bridge at Site 12, Figure 4) supported the least diverse of the communities. Site 12 supported two special concern species; the deertoie and the purple pimpleback. It is expected that construction at any of these sites will result in the elimination of mussels. However, since these same species are widely distributed throughout the reach of this study, it is not anticipated that the elimination of mussels from any reach would result in the elimination of these species from the study area. Since Site 11 is the most ~~divers~~^{diverse} it would take a longer period of time for this community to recover.

Literature Cited

- Anderson, R.M. 1991. Interim Report of the 1991 Mussel Survey of Fish Creek, Steuben County, IN, DeKalb County, IN, Williams County, OH. Indiana Department of Natural Resources, Division of Wildlife.
- Cummings, K.S., C.A. Mayer, L.M. Page, and J.M.K. Berlocher. 1987. Survey of the Freshwater Mussels (Mollusca: Unionidae) of the Wabash River Drainage, Phase I: Lower Wabash and Tippecanoe Rivers. Illinois Natural History Survey, Section of Faunistic Surveys and Insect Identification, Technical Report 1987(5).
- Cummings, K.S., C.A. Mayer, and L.M. Page. 1988. Survey of the Freshwater Mussels (Mollusca: Unionidae) of the Wabash River Drainage, Phase II: Upper and Middle Wabash River. Illinois Natural History Survey, Section of Faunistic Surveys and Insect Identification, Technical Report 1988(8).
- Fuller, S.L.H. 1974. Clams and mussels (Mollusca:Bivalvia). Pp 215-273 in: C.W. Hart, Jr. and S.L.H. Fuller (eds.), Pollution ecology of freshwater invertebrates. New York, Academic Press.
- Hoggarth, M.A. 1986. The freshwater mussels (Unionidae) of the upper St. Joseph River basin within Ohio. Final report to the Ohio Department of Natural Resources, Division of Wildlife, Columbus, Ohio. 73 pp.
- Hoggarth, M.A. 1990a. The Unionidae of the Chagrin River: The remnant of a molluscan fauna. Ohio Journal of Science, 90(5):168-170.

- Hoggarth, M.A. 1990b. A study of the Unionidae of the Olentangy River above Columbus. Final report to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Columbus, Ohio. 27 pp.
- Hoggarth, M.A. 1991. A study of the Unionidae of the Little Beaver Creek system. Final report to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Columbus, Ohio. 30 pp.
- Hoggarth, M.A. 1992. The Unionidae and Corbiculidae of the Little Miami River system in southcentral Ohio. *Walkerana*, 6(16):247-293.
- Hoggarth, M.A. 1995-1996. The Unionidae (Mollusca:Bivalvia) of the Walhonding River, Coshocton County, Ohio, including the federally endangered catspaw (*Epioblasma obliquata obliquata*), fanshell (*Cyprogenia stegaria*), and clubshell (*Pleurobema clava*) mussels. *Walkerana*, 8(20):149-176.
- Hoggarth, M.A., D.L. Rice, and D.M. Lee. 1995. Discovery of the federally endangered freshwater mussel, *Epioblasma obliquata obliquata* (Rafinesque, 1820) (Unionidae), in Ohio. *Ohio Journal of Science*, 95(4):298-299.
- Hoggarth, M.A., D.L. Rice, and T.L. Groove. In press. The correlation of mussels with fish in the upper Blanchard River in Hardin and Hancock counties, Ohio, with special regard to the rayed bean (*Villosa fabalis*).
- Marking, L.L. and T.D. Bills. 1980. Acute effects of silt and sand sedimentation on freshwater mussels, pp. 204-211. In: J.L. Rasmussen, ed., *Proceedings of the Upper Mississippi River bivalve mollusks*. Upper Mississippi River Conservation Committee, Rock Island, Illinois.
- Meyer, E.R. 1974. Unionid Mussels of the Wabash, White, and East Fork White Rivers, Indiana. *The Virginia Journal of Science*, 25(1):20-25.
- Neves, R.J. 1987. Recent die-offs of freshwater mussels in the United States: An overview. Pp 7-18 in: R.J. Neves (ed.), *Proceedings of the workshop on die-offs of freshwater mussels in the United States*. Blackburg: Virginia Polytechnic and State University.
- Neves, R.J. 1993. A state-of-the unionid address. Pages 1-10 in K.S. Cummings, A.C. Buchanan, and L.M. Koch, eds. *Conservation and management of freshwater mussels*. Proceedings of a UMRCC symposium, 12-14 October 1992, St. Lewis, Missouri. Upper Mississippi River Conservation Committee, Rock Island, Illinois.
- Personal Communication. 1999. Dr. G. Thomas Watters (completed at study of the Unionidae of the Tiffin River in 1999).

- Starrett, W.C. 1971. A survey of the mussels (Unionacea) of the Illinois River: A polluted stream. Illinois Natural History Survey Bulletin 30:268-403.
- U. S. Fish and Wildlife Service. 1993. Clubshell (*Pleurobema clava*) and Northern Riffleshell (*Epioblasma torulosa rangiana*) Recovery Plan. Hadley, Mississippi. 55 pp.
- Watters, G.T. 1988. A survey of the freshwater mussels of the St. Joseph River system, with emphasis on the federally endangered white cat's paw pearly mussel. Final Report to the Indiana Department of Natural Resources, Division of Fish and Wildlife. 127 pp.
- Watters, G.T. 1990. 1990 survey of the unionids of the Big Darby Creek system. Final Report to the Nature Conservancy, Ohio Chapter. 118 pp.
- Watters, G.T. 1992. Distribution of the Unionidae in south central Ohio. Malacology Data Net, 3(1-4):56-90.
- Watters, G.T. 1998a. Freshwater mussel surveys of the Big Darby Creek system in central Ohio. Ohio Biological Survey Notes, 1:19-24.
- Watters, G.T. 1998b. Freshwater mussels surveys of the Fish Creek system in Ohio and Indiana. Ohio Biological Survey Notes, 1:25-30.

Table 1. Historic and existing occurrence of state and federal significant species of mussels from the Maumee River and tributaries in the vicinity of U. S. Rt. 24.

Species	Common Name	Status (Federal/Ohio/Indiana)
<i>Cyclonaias tuberculata</i>	purple pimpleback	Ohio special concern
<i>Pleurobema sintoxia</i>	round pigtoe	Ohio special concern
<i>Pleurobema clava</i>	clubshell	Federal endangered
<i>Unio merus tetralasmus</i>	pondhorn	Ohio threatened
<i>Truncilla donaciformis</i>	fawnsfoot	Ohio threatened
<i>Truncilla truncata</i>	deertoe	Ohio special concern
<i>Obovaria subrotunda</i>	round hickorynut	Indiana special concern
<i>Ligumia recta</i>	black sandshell	Ohio threatened
<i>Epioblasma t. rangiana</i>	northern riffleshell	Federal endangered

Table 2. Mussels collected from Maumee River and tributaries in conjunction with the U. S. Rt. 24 project.

Species	Gar	Grove	Nash	Island	4	3	2	1	North	7	8	9	10	11	12	13	14	15
<i>Uterbackia imbecillis</i>	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-
<i>Pyganodon g. grandis</i>	-	-	-	2	-	3	-	1	-	1	1	7	12	10	-	-	-	3
<i>Anodontoides ferussacianus</i>	4	-	1*	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-
<i>Alasmidonta marginata</i>	-	-	-	-	-	-	-	-	-	-	-	3	17	19	-	-	-	-
<i>Alasmidonta costata</i>	-	-	-	-	-	-	-	-	-	-	-	5	10	3	-	-	-	2
<i>Lasmigona complanata</i>	-	-	-	-	-	-	-	1	-	-	-	25	100	50	-	-	-	3
<i>Amblyma plicata</i>	-	-	-	-	-	-	-	-	-	-	-	-	1*	1*	-	-	-	1*
<i>Quadrula pustulosa</i>	-	-	-	-	-	-	-	-	-	-	-	105	117	59	-	-	-	5
<i>Quadrula quadrula</i>	-	-	-	-	-	-	-	-	-	-	-	100	103	51	-	-	-	1*
<i>Cyclonaias tuberculata</i>	-	-	-	-	-	-	-	-	-	-	-	-	2*	1	-	-	-	10
<i>Fusconaias flava</i>	-	-	-	-	-	-	-	-	-	-	-	101	11	53	-	-	-	1*
<i>Pleurobema sintoxia</i>	-	-	-	-	-	-	-	-	-	-	-	1*	1	-	-	-	-	1*
<i>Pleurobema clava</i>	-	-	-	-	-	-	-	-	-	-	-	2*	5*	1*	-	-	-	1*
<i>Ellipito dilatata</i>	-	-	-	-	-	-	-	-	-	-	-	-	2*	2*	-	-	-	1*
<i>Urtomereus tetralasmus</i>	-	-	-	-	-	-	-	1*	-	-	-	-	-	-	-	-	-	-
<i>Actinonaias l. carinata</i>	-	-	1*	-	-	-	-	-	-	-	-	1*	-	-	1*	-	-	1*
<i>Leptodea fragilis</i>	-	-	-	-	-	-	-	-	-	-	-	102	106	106	-	-	-	5
<i>Potamilius alatus</i>	-	-	-	-	1	-	-	1	-	-	-	106	103	103	-	-	-	2
<i>Truncilla donaciformis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1*
<i>Truncilla truncata</i>	-	-	-	-	-	-	-	-	-	-	-	1367	237	527	-	-	-	9
<i>Toxolasma parvum</i>	-	-	1*	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-

* Collected as weather shell 20+ years Not extent 13

Table 2. Mussels collected from Maumee River and tributaries in conjunction with the U. S. Rt. 24 project. - Continued

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>Round</i> <i>Obovaria protunda</i>	-	-	-	-	-	-	-	-	-	-	1*	-	-	-	-
<i>White Sand</i> <i>Ligumia n. a.</i>	-	-	-	-	-	-	-	-	-	-	-	1*	-	-	-
<i>Black</i> <i>Strophomena</i>	-	-	-	-	-	-	-	-	-	-	2*	-	-	-	-
<i>Rainbow</i> <i>Villosa iris</i>	-	-	-	-	-	-	-	-	-	3	11	11	-	1	-
<i>Fatmucket</i> <i>Lampsilis luteola</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	1*	-
<i>Yellow Sand</i> <i>Lampsilis s. n. tricosa</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	1*	-
<i>North</i> <i>Epioblasma t. rangiana</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	1*	-
Total # Species	1	0	3	3	1	3	2	2	3	15	19	16	0	17	1
# Live/Fresh Specimens	4	0	0	5	1	5	1	2	3	694	829	618	0	40	13
# Weathered/Subfossil	0	0	3	0	0	0	1	0	0	4	13	4	0	10	0
Total # Specimens	4	0	3	5	1	5	2	2	3	698	842	622	0	50	13

1 = Gar Creek, Indiana
 2 = Grover Ditch, Indiana
 3 = Marsh Ditch, Indiana
 4 = Viland Ditch, Indiana
 5 = Litzinger Ditch, Indiana
 6 = South Creek, Ohio
 7 = North Creek, Ohio
 8 = South Creek, Ohio
 9 = Zuber Ditch, Ohio
 10 = Maumee River, Ohio
 11 = Maumee River, Ohio
 12 = Maumee River, Ohio
 13 = Dow Ditch, Ohio
 14 = Tiffin River, Ohio
 15 = Steven's Ditch, Ohio

Corridor A
 Corridor X
 @US24

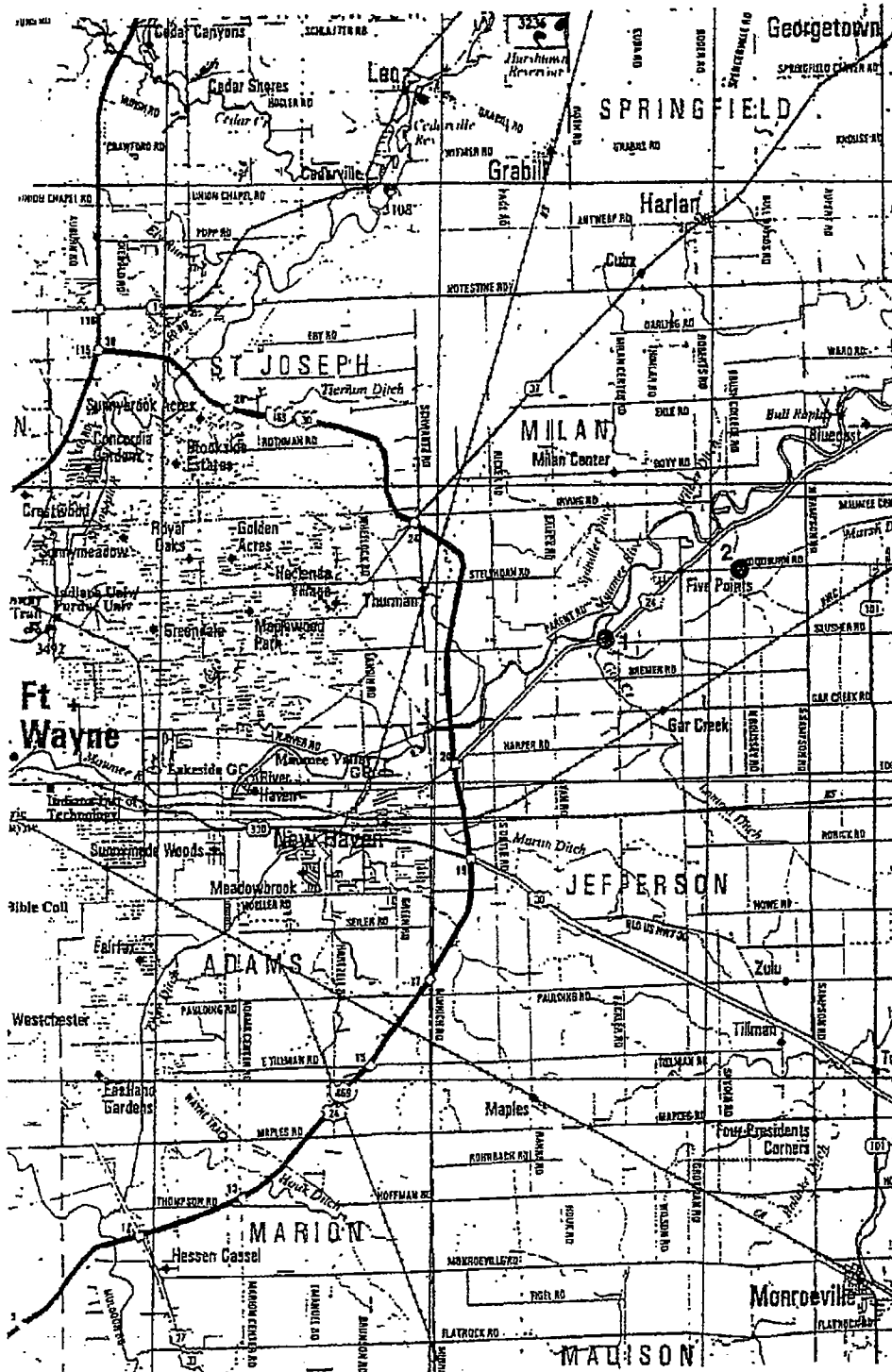


Figure 1. Map showing project locations for Site 1 on Gar Creek, Indiana and Site 2 on Grover Ditch, Indiana.

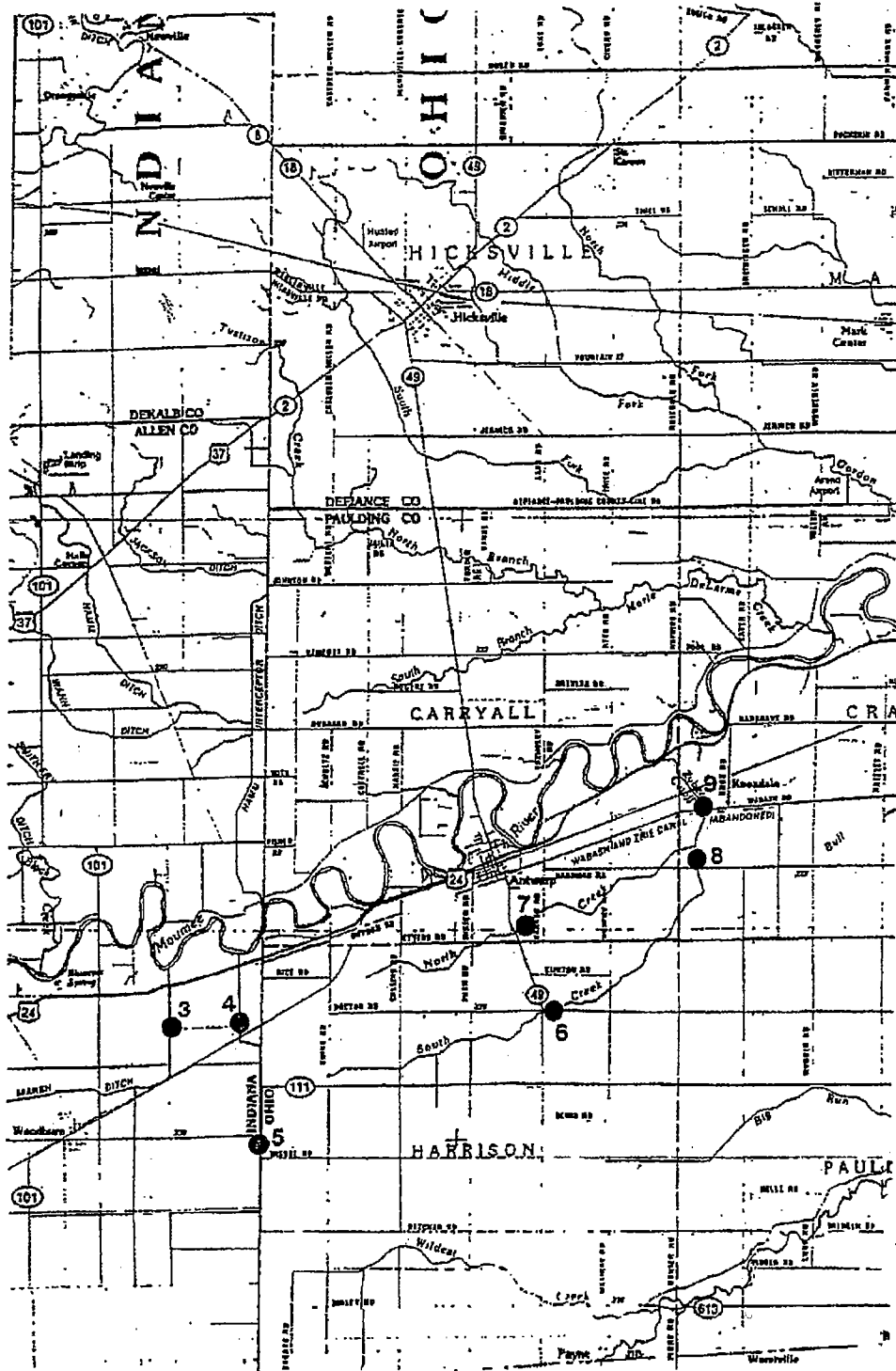


Figure 2. Locations of sites for the study of the effects of the Litzenberg Ditch, Indiana, Site 5 on Litzenberg Ditch, Indiana, Site 6 on South Creek, Ohio, Site 7 on North Creek, Ohio, Site 8 on South Creek, Ohio, and Site 9 on Zuber Cutoff, Ohio.

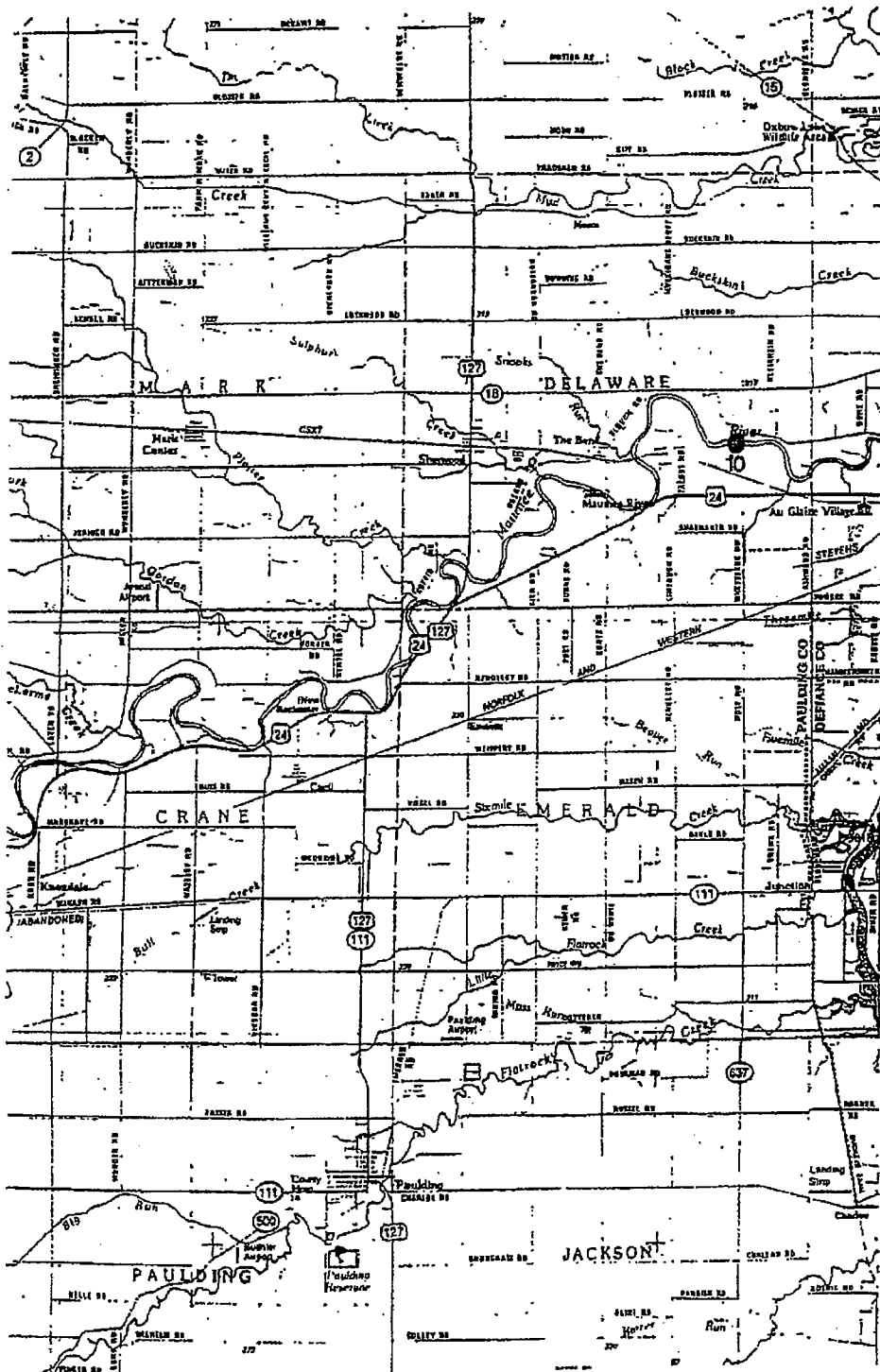


Figure 3. Map showing the location of Site 10 on the Maumee River at the uppermost station on the river.

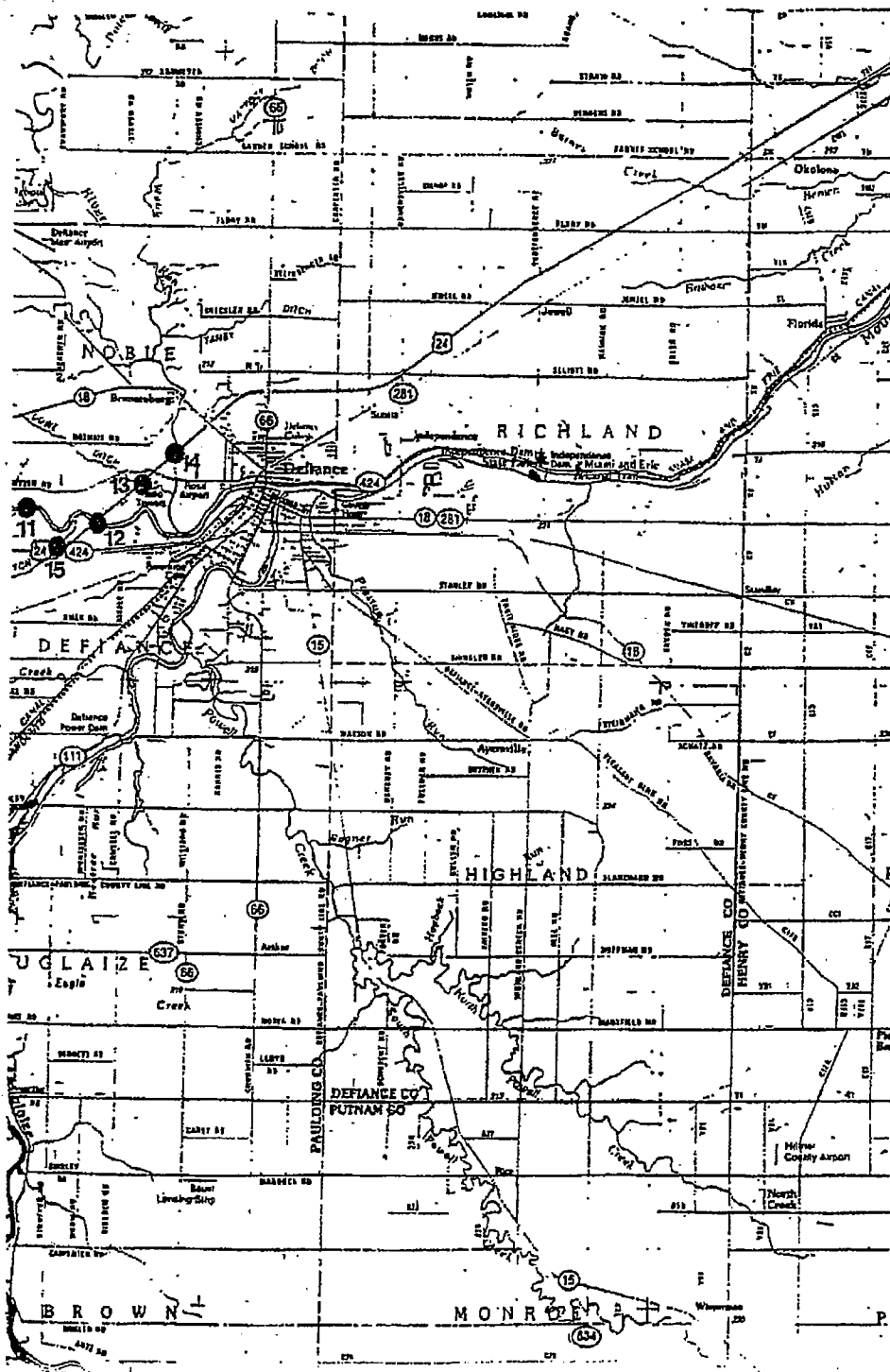
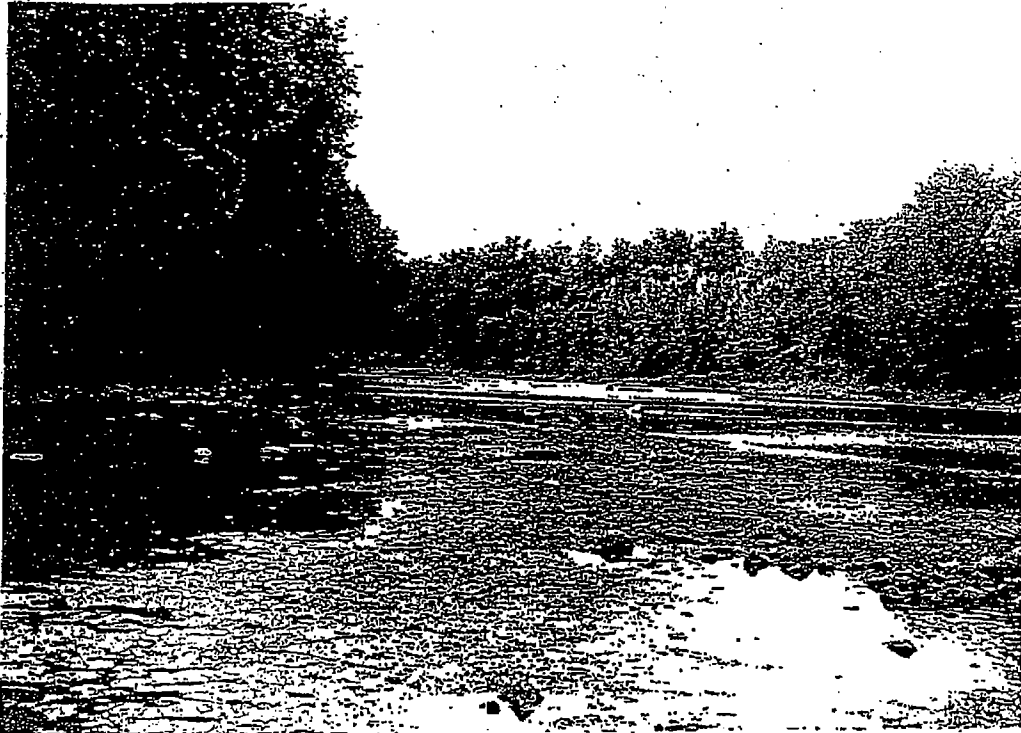


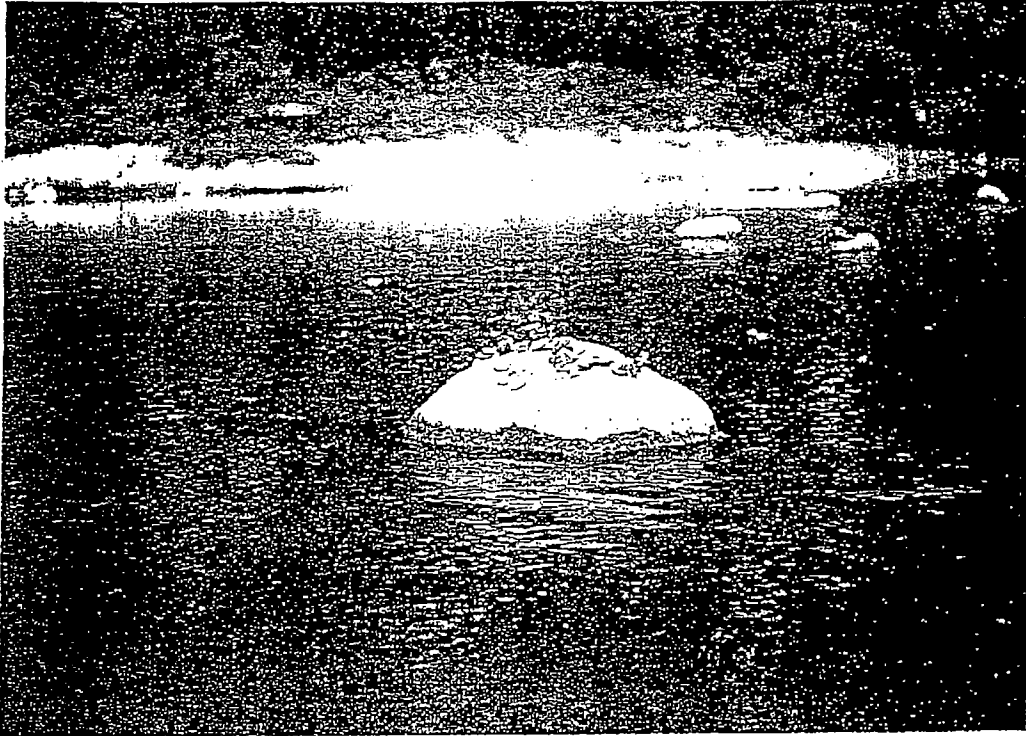
Figure 4. Map showing project locations for Site 11 on the Maumee River, Ohio, Site 12 on the Maumee River, Ohio, Site 13 on Dowe Ditch, Ohio, Site 14 on the Tiffin River, Ohio, and Site 15 on Steven's Ditch, Ohio.



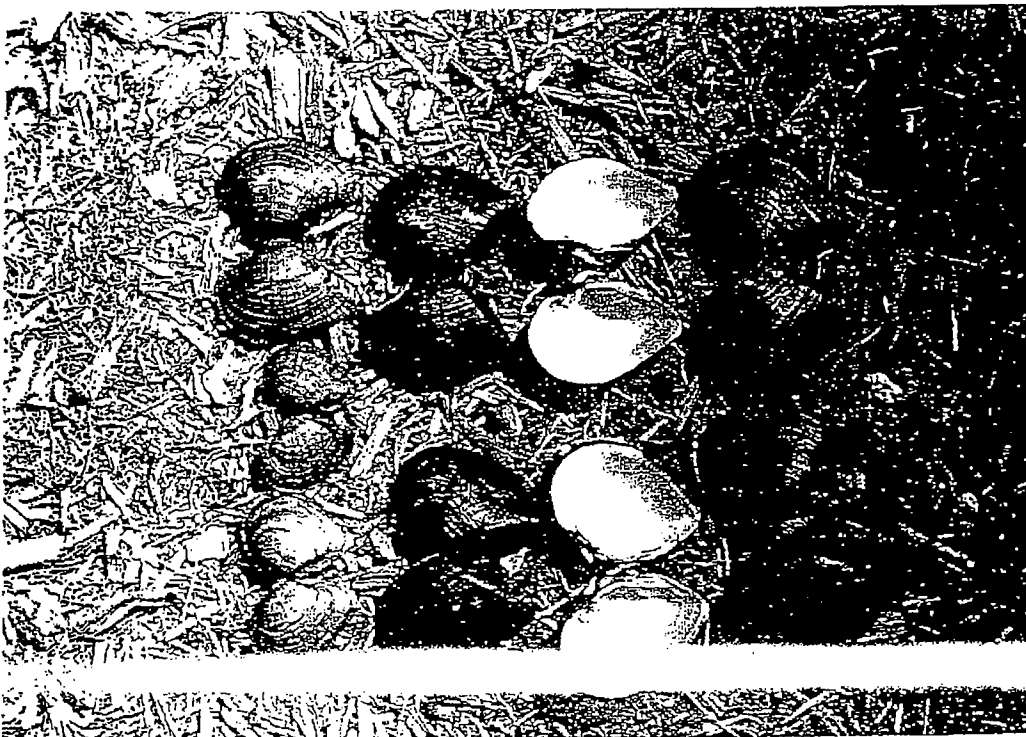
Photograph 1. The Maumee River upstream of the uppermost station at Site 10. Habitats in this river vary from shallow riffle to deeper pool habitats.



Photograph 2. The Maumee River downstream of the uppermost station at Site 10. This wide shallow river supports an abundant mussel fauna.



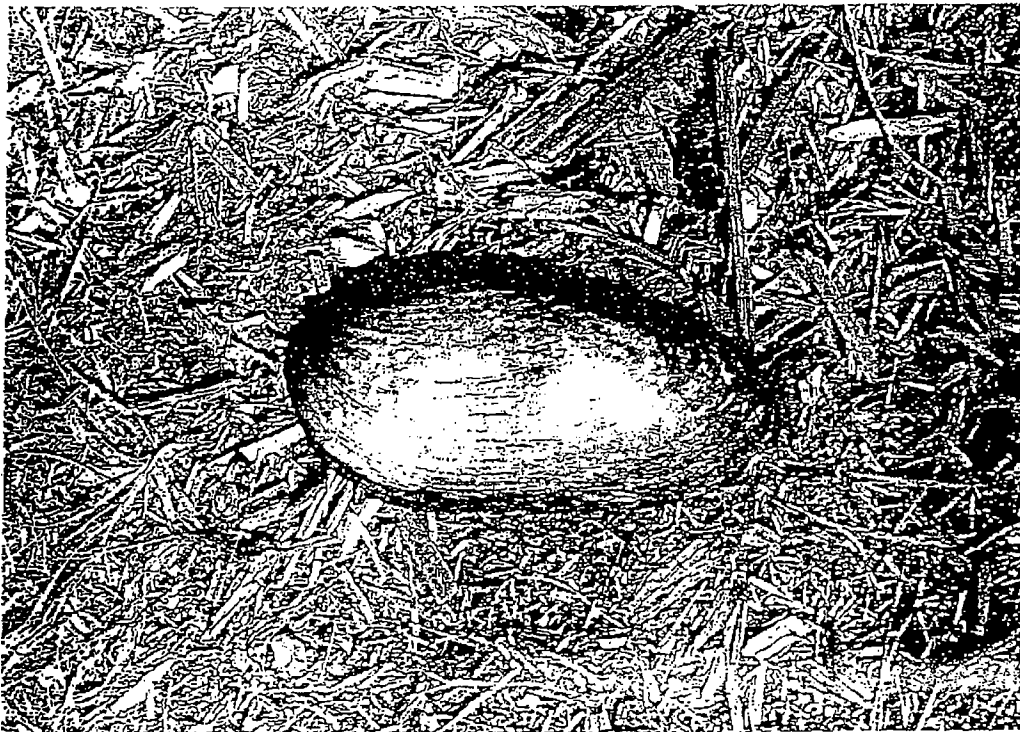
Photograph 3. Rock located in the middle of the Maumee River with a small midden of mostly deertoe mussels (*T. truncata*).



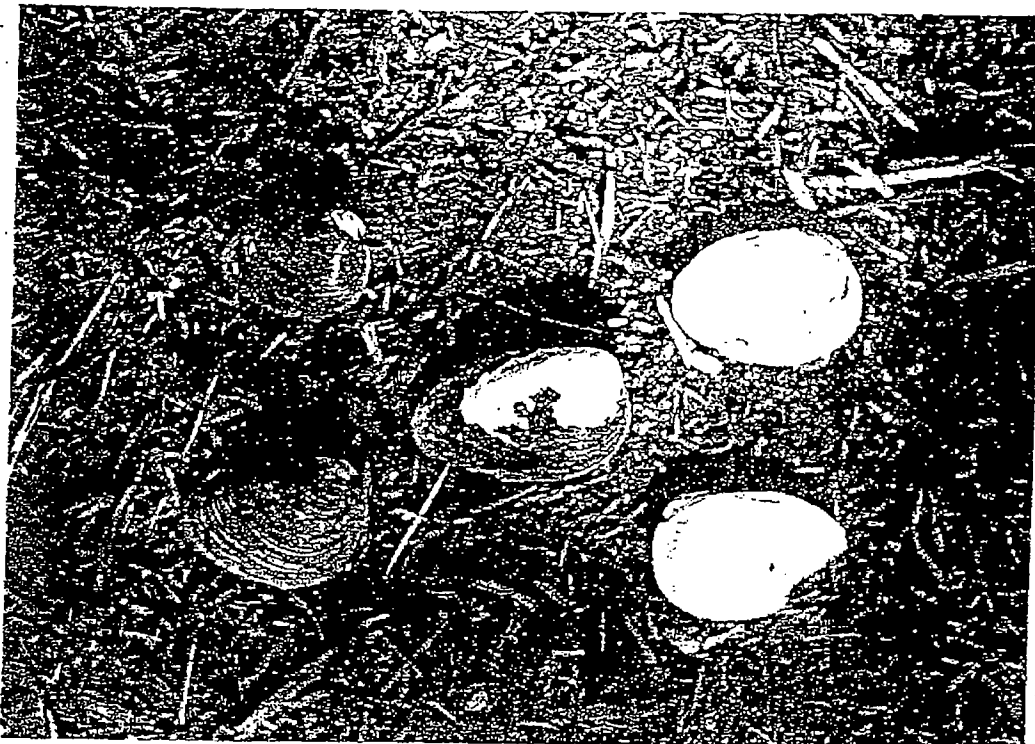
Photograph 4. Shells of the deertoe mussels (*T. truncata*). This highly variable mussel is very abundant in the lower Maumee River.



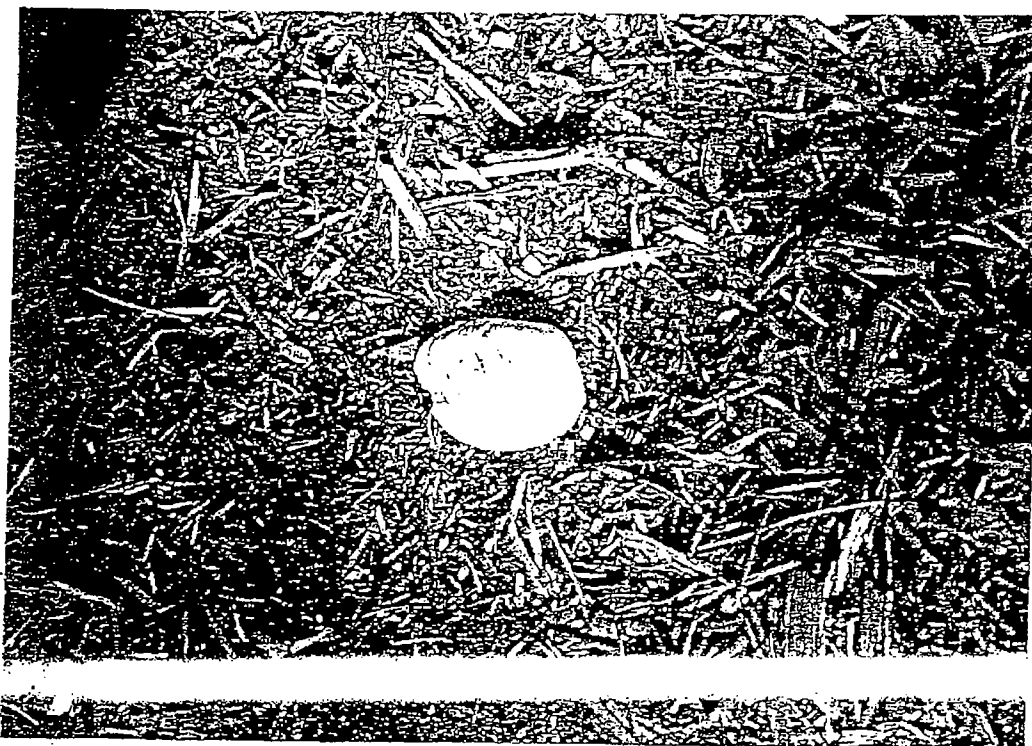
Photograph 5. Shell of the purple pimpleback (*C. tuberculata*). This species was found alive in the lower Tiffin River and at the lower station on the Maumee River.



Photograph 6. Shell of the black sandshell (*L. recta*) collected from the Maumee River. This Ohio threatened species was not found alive or as a freshly dead shell.



Photograph 7. Shells of the clubshell (*P. clava*) collected from the Maumee River. This federal endangered species was not found alive or as a freshly dead shell.



Photograph 8. Shell of the northern riffleshell (*E. r. rangiana*) collected from the Tiffin River. This federal endangered species was not found alive or as a freshly dead shell.



DIVISION OF NATURAL AREAS & PRESERVES

1889 Fountain Square, Columbus, OH 43224
(614) 265-6453 phone; (614) 267-3096 fax

George V. Voinovich • Governor
Donald C. Anderson • Director

January 20, 1999

Brian Swartz
Midwest Environmental Consultants, Inc.
1800 Indian Wood Circle
Maumee, OH 43537

MEC Received

JAN 20 1999

MEC

#	#

Dear Mr. Swartz:

I have reviewed our Natural Heritage Database for records within the project area involving the upgrade of U.S. Route 24. This project incorporates portions of the following quadrangle maps: Antwerp, Defiance East and West, Hicksville, Junction, Latty, Mark Center, Paulding, Payne, Sherwood, Woodburn North and South Quads. in Defiance and Paulding Counties:

The rare species data for this study area is in a file named OHDATA on the enclosed floppy disk. This file is in a comma delimited ASCII text format and contains thirty-three records. Information sheets that explain the various codes used in this file along with additional file information are also enclosed.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that site. Please note that we inventory only high-quality plant communities and do not maintain an inventory of all Ohio wetlands. The Division of Wildlife has a statewide wetland inventory that may give you additional data. Their phone number is (614) 265-6300 or 1-800-WILDLIFE.

Please contact me at (614) 265-6409 if I can be of further assistance.

Sincerely,

Treva J. Knasel
Ecological Analyst
Division of Natural Areas & Preserves

LAHUIDEFLUN	DE	DATE	CLASS	FED	STATE	UCCNUM	SCINAME	COMNAME	MGAREA
410957N	0843021W	1988	SP		P	8	VERNONIA FASCICULATA	PRAIRIE IRONWEED	
411411N	0843945W	1988	PC			36	MAPLE-ASH-OAK SWAMP		
410411N	0844341W	1988	PC			18	FLOODPLAIN FOREST		
411419N	0842402W	1994	SA			3	MACROMIA WABASHENSIS	WABASH BELTED SKIMMER	
411709N	0841513W	1965	SP		P	14	CYPRIPEDIUM CALCEOLUS VAR. PUBESCENS	LARGE YELLOW LADY'S-SLIPPER	THE TREE FARM
411513N	0842224W	1987	SP		P	13	ARENARIA LATERIFLORA	GROVE SANDWORT	
411654N	0841644W	1967	SP		P	12	CYPRIPEDIUM CALCEOLUS VAR. PUBESCENS	LARGE YELLOW LADY'S-SLIPPER	
410345N	0844408W	1993	OT			80	GREAT BLUE HERON COLONY		
411418N	0843603W	1997	SA		S	27	TRUNCILLA TRUNCATA	DEERTOE	
411738N	0841732W	1967	SA		S	5	HODDON TERGISUS	MOONEYE	
411333N	0842327W	1987	PC			2	BUR OAK SAVANNA		
411728N	0841651W	1976	SA		S	42	CYCLONAIAS TUBERCULATA	PURPLE WARTYBACK	
410813N	0842551W	1974	OT			24	TURKEY VULTURE ROOST		
411402N	0843946W	1989	PC			6	FLOODPLAIN FOREST		
411113N	0842635W	1988	OT			48	TURKEY VULTURE ROOST		
411551N	0843306W	1991	SP		P	15	VERNONIA FASCICULATA	PRAIRIE IRONWEED	
410730N	0842446W	1987	PC			3	MAPLE-ASH-OAK SWAMP		
412059N	0842559W	1978	SP		P	1	CAREX RADIATA	RADIATE SEDGE	OXBOW LAKE WILDLIFE /
410905N	0843318W	1988	PC			17	FLOODPLAIN FOREST		
411517N	0843409W	1973	SA		S	43	CYCLONAIAS TUBERCULATA	PURPLE WARTYBACK	
411236N	0844352W	1988	PC			34	FLOODPLAIN FOREST		
411216N	0844252W	1987	SP		T	7	SMILAX HERBACEA VAR. LASIONEURA	PALE CARRION-FLOWER	
411245N	0844143W	1988	SA		S	2	ACCIPITER STRIATUS	SHARP-SHINNED HAWK	
411500N	0844964W	1985	SA		T	21	GLONOPHIS KIRTLANDII	KIRTLAND'S SNAKE	
411235N	0842808W	1988	SP		P	8	VERNONIA FASCICULATA	PRAIRIE IRONWEED	
411402N	0843946W	1981	OT			32	GREAT BLUE HERON COLONY		
410922N	0843230W	1988	PC			39	MIXED EMERGENT MARSH		
410524N	0843926W	1993	OT			81	GREAT BLUE HERON COLONY		
411417N	0843736W	1988	OT			49	TURKEY VULTURE ROOST		
410227N	0844536W	1988	PC			19	FLOODPLAIN FOREST		
411901N	0842433W	1976	SP		P	2	ARENARIA LATERIFLORA	GROVE SANDWORT	
411402N	0843946W	1981	SA		S	40	HEMIDACTYLUM SCUTATUM	FOUR-TOED SALAMANDER	
411959N	0844247W	1973	SA		T	4	MOXOSTOMA VALENCIENNESI	GREATER REDHORSE	

DIVISION OF NATURAL AREAS & PRESERVES
OHIO DEPARTMENT OF NATURAL RESOURCES
JANUARY 15, 1999

Natural Heritage Database Records for Midwest Environmental Consultants, Inc.

File Documentation

File Type: Comma delimited ASCII text

File Name: OHDATA

of Records: 33

Bytes: 2,258

Fields:

Quadrangle - name of 7.5 minute U.S.G.S. map

Locational Accuracy Code - see enclosed sheet

Latitude - degrees, minutes, seconds (xxxxxxN)

Longitude - degrees, minutes, seconds (0xxxxxxW)

Federal Status - see enclosed sheet

Ohio Status - see enclosed sheet

Occurrence Number - three digit number used to identify individual records

Scientific/Element Name

Common Name

Managed Area Name

DIVISION OF NATURAL AREAS & PRESERVES
OHIO DEPARTMENT OF NATURAL RESOURCES

ENDANGERMENT CODES

Federal Status Codes

LE = Legally Endangered
LT = Legally Threatened
PE = Proposed Endangered
PT = Proposed Threatened

CLASS CODES

SP = Special Plant
SA = Special Animal
PC = Plant Community
GF = Geological Feature
OT = Other Things

Ohio Status Codes

Animals (Assigned by the *Ohio Division of Wildlife*)

E = State Endangered
*T = Threatened
*S = Special Interest
*X = Extirpated from Ohio
No Status Listed = Animals without an Ohio status are included in the Natural Heritage inventory, but have not been assigned a state status by the *Division of Wildlife*.

Statuses for birds are based on *nesting* records and do not include migrating or wintering individuals.

Plants (Assigned by the *Division of Natural Areas & Preserves*)

E = State Endangered
T = State Threatened
*P = Potentially Threatened
*A = A species recently added to the inventory and/or a status has not yet been determined
*X = Presumed Extirpated - a species which has not been recorded from Ohio in the last 20 years

* Administrative Statuses - these are not legal designations

LOCATIONAL ACCURACY CODES

C = Exact Location
N = Accuracy is at most one square mile (≤ 1 square mile)
G = General Location; Accuracy is greater than one square mile (> 1 square mile)
P = Center of a Population with several collection points



OHIO DEPARTMENT OF TRANSPORTATION

CENTRAL OFFICE, P.O. Box 899, COLUMBUS, OHIO 43216-0899

OFFICE OF ENVIRONMENTAL SERVICES

June 10, 2005

Mr. Randy Bournique
Ohio Environmental Protection Agency
Division of Surface Water
OEPA Lazarus Government Center
P.O. Box 1049
Columbus, Ohio 43216

**RE: Paulding and Defiance Counties, Ohio
PAU/DEF-24 (PID 18904)
Isolated Wetland Level Two Review**

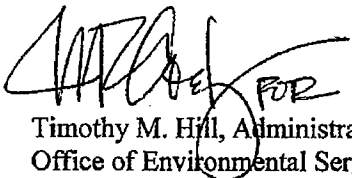
Mr. Bournique:

Enclosed for your review are four copies of an Isolated Wetland Level Two Review for the above mentioned project. This project involves the construction of 26 miles of four-lane expressway on new alignment for US 24. The project starts at the Ohio/Indiana line and extends to State Route 18, in Defiance, Ohio. Culvert and embankment work will occur within jurisdictional waters of the U.S.

The wetland impacts will be mitigated on-site through the development of a 26 acre wetland adjacent to an existing Category 3 wetland.

ODOT is seeking the OEPA's approval to impacts the associated isolated wetlands per the "Minimal Degradation Alternative" as described in Block 10 "Anti-degradation Rule" of the Section 401 Water Quality Certification Application for the above project. No work in isolated wetlands will occur before this activity is authorized. Should any question arise, please contact Don Rostofer at (614)-387-3057 or email: donald.rostofer@dot.state.oh.us.

Sincerely,

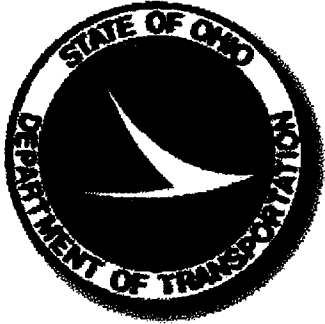


Timothy M. Hill, Administrator
Office of Environmental Services

TMH:WRC:MAP:DER

Enclosure(s)

c: Clark Nash (D-2), Mark Epstein (SHPO), File, Permits File, Reading File



**Ohio EPA Level 2
Isolated Wetland Permit**

**PAU/DEF-24-0.00/0.00
PID No. 18904
US 24 Ohio/Indiana Line to
Defiance, Ohio**

Prepared for:
Ohio Department of Transportation
1930 West Broad Street
Columbus, Ohio 43223

June 3, 2005

By: The Mannik & Smith Group, Inc.
1800 Indian Wood Circle
Maumee, Ohio 43537
John Kusnier, Jr. and Jason Earley
Phone: (419) 891-2222
Fax: (419) 891-1595

TABLE OF CONTENTS

SECTIONS

SECTION 1: OHIO EPA GENERAL ISOLATED WETLAND PERMIT – LEVEL 2 REVIEW

APPENDICES

APPENDIX A

- LOCATION OF ISOLATED WETLAND IMPACTS (TABLE A)
- SITE LOCATION MAPS (FIGURES 1A-1H)
- EXHIBITS OF ISOLATED WETLAND IMPACTS (FIGURES 2-9)

APPENDIX B - AGENCY COORDINATION LETTERS

APPENDIX C - CONCEPTUAL WETLAND AND STREAM MITIGATION PLAN

Individual Isolated Wetland Information Table*. Please list all isolated wetlands:

Wetland ID	ORAMI Score	Category	Size (Acres)			Impacts (Acres)		
			Forest	Non-Forest	Total Acreage	Forest	Non-Forest	Total Impacts
L-8(a)	38.5	Mod 2	0.24	0.00	0.24	0.24	0.00	0.24
L-8(b)	38.5	Mod 2	0.31	0.00	0.31	0.19	0.00	0.19
NO-15	43.5	2	4.49	0.00	4.49	0.36	0.00	0.36
W-4(b)	55.5	2	0.00	0.09	0.09	0.00	0.09	0.09
W-4(c)	55.5	2	0.00	0.01	0.01	0.00	0.01	0.01
W-4(d)	55.5	2	0.00	1.11	1.11	0.00	0.19	0.19
W-4(e)	55.5	2	0.00	0.20	0.20	0.00	0.20	0.20
W-4(g)	55.5	2	0.00	0.05	0.05	0.00	0.04	0.04
W-4(h)	55.5	2	0.00	0.35	0.35	0.00	0.35	0.35
Wetland 1	44.5	Mod 2	0.44	0.00	0.44	0.15	0.00	0.15
Wetland 2	42	Mod 2	0.00	0.37	0.37	0.00	0.10	0.10
Wetland 3	25	1	0.00	0.02	0.02	0.00	0.02	0.02
Wetland 4	45.5	2	0.00	0.18	0.18	0.00	0.08	0.08
Totals			5.48	2.38	7.86	0.94	1.08	2.02
Totals - Category 1 Wetlands			0.00	0.02	0.02	0.00	0.02	0.02
Totals - Category 2 Wetlands			5.53	2.36	7.84	0.94	1.06	2.00
Totals - Category 3 Wetlands			0.00	0.00	0.00	0.00	0.00	0.00

*List more on separate sheets if needed.

List mitigation techniques utilized for the proposed filling:

Onsite (check)	Offsite (check)	Mitigation Acreage				Name of Bank (if App)	Watershed (include USGS 8-Digit HUC)
		Restored	Created	Enhanced	Preserved		
X		26*			133**		Maumee-0410005
Totals		26*			133**		

*Proposed wetland restoration for both isolated and non-isolated wetland impacts.

**Preservation includes 61 acres of wetland and 72 acres of mature forested upland buffer.

Fee Table:

a. Application Fee:	_____	\$0.00	
b. Review Fee (500.00 x 2.02): (Acres of impacts to the nearest 1/100 of an acre)	_____	\$0.00	(Maximum \$5,000.00)
c. Subtotal (add lines a and b):	_____	\$0.00	(Maximum \$5,200.00)
d. After the Fact Fee (equal to line c): (Only if impacts have occurred without authorization)	_____	\$0.00	(Maximum \$5,200.00)
e. Total Fee Amount (add lines c and d):	_____	\$0.00	(Maximum \$10,400.00)

Please make fee check payable to: "Treasurer, State of Ohio"

I certify that the information provided on this form and as part of this submittal regarding the project is true and accurate to the best of my knowledge:

Applicant Name (Print): Gordon Proctor, Director, Ohio DOT Applicant Signature: _____ Date: _____

Send completed application, including fee check to: Ohio EPA, Division of Surface Water
P.O. Box 1049, Columbus, Ohio 43216-1049
ATTN: Isolated Wetlands Permitting

OHIO EPA
INDIVIDUAL ISOLATED WETLAND PERMIT
APPLICATION (Level Two Review)

For impacts greater than ½ acre for Category 1 isolated wetlands and greater than
½ acre but not exceeding 3 acres for Category 2 isolated wetlands

Please Print or Type (attach additional sheet if necessary)

Project Name: US 24 - IN/OH State line to Defiance, Ohio PAU/DEF 0.00/0.00 PID #18904

Applicants must submit a completed General Isolated Wetland Permit Application (Level One Review) in addition to providing the following information and or demonstrations:

- 1. Please provide an analysis of practicable on-site alternatives to the proposed filling of the isolated wetland that would have a less adverse impact on the isolated wetland ecosystem:**

The Minimal Degradation Alternative for the US 24 Alignment from Defiance, Ohio to the Ohio/Indiana State Line is the most practicable alternative for minimally impacting isolated wetlands while meeting the required highway design requirements. Under the Minimal Degradation Alternative a total of 2.02 acres (out of 7.86 acres) of isolated wetlands will be impacted as a result of this project. There will be a total of 0.02-acre of non-forested Category 1 wetlands, 1.06 acres of non-forested Category 2 wetlands and 0.94-acre of forested Category 2 wetlands impacted. No isolated Category 3 wetlands will be impacted from the construction of the new US 24 alignment.

- 2. Please provide information indicating whether high quality waters, as defined in rule 3745-1-05 of the administrative code, are to be avoided by the proposed filling of the isolated wetland(s):**

This project will impact a total of 2.00-acres of isolated "general high quality waters" (Category 2 wetlands) and 0.02-acre of isolated "limited quality waters" (Category 1 wetlands) as defined in OAC 3745-1-05. This project avoids a total of 5.84-acres of Category 2 isolated wetlands. The Minimal Degradation Alternative has been engineered and further refined to minimize impacts to wetlands, while complying with highway design and construction criteria.

- 3. Please provide maps and narratives describing buffers provided for any isolated wetland(s) that will be avoided at the site:**

All of the above listed isolated wetlands within the project area are to be impacted as a result of this project. Through the entire design process impacts to wetlands have been minimized to the greatest extent practicable while meeting the required highway design requirements.

This project impacts 2.02 acres out of the total 7.86 acres of isolated wetlands that lie within the proposed Minimal Degradation Alternative.

A buffer of scrub/shrub/second growth woodlot will provide a buffer for the unimpacted 0.12-acre of Wetland L-8 (b). Approximately 5.3 acres of forest, including 4.13 acres of the unimpacted Wetland NO-15, will be avoided in the construction of this highway project. Approximately 1.17-acres of upland forest will serve as a buffer for Wetland NO-15. Of the 1.11-acres of Wetland W-4 (d), only 0.19-acre will be impacted. The remaining 0.92-acres of unimpacted wetland will be buffered by the surrounding upland old field community. Wetlands 1 and 2 will have a scrub/shrub and upland old field buffer for the remaining 0.29-acre and 0.27-acre, respectively, of unimpacted wetland. Wetland 4 will have 0.10-acre of wetland unimpacted, which will be buffered by the surrounding scrub/shrub/old field community. The locations of these wetland areas and their corresponding buffers are identified in Appendix A.

- 4. Please demonstrate that the wetland(s) to be filled are not locally or regionally scarce and do not contain rare, threatened or endangered species:**

All of the isolated wetlands that will be impacted by this project are typical of the wetlands found within second growth woodlots and non-forested areas situated on hydric soils throughout Defiance and Paulding Counties.

A request for information to the US Fish and Wildlife Service regarding threatened and endangered species within the vicinity of the project site found the site lies within the range of the federally endangered Indiana bat (*Myotis sodalis*) and clubshell mussel (*Pleurobema clava*); federally threatened bald eagle (*Haliaeetus leucocephalus*) and copperbelly

I certify that the information provided on this form and as part of this submittal regarding the project is true and accurate to the best of my knowledge:

Applicant

Name (Print): Gordon Proctor, Director, Ohio DOT

Applicant

Signature: _____

Date: _____

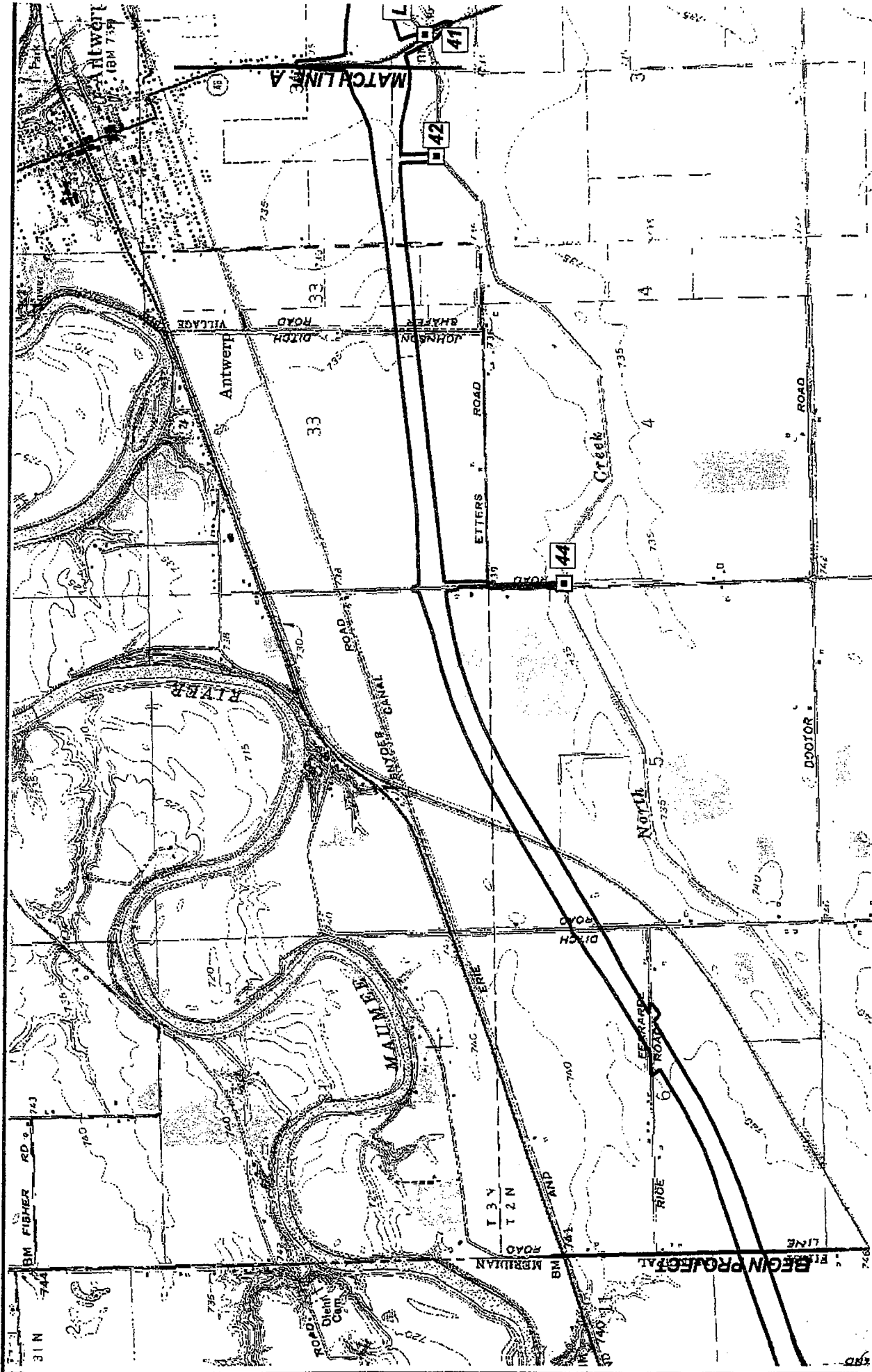
Send completed application, including fee check to:

Ohio EPA, Division of Surface Water
P.O. Box 1049, Columbus, Ohio 43216-1049
ATTN: Isolated Wetlands Permitting

EPA4012 (DRAFT)

Table A
Location of Isolated Wetlands Affected by the Proposed Project

Wetland ID	USGS Coordinates (Only North WAD 1983) Easting	USGS Coordinates (Only North WAD 1983) Northing	Drainage Basin	Forest/ Non-Forest	Wetland Description	Cowardin's 1980 Class (notation)	ORAW Wetland Score	CEQA Category	Soil Size (Area Impacted)	Adjacent Habitats	Proximity to Other Surfaces (waters (feet)
L-8 (A)	1355086.26	555297.84	Maumee River	Forested	Isolated	Palustrine forested broad-leaved deciduous	38.5	Modified 2	0.24 (0.24)	Agriculture/ Forested/ Residential	375
L-8 (B)	1355314.23	554813.29	Maumee River	Forested	Isolated	Palustrine forested broad-leaved deciduous	38.5	Modified 2	0.31 (0.19)	Agriculture/ Forested/ Residential	375
NO-15	1395276.55	572098.32	Maumee River	Forested	Isolated	Palustrine forested broad-leaved deciduous	43.5	2	4.49 (0.36)	Agriculture	4,425
W-4 (B)	1421623.87	582373.61	Maumee River	Non-Forested	Isolated	Palustrine emergent persistent	55.5	2	0.09 (0.09)	Agriculture/ Old Field	3,900
W-4 (C)	1421793.02	582397.19	Maumee River	Non-Forested	Isolated	Palustrine emergent persistent	55.5	2	0.01 (0.01)	Agriculture/ Old Field	3,900
W-4 (D)	1422047.52	582649.17	Maumee River	Non-Forested	Isolated	Palustrine scrub-shrub broad-leaved deciduous	55.5	2	1.11 (0.19)	Agriculture/ Old Field	3,000
W-4 (E)	1422210.81	582605.65	Maumee River	Non-Forested	Isolated	Palustrine scrub-shrub broad-leaved deciduous	55.5	2	0.20 (0.20)	Agriculture/ Old Field	3,300
W-4 (G)	1422526.14	582701.81	Maumee River	Non-Forested	Isolated	Palustrine scrub-shrub broad-leaved deciduous	55.5	2	0.05 (0.04)	Agriculture/ Old Field	3,000
W-4 (H)	1422895.92	582735.71	Maumee River	Non-Forested	Isolated	Palustrine scrub-shrub broad-leaved deciduous	55.5	2	0.35 (0.35)	Agriculture/ Old Field	3,000
Wetland 1	1452027.74	598090.37	Maumee River	Forested	Isolated	Palustrine forested broad-leaved deciduous/scrub-shrub broad-leaved deciduous/ Palustrine emergent persistent	44.5	Modified 2	0.44 (0.15)	Forested /Old Field	900
Wetland 2	1452034.64	598307.69	Maumee River	Non-Forested	Isolated	Palustrine scrub-shrub broad-leaved deciduous/ Palustrine emergent persistent	42	Modified 2	0.37 (0.10)	Agriculture/ Old Field	1,000
Wetland 3	145204.32	598971.96	Maumee River	Non-Forested	Isolated	Palustrine emergent persistent	25	1	0.02 (0.02)	Old Field	3,150
Wetland 4	1454026.36	599051.16	Maumee River	Non-Forested	Isolated	Palustrine scrub-shrub broad-leaved deciduous/ Palustrine emergent persistent	45.5	2	0.18 (0.08)	Old Field/ Shrub Scrub	2,400

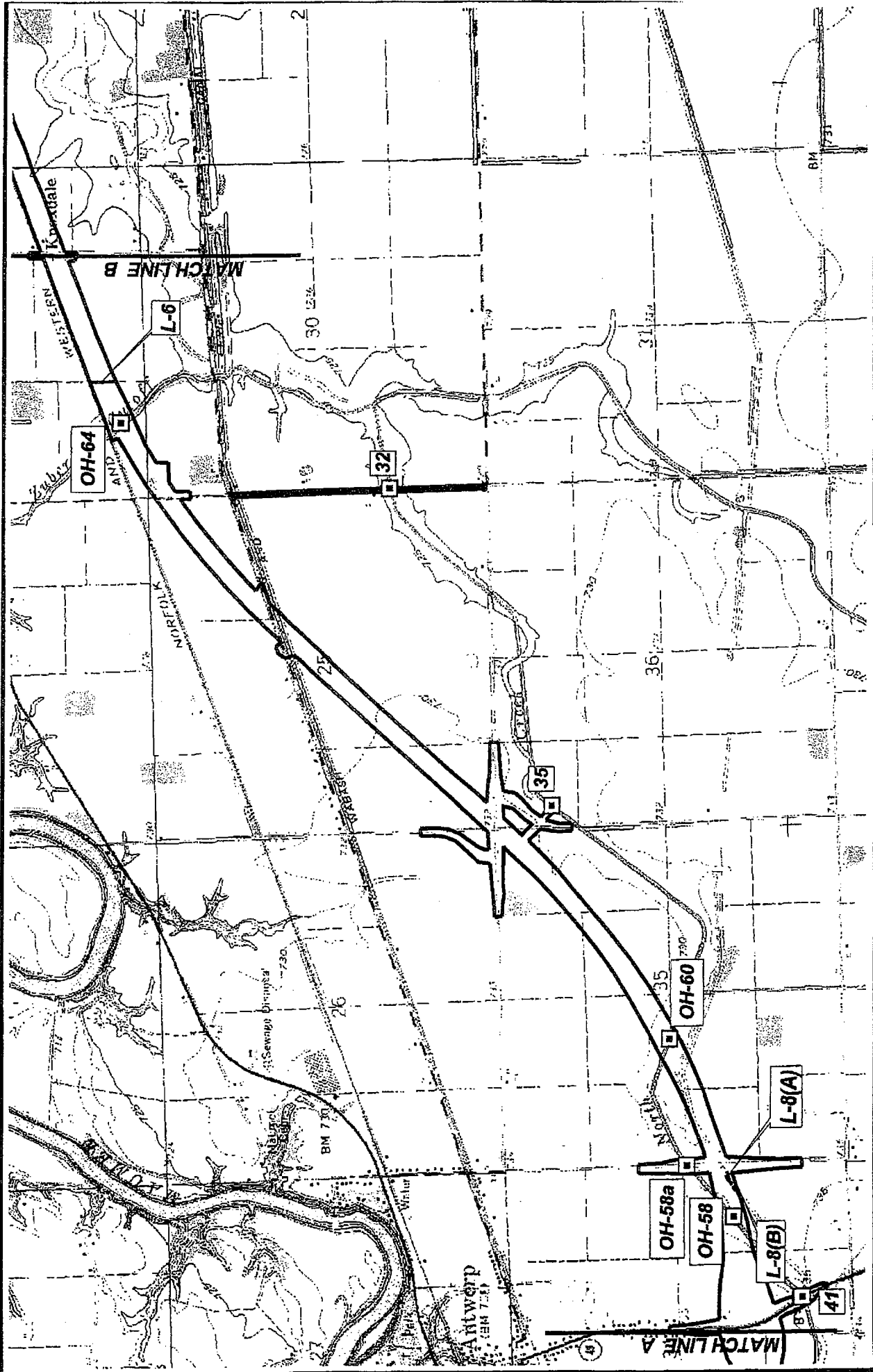


Mannik & Smith
 Group
 1800 Indian Wood Circle
 Maumee, Ohio 43537
 (419) 891-2322
 Fax: (419) 891-1555
 Civil Engineering, Surveying and Environmental Consulting
 TOLEDO • MORROE • DETROIT

FIGURE 1A
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Legend

- Right-of-Way
- Stream Impact
- Wetland Impact

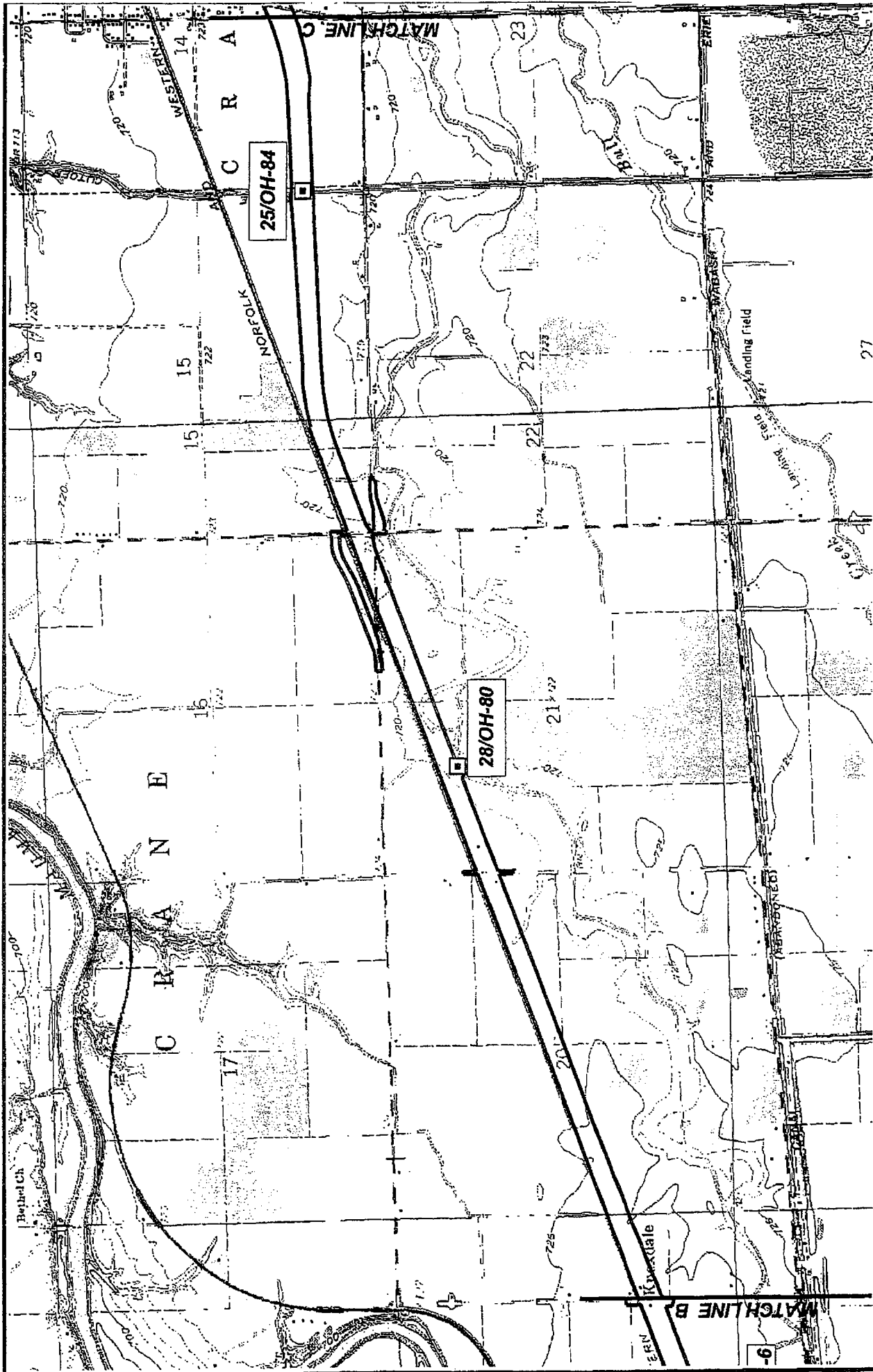


Legend

- Right-of-Way
- Stream Impact
- Wetland Impact

FIGURE 1B
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Mannik & Smith
Civil Engineering, Surveying and Environmental Consulting
1600 Indian Wood Circle
Painesville, Ohio 43057
(419) 891-2222
Fax: (419) 891-1595
TOLEDO • NORCOE • DETROIT

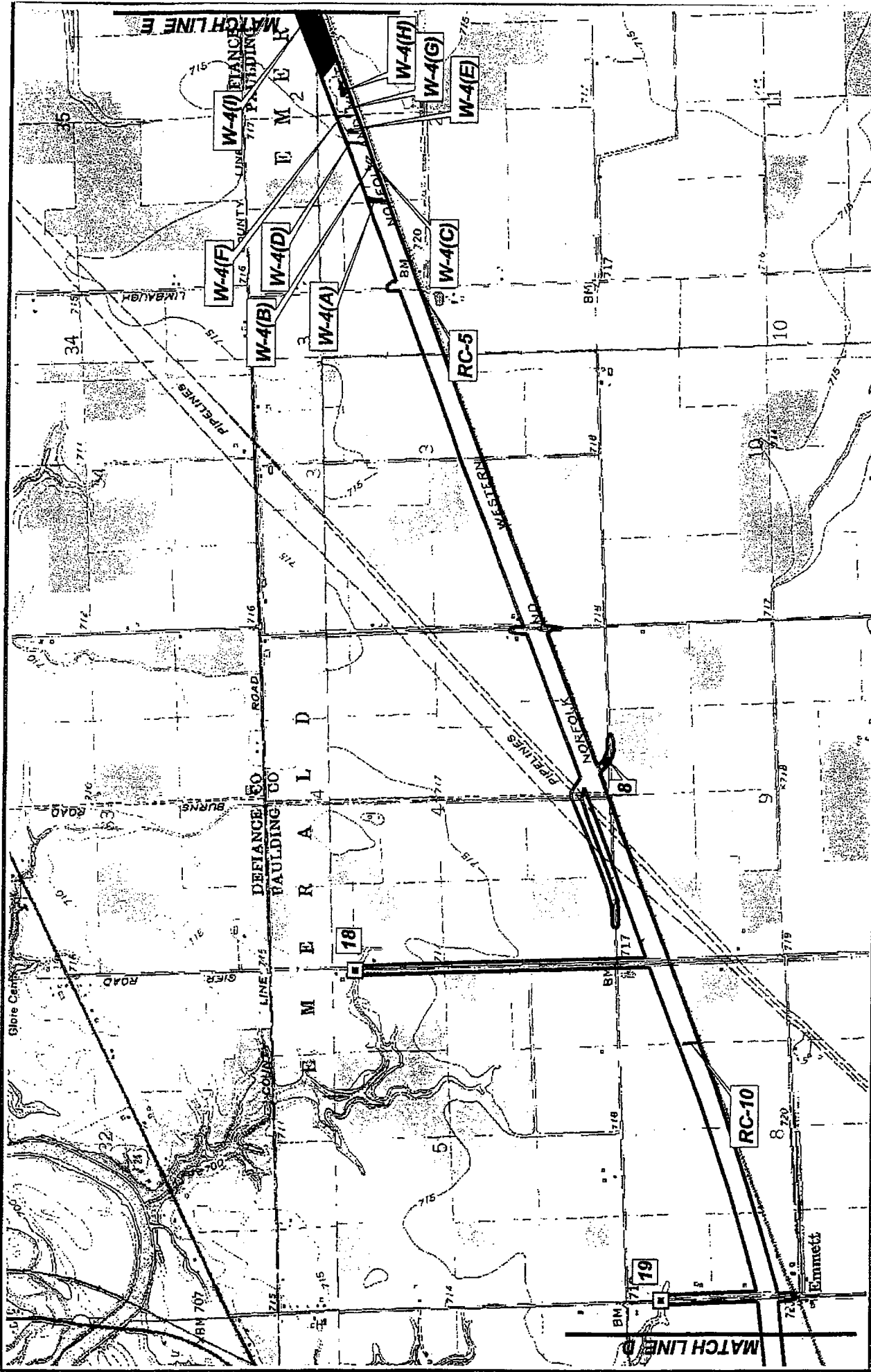


Legend

- Right-of-Way
- Stream Impact
- Wetland Impact

FIGURE 1C
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Mannik & Smith
 Group
 (419) 891-2222
 Fax: (419) 891-1595
 1800 Indian Wood Circle
 Maumee, Ohio 43537
 Civil Engineering, Surveying and Environmental Consulting
 TOLEDO • MONROE • DETROIT

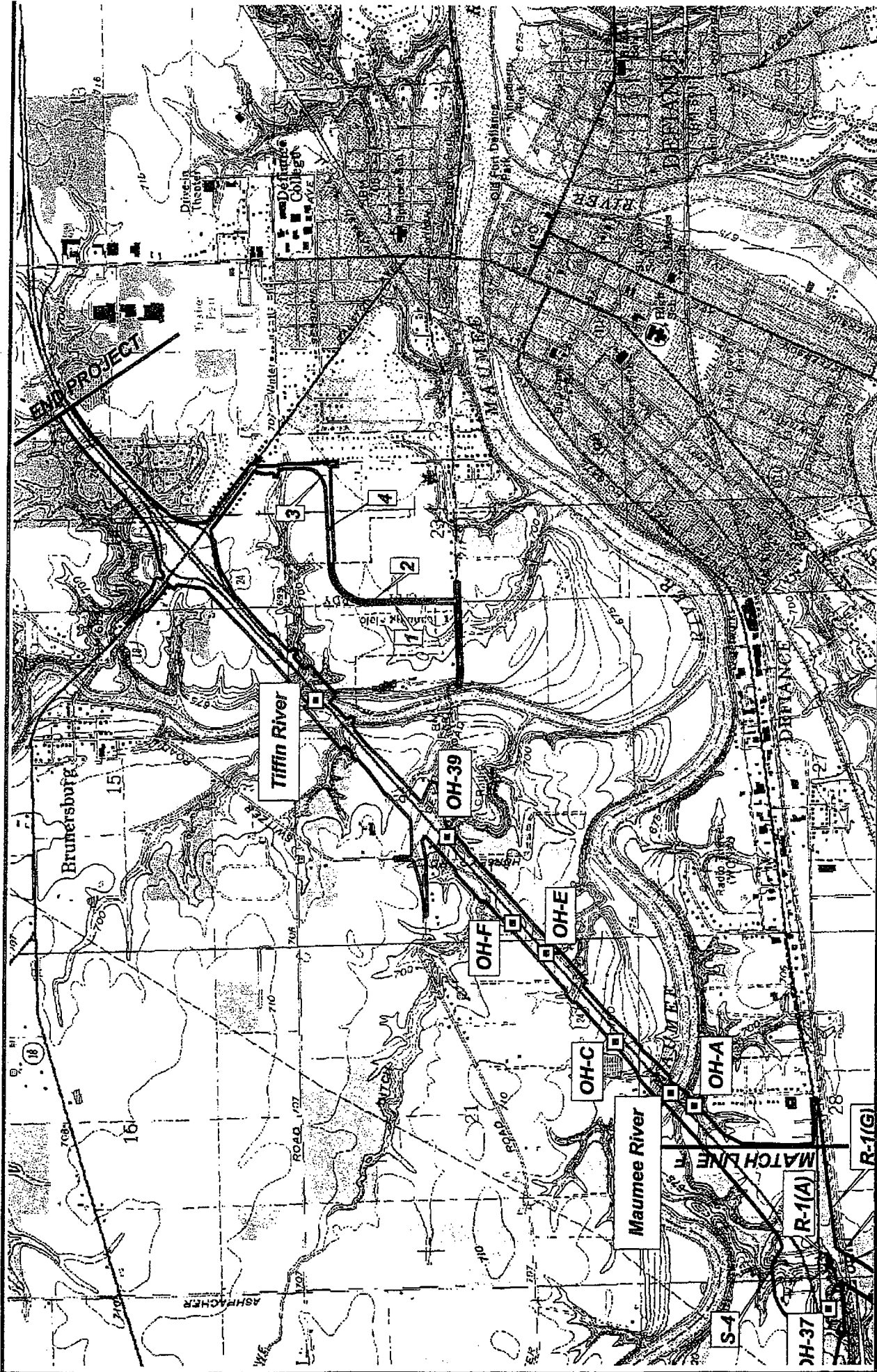


Legend

- Right-of-Way
- Stream Impact
- Wetland Impact

FIGURE 1E
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Mannik & Smith
Civil Engineering, Surveying and Environmental Consulting
1600 Indian Wood Circle
Hainesville, Ohio 43024
(614) 891-2222
Fax: (614) 891-1555
TOLEDO • MONROE • DETROIT

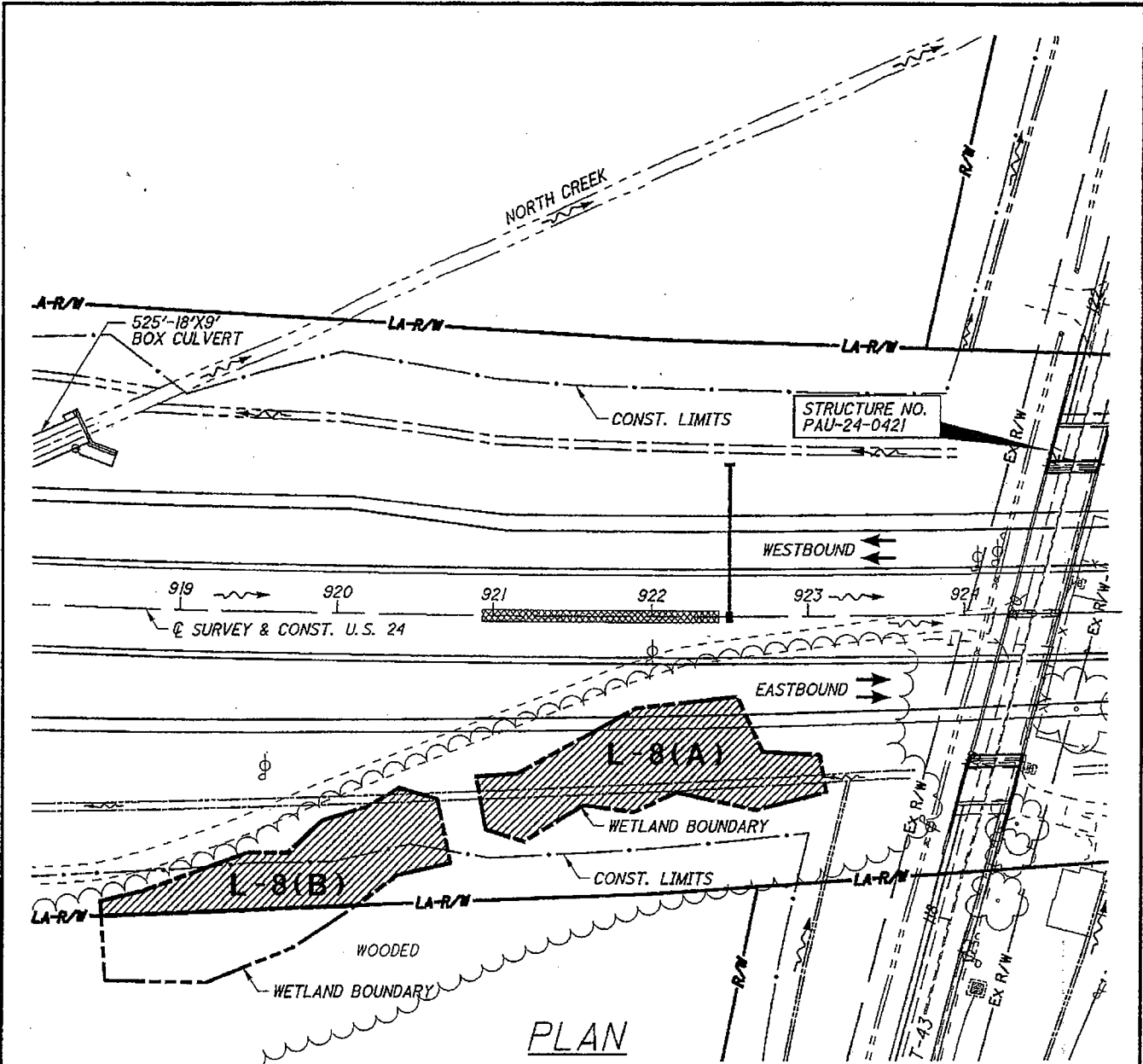


Legend


-  Right-of-Way
-  Stream Impact
-  Wetland Impact


FIGURE 1G
PAU/DEF 24-0.00 PID 24334
RIGHT-OF-WAY MAP

Mannik & Smith
 Civil Engineering, Surveying and Environmental Consulting
 1800 Ingham Wood Circle
 Maumee, Ohio 43537
 (419) 891-2222
 Fax: (419) 891-1595
 TOLEDO • MONROE • DETROIT



PLAN

WETLAND L-8(B)	
	TOTAL WETLAND LOSS (0.19 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.07 AC
EXCAVATION BELOW OHW:	232.00 CY
FILL BELOW OHW:	0.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.12 AC

WETLAND L-8(A)	
	TOTAL WETLAND LOSS (0.24 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.24 AC
EXCAVATION BELOW OHW:	1874.00 CY
FILL BELOW OHW:	176.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 AC



APPROXIMATE PLAN SCALE: 1"=100'



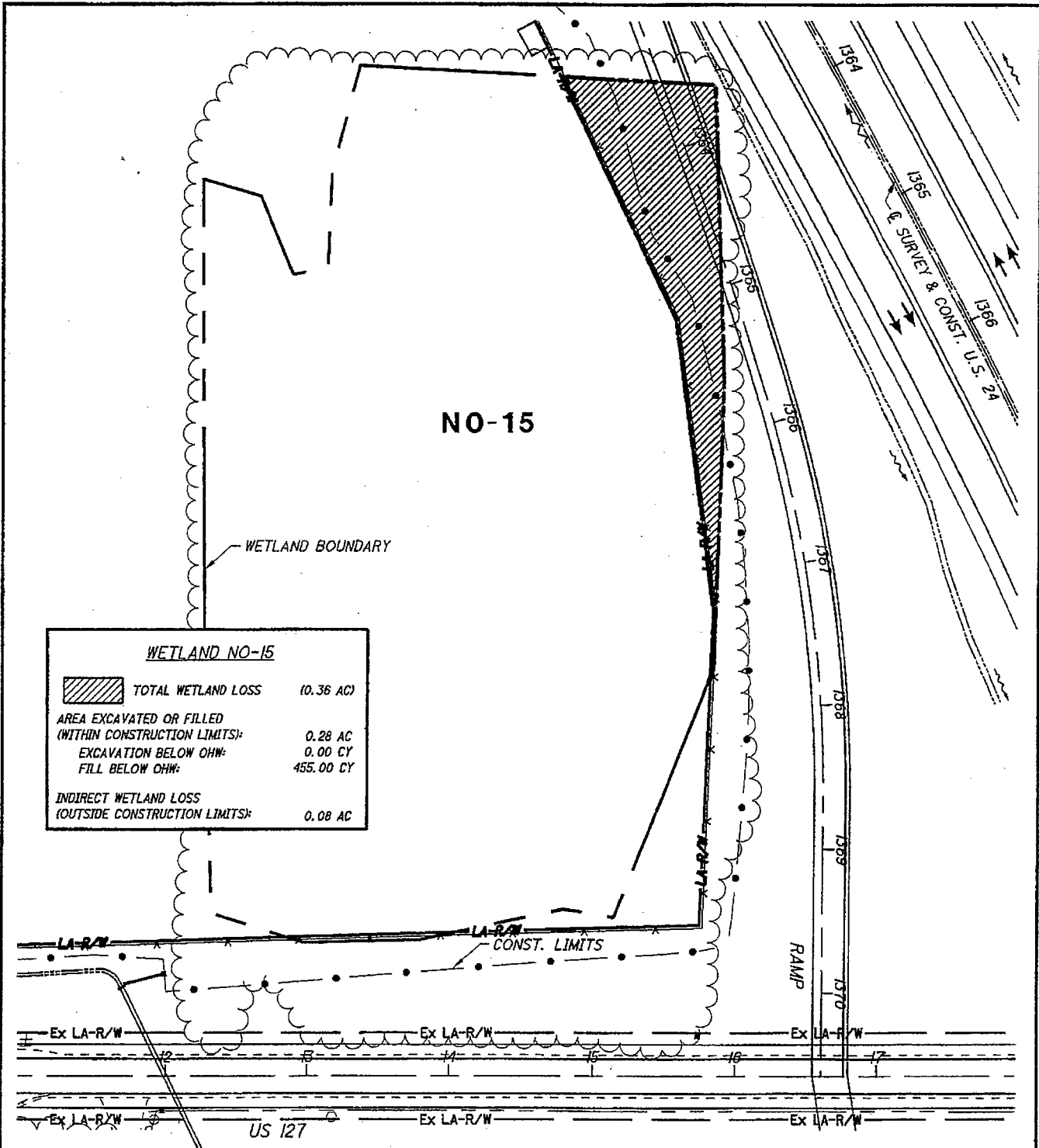
IMPACTS TO ISOLATED WETLANDS L-8(A) AND L-8(B)


OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application

Date: 10-19-2004

Figure 2



WETLAND NO-15	
	TOTAL WETLAND LOSS (0.36 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
	EXCAVATION BELOW OHW: 0.28 AC
	FILL BELOW OHW: 455.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS): 0.08 AC	

PLAN

APPROXIMATE PLAN SCALE: 1"=100'



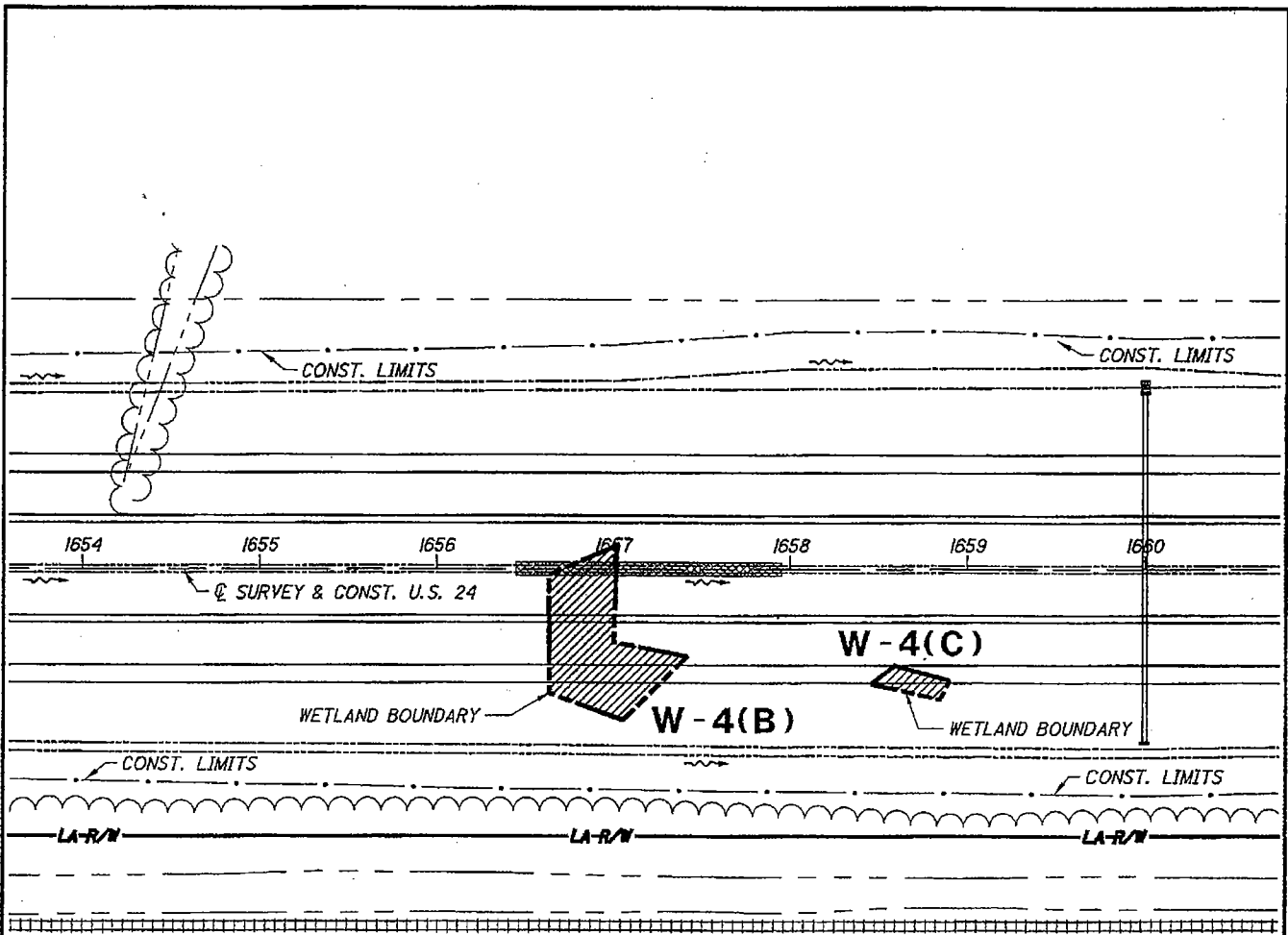
IMPACT TO ISOLATED WETLAND NO-15

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334


U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application


Date: 10-19-2004

Figure 3



PLAN

<u>WETLAND W-4(B)</u>	
	TOTAL WETLAND LOSS (0.09 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.09 AC
EXCAVATION BELOW OHW:	0.00 CY
FILL BELOW OHW:	147.00CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 CY

<u>WETLAND W-4(C)</u>	
	TOTAL WETLAND LOSS (0.01 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.01 CY
EXCAVATION BELOW OHW:	0.00 CY
FILL BELOW OHW:	13.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 CY



APPROXIMATE PLAN SCALE: 1"=100'



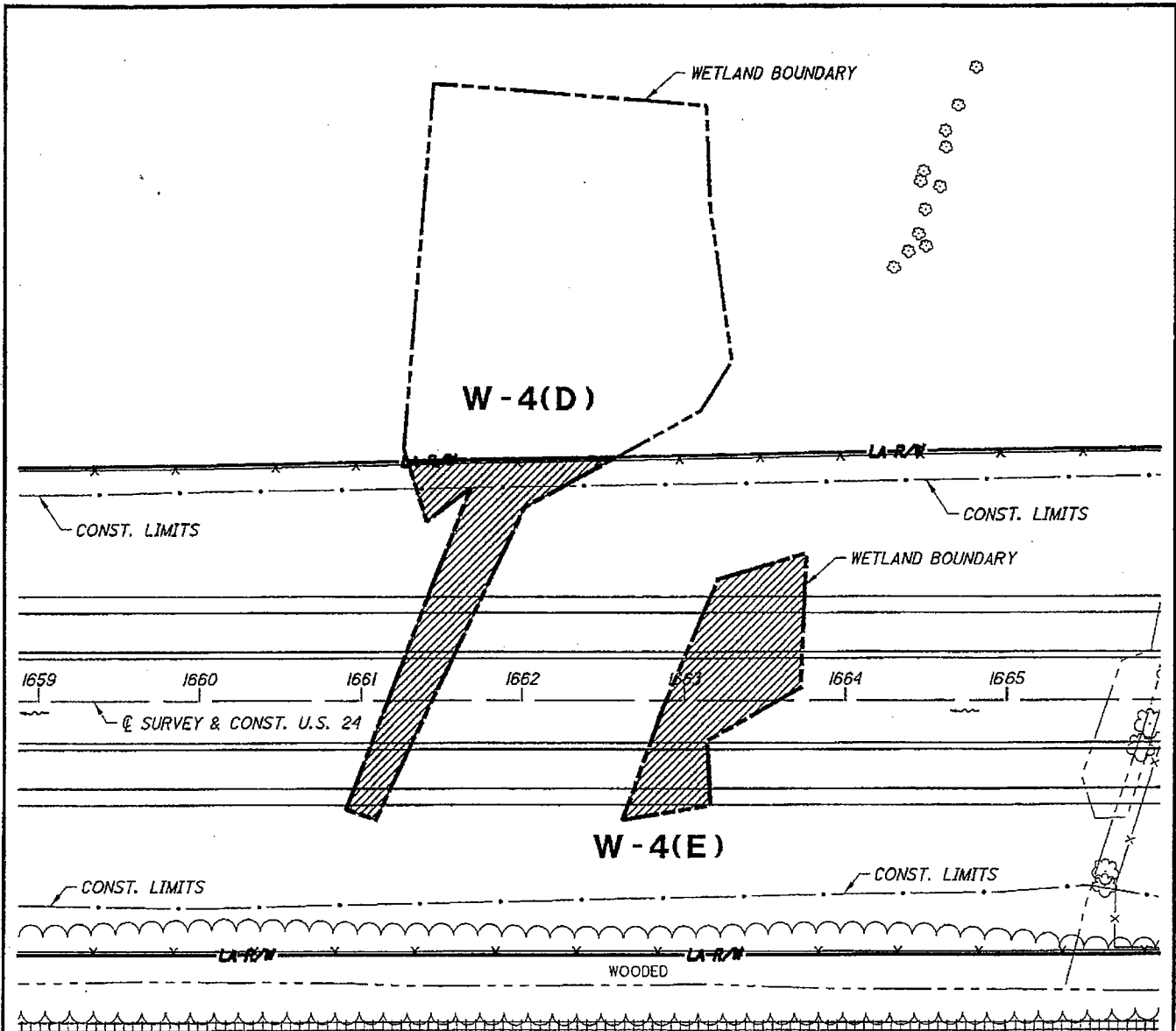
IMPACTS TO ISOLATED WETLANDS W-4(B) AND W-4(C)

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334


U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application


Date: 10-19-2004

Figure 4



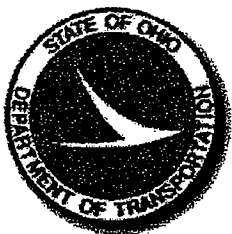
PLAN

WETLAND W-4(D)	
	TOTAL WETLAND LOSS (0.19 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.15 AC
EXCAVATION BELOW OHW:	88.00 CY
FILL BELOW OHW:	154.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	.04 AC

WETLAND W-4(E)	
	TOTAL WETLAND LOSS (0.20 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.20 CY
EXCAVATION BELOW OHW:	9.00 CY
FILL BELOW OHW:	314.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 AC



APPROXIMATE PLAN SCALE: 1"=100'



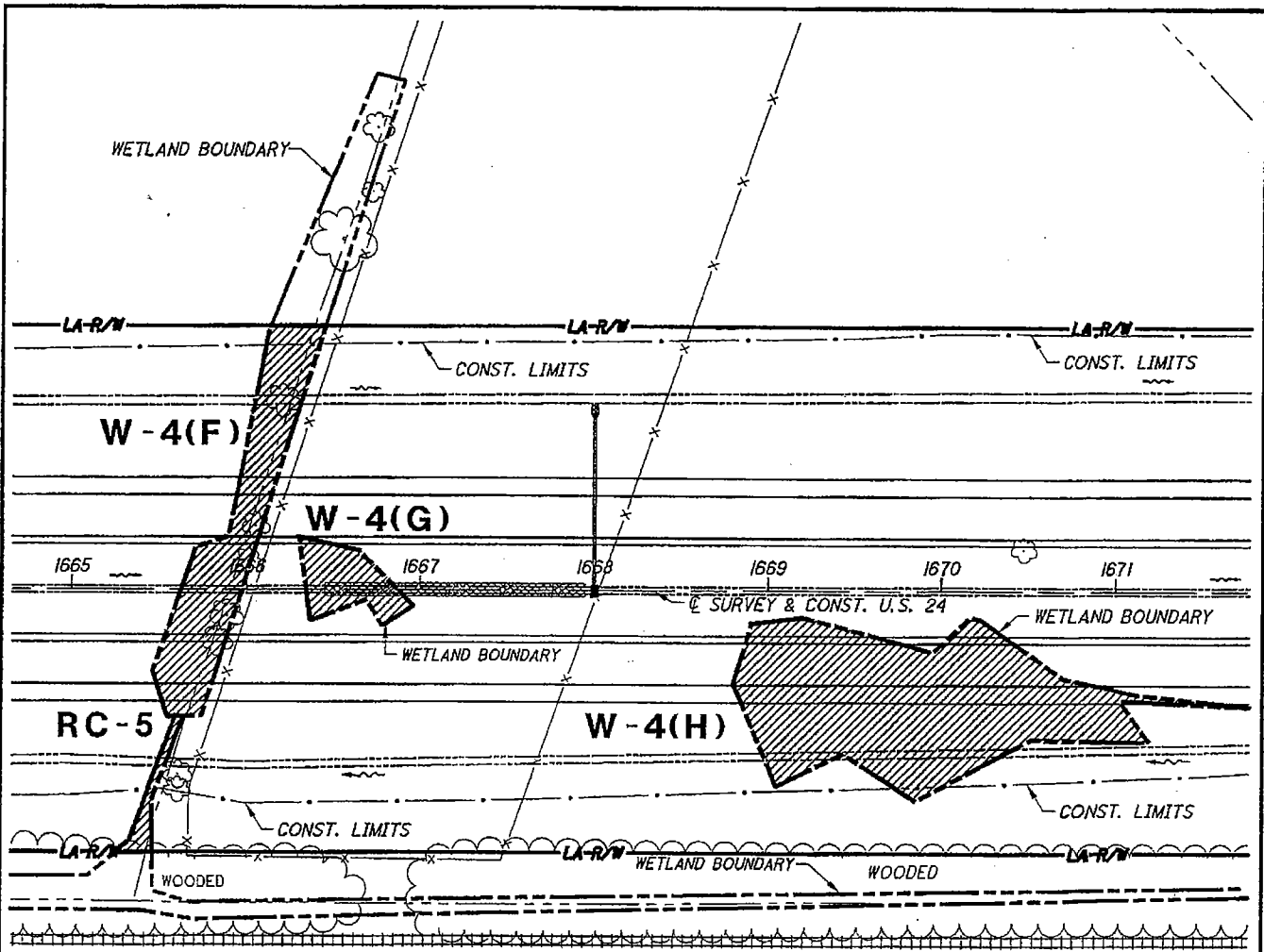
IMPACTS TO ISOLATED WETLANDS W-4(D) AND W-4(E)

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334

U.S. Army Corps of Engineers 404 Permit and OSPA Section 401 Water Quality Certification Application

Date: 10-19-2004

Figure 5



WETLAND W-4(F)

	TOTAL WETLAND LOSS (0.15 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.14 AC
EXCAVATION BELOW OHW:	85.00 CY
FILL BELOW OHW:	136.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.01 AC

WETLAND RC-5 (TOTAL FROM FIG. 9, 12, & 13)

	TOTAL WETLAND LOSS (0.90 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.02 AC
EXCAVATION BELOW OHW:	18.00 CY
FILL BELOW OHW:	12.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.88 AC

MAUMEE & WESTERN RR

PLAN

WETLAND W-4(G)

	TOTAL WETLAND LOSS (0.04 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.04 AC
EXCAVATION BELOW OHW:	33.00 CY
FILL BELOW OHW:	36.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 AC

WETLAND W-4(H)

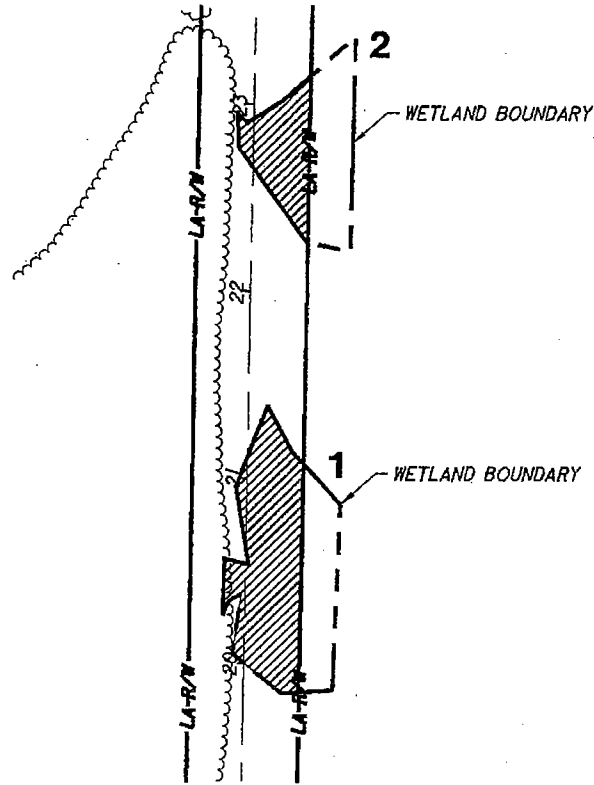
	TOTAL WETLAND LOSS (0.35 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.35 AC
EXCAVATION BELOW OHW:	249.00 CY
FILL BELOW OHW:	316.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.00 CY

APPROXIMATE PLAN SCALE: 1"=100'





**IMPACTS TO ISOLATED
WETLANDS W-4(G) & W-4(H) &
NON-ISOLATED WETLANDS
W-4(F) & RC-5**
OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULDING COUNTY
PAU-24-0.00 PID 24334

U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application
Date: 10-19-2004
Figure 6



PLAN

<u>WETLAND 1</u>	
	TOTAL WETLAND LOSS (0.15 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.10 AC
EXCAVATION BELOW OHW:	168.00 CY
FILL BELOW OHW:	0.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.05 AC

<u>WETLAND 2</u>	
	TOTAL WETLAND LOSS (0.10 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.04 AC
EXCAVATION BELOW OHW:	34.00 CY
FILL BELOW OHW:	0.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.06 AC



APPROXIMATE PLAN SCALE: 1"=100'



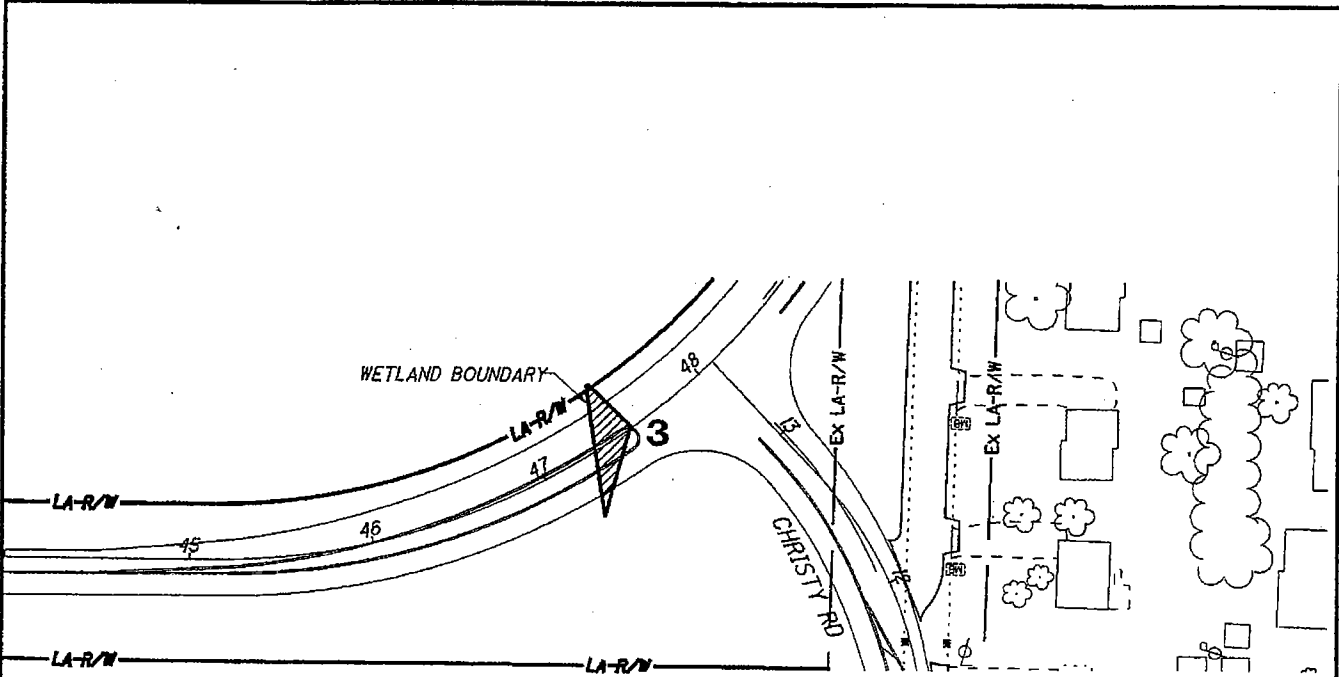
IMPACTS TO ISOLATED WETLANDS 1-2

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334


U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application

Date: 10-19-2004

Figure 7



PLAN

<u>WETLAND 3</u>	
	TOTAL WETLAND LOSS (0.02 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	
EXCAVATION BELOW OHW:	0.02 AC
FILL BELOW OHW:	6.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	1.00 CY
	0.00 CY



APPROXIMATE PLAN SCALE: 1"=100'



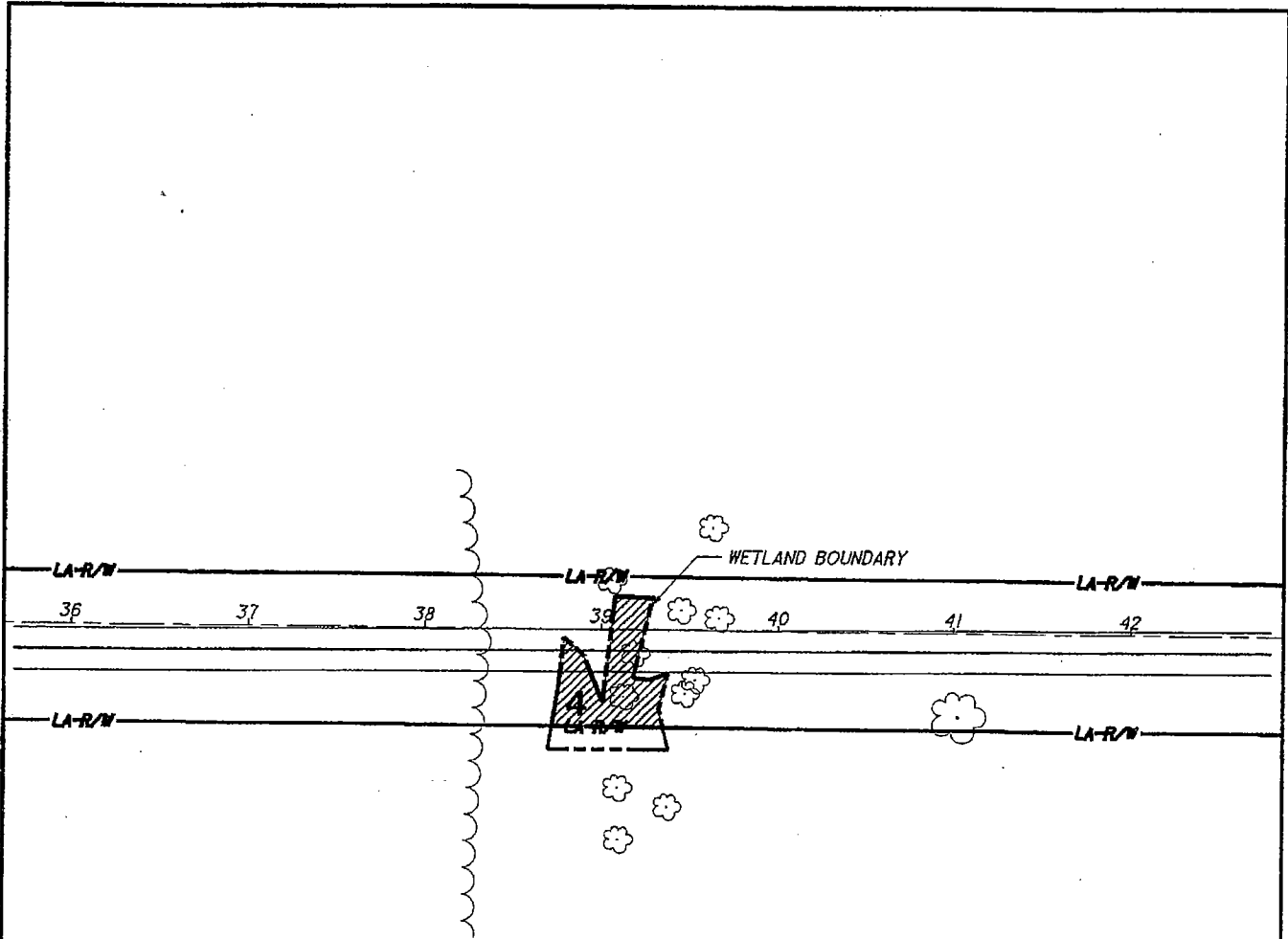
IMPACT TO ISOLATED WETLAND 3

OHIO DEPARTMENT OF TRANSPORTATION
 U.S. ROUTE 24 IN PAULDING COUNTY
 PAU-24-0.00 PID 24334


U.S. Army Corps of Engineers 404 Permit and OEPA Section 401 Water Quality Certification Application

Date: 10-19-2004

Figure 8



PLAN

WETLAND 4	
	TOTAL WETLAND LOSS (0.08 AC)
AREA EXCAVATED OR FILLED (WITHIN CONSTRUCTION LIMITS):	0.07 AC
EXCAVATION BELOW OHW:	83.00 CY
FILL BELOW OHW:	9.00 CY
INDIRECT WETLAND LOSS (OUTSIDE CONSTRUCTION LIMITS):	0.01 AC



APPROXIMATE PLAN SCALE: 1"=100'



IMPACT TO ISOLATED WETLAND 4

OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24 IN PAULDING COUNTY
PAU-24-0.00 PID 24334

U.S. Army Corps of
Engineers 404 Permit
and OEPA Section 401
Water Quality
Certification
Application

Date: 10-19-2004

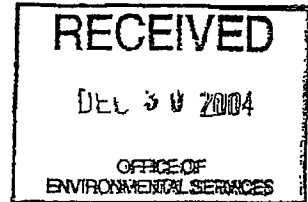
Figure 9



REPLY TO
ATTENTION OF:

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

December 28, 2004



Regulatory Branch

SUBJECT: Department of the Army Application No. 1999-02122(4)

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

Dear Mr. Hill:

I am writing to you in regard to your request for a wetland delineation verification and a jurisdictional determination for the proposed preferred alternative right-of-way for the new Route 24 limited access road project, PID 24334, located in Paulding and Defiance Counties, Ohio.

On January 9, 2001, the U.S. Supreme Court issued a ruling that affected the Corps of Engineers authority to regulate isolated, non-navigable, intrastate waters under the Clean Water Act (Solid Waste Agency of Northern Cook County v. the U.S. Army Corps of Engineers, No. 99-1178). Specifically, the case involved statutory and constitutional challenges to the assertion of Clean Water Act jurisdiction over isolated, non-navigable, intrastate waters where use of the site by migratory birds established the necessary interstate commerce connection. The U.S. Supreme Court found that use of the site by migratory birds alone is not sufficient to establish Federal jurisdiction over isolated wetlands, and that such areas are not waters of the United States and are not subject to regulation under Section 404 of the Clean Water Act.

In light of the recent Supreme Court decision, I have reviewed various maps and the administrative record for the project. Based on this review, I have determined that the following wetlands within the proposed right-of-way are isolated, non-navigable, intrastate waters that are not subject to regulation under Section 404 of the Clean Water Act: L-8(A), L-8(B), No-15, W-4(B), W-4(C), W-4(D), W-4(E), W-4(G), W-4(H), 1, 2, 3, and 4. Accordingly, you do not need Department of the Army authorization to commence with work within those wetlands.

Based on those same criteria, the following wetlands remain subject to Federal jurisdiction: L-9(B), L-6, 10, 9, 9a, 8, RC-10, RC-14(B), W-4(A), W-4(F), W-4(1), OH-6, RC-1, RC-2, RC-5,

Regulatory Branch

SUBJECT: Department of the Army Application No. 1999-02122(4)

R-4, S-4, R-1(A), R-1(B), R-1(C), R-1(F), and R-1(G).

I am hereby verifying the Federal wetland boundary within the proposed right-of-way only, as shown on the attached wetland delineation maps dated November 20, 2004. This verification was confirmed on 11/29/2004 and will remain valid for a period of five (5) years from the date of this correspondence. At the end of this period, a new wetland delineation will be required if a project has not been completed on this property and additional impacts are proposed for waters of the United States.

I encourage you to contact the appropriate state and local governmental agencies, including the Ohio Environmental Protection Agency (OEPA), to insure that the proposed work complies with their requirements. You can reach the OEPA Division of Surface Water at (614) 644-2001.

A copy of this letter has been forwarded to: Ms. Jennifer Graf, Parsons Brinkerhoff Ohio, Inc., and Mr. Art Coleman, Ohio Environmental Protection Agency.

Questions pertaining to this matter should be directed to Elizabeth W. Stone at (716) 879-4363, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207, or by e-mail at: elizabeth.w.stone@usace.army.mil

Sincerely,



Elizabeth W. Stone
Project Manager, Regulatory Branch



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
6950 Americana Parkway, Suite H
Reynoldsburg, Ohio 43068-4132

(614) 469-6923/FAX (614) 469-6919
February 2, 1999

MEC

MEC Received

FEB 5 1999

Mr. Brian P. Swartz
Midwest Environmental Consultants, Inc.
1800 Indian Wood Circle
Maumee, Ohio 43537

RE: Upgrading of U. S. Route 24 in Defiance and Paulding Counties, Ohio.

Dear Mr. Swartz:

This responds to your January 26, 1999 letter requesting our endangered species comments on the proposal referenced above. We do not have site specific information on any unique or rare plant or animal communities in the areas of the possible alternatives.

This technical assistance letter is submitted in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act, of 1973, as amended, and is consistent with the intent of the National Environmental Policy Act of 1969, and the U. S. Fish and Wildlife Service's Mitigation Policy. It does not, however, constitute the report of the Secretary of the Interior under Section 2(b) of the Fish and Wildlife Coordination Act, nor does it represent the review comments of the Department of the Interior on any forthcoming environmental document.

ENDANGERED SPECIES COMMENTS: To facilitate compliance with Section 7(c) of the Endangered Species Act of 1973, as amended, we are providing you the following list of endangered (E), threatened (T), or proposed (PT or PE) species which may be present in the referenced area:

- Indiana bat (E), Defiance and Paulding Counties
- clubshell mussel (E), Defiance County
- copperbelly water snake (T), Defiance County

ADDITIONAL COMMENTS

Two divisions of the Ohio Department of Natural Resources, the Division of Wildlife (614-265-6300) and the Division of Natural Areas and Preserves (614-265-6472), maintain lists of plants and animals of concern to the State of Ohio. If you have not already done so, please contact each of the above two agencies to obtain project comments or site-specific information on State listed species. In addition, the

Ohio Environmental Protection Agency (OEPA; 614-728-3393; 614-728-3388) will sometimes make available lists of fish and invertebrate species found in many of Ohio's rivers and streams.

Sincerely

A handwritten signature in cursive script that reads "Kent E. Kroonmeyer". The signature is written in dark ink and is positioned above the printed name and title.

Kent E. Kroonmeyer
Supervisor

cc: DOW, Wildlife Environmental Section, Columbus, OH
ODNR, Division of Real Estate and Land Management, Columbus, OH



IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE
BLOOMINGTON FIELD OFFICE (ES)
620 South Walker Street
Bloomington, IN 47403-2121
(812) 334-4261 FAX (812) 334-4273

MIR Received

February 24, 1999

6/3 1 1999

Brian P. Swartz
Midwest Environmental Consultants, Inc.
1800 Indian Wood Circle
Maumee, Ohio 43537

Dear Mr. Swartz:

This responds to your letter of January 26, 1999 requesting U.S. Fish and Wildlife Service (FWS) information regarding federally listed species, plant communities and animal concentrations in Allen County, Indiana.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et. seq.) and are consistent with the intent of the National Environmental Policy Act of 1969, the Endangered Species Act of 1973, and the U. S. Fish and Wildlife Service's Mitigation Policy.

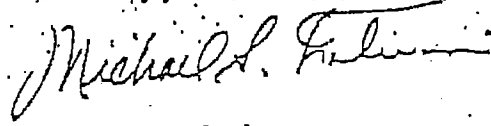
Endangered Species

Allen County, including the proposed project area, is within the range of the federally endangered Indiana bat (*Myotis sodalis*) and federally threatened bald eagle (*Haliaeetus leucocephalus*). Two federally endangered mussel species, *Pleurobema clava* and *Epioblasma obliquata*, have recently been reported in Allen County but not within the project area as defined on the maps you provided our office.

In addition, many wetland communities, including Palustrine emergent and Palustrine forested wetlands, exist within the project area. Please refer to the enclosed National Wetland Inventory maps, Fort Wayne East, Cedarville, Grabill, Hicksville, Woodburn North and Woodburn South Quadrangles, for their locations.

For further discussion, please contact Barbara Hosler at (812) 334-4261 extension 209.

Sincerely yours,



Michael S. Litwin
Acting Supervisor

cc: Liz McCloskey, USFWS, Northern Indiana Sub-Office, Warsaw, IN

A STUDY OF THE MUSSELS (UNIONIDAE) OF THE MAUMEE RIVER AND
TRIBUTARIES FROM DEFLANCE, OHIO TO FORT WAYNE, INDIANA

Alternative Study for U. S. Rt. 24 Project

By

Michael A. Hoggarth, Ph.D.
Department of Life and Earth Sciences
Otterbein College
Westerville, Ohio 43081

and

Museum of Biological Diversity
The Ohio State University
Columbus, Ohio 43212

For

Midwest Environmental Consultants
1800 Indian Wood Circle
Maumee, Ohio 43537

3 October 1999

TABLE OF CONTENTS

	Page
Executive Summary.....	3
Introduction.....	4
Materials and Methods.....	5
Results.....	6
Endangered Species.....	7
Impacts.....	8
Literature Cited.....	9
Table 1 - Federal, Ohio and Indiana significant species.....	12
Table 2 - Mussels collected during this study.....	13
Figure 1 - Map of the project area (west).....	15
Figure 2 - Map of the project area (Indiana/Ohio boarder).....	16
Figure 3 - Map of the project area (west of Defiance, Ohio).....	17
Figure 4 - Map of the project area (in Defiance, Ohio).....	18
Photograph 1 - Photograph 8.....	19

Executive Summary

The purpose of this report is to describe the mussel fauna (family Unionidae) of the Maumee River and selected tributaries from Defiance, Ohio to Ft. Wayne, Indiana. The rivers, creeks and ditches potentially impacted by the relocation of U. S. Rt. 24 include the Maumee and Tiffin rivers in Ohio, Gar Creek, Indiana, Grover Ditch, Indiana, Litzenberg Ditch, Indiana, Marsh Ditch, Indiana, Viland Ditch, Indiana, South Creek, Ohio, North Creek, Ohio, Zuber Cutoff, Ohio, Dowe Ditch, Ohio, and Steven's Ditch, Ohio. These rivers, creeks and ditches were found to support mussel communities during preliminary reconnaissance or provide permanent flow conditions.

The current study of the mussel community at this site was performed on 4-6 September, 1999. Sampling for mussels occurred within each stream listed above from the entire length of stream potentially impacted by the relocation of U. S. Rt. 24. In each case, the entire length of stream potentially impacted was walked (for all small streams) or canoed (for the two rivers). The Maumee River was sampled at three locations and South Creek was sampled at two locations.

All available habitat was searched for living mussels at each site. When found, all living mussels were field identified, counted, and returned to the river. Dead shells were also collected to voucher the collections. These shells have been deposited at The Ohio State University, Museum of Zoology (Museum of Biological Diversity). Hand collecting, including noodling and the use of a glass bottom bucket, was employed during this study.

A total of 27 species of mussels was found during the current study. Included in this total were two federally endangered species; the clubshell (*Pleurobema clava*) and the northern riffleshell (*Epioblasma torulosa rangiana*). Neither species was found alive or as a freshly dead shell. Neither species occurs in the impact area today. Additional state significant species found in study area were the purple pimpleback (*Cyclonaias tuberculata*), round pigtoe (*Pleurobema sintoxia*), pondhorn (*Unio merus tetralasmus*), fawnsfoot (*Truncilla donaciformis*), deertoe (*Truncilla truncata*), round hickorynut (*Obovaria subrotunda*), and black sandshell (*Ligumia recta*). Only the purple pimpleback, the round pigtoe, and the deertoe were found as extant populations during this study. None of the small ditches or creeks examined supported extant populations of state significant species or diverse communities of mussels. The Maumee and Tiffin rivers supported diverse communities, however these communities were different communities than they historically had supported. Of the 17 species of mussels found in the Tiffin River only seven were found as extant populations. Of the 21 species found in the Maumee River, only 14 were found as extant populations. These river supported large populations of the deertoe (Ohio special concern species) and smaller populations of the purple pimpleback (Ohio special concern species) and the round pigtoe (Ohio special concern species).

Both direct and indirect impacts will occur due to this project. Some mussels will be buried or crushed during instream work performed during the construction phase of this project. The smaller streams and ditches will be restored to their pre-impact community structure more slowly than the rivers, although more specimens and more species will be impacted in the larger rivers.

Has date
before
month

None of
the mussels
common
names
are
Capt.
Science
says
as long
as consis.

Introduction

Freshwater mussels are the most endangered of all of our aquatic organisms (Neves, 1993). In Ohio, 14 of the 79 recognized species of mussels are listed as endangered by the U.S. Fish and Wildlife Service (18%). Another 21 Ohio species are listed as endangered species in the state with others listed as threatened and of special concern. Nearly half of Ohio's species are in danger of being lost. In Indiana, ten of 75 species are federally listed as endangered (13%), ten additional species are presumed extirpated, and five others are listed as endangered in the state. Nine other species are state listed as special concern (Indiana does not use threatened as a category).

Surveys designed to identify the existence, numeric abundance, and distribution of the mussel fauna of the Ohio and Indiana have become increasingly important as this fauna has declined. Meyer (1974), Hoggarth (1986, 1990a, 1990b, 1991, 1992a, 1995-1996), Cummings et al. (1987, 1988), Watters (1988, 1990, 1992, 1998a, 1998b), Hoggarth et al. (1995, in press), and Anderson (1991) have surveyed many of the stream systems of these two states. These studies have lead to three conclusions; 1) many of our river systems support a different mussel community today than they did 100 to 200 years ago, 2) those streams which still support their original mussel fauna support fewer individuals and at least one third to one half of the species present are rare and/or endangered, and 3) few streams support as diverse a mussel community as they once supported. The Maumee River has been found to support a much different fauna today then historically, and its tributaries generally support fewer individual mussels although they have retained a greater diversity of mussel species (Hoggarth, 1986; Watters, 1988, 1998b; Anderson, 1991).

Many factors have contributed to the decline in population number and distribution of these animals. Chief among these are water pollution, sedimentation, habitat destruction, the construction of impoundments, and more recently, zebra mussels (Starrett 1971, Fuller 1974, Neves 1987). Each of these affects mussels in slightly different ways and combined they have reduced some populations by more than 90 % of their original size and dispersion. In one way or another, each of these alterations to natural streams have negatively impacted mussel populations, including mussel populations in Ohio and Indiana.

The current study was performed to examine the mussel communities which might be impacted by the widening and/or relocation of U. S. Rt. 24 from Defiance, Ohio to Ft. Wayne, Indiana. Preliminary assessment includes the possibility of many alignments. The lower Maumee River near Defiance, Ohio, and the lower Tiffin River near Defiance, Ohio will be impacted by this construction project. Proposed alternatives cross other tributaries of the Maumee River in Indian and Ohio and therefore, an assessment of these streams is also necessary.

The primary objective of this study was to locate potential habitat for rare and/or endangered species known to have occurred in this area. A secondary objective was to locate living and dead specimens of mussels to determine the historic and current species composition in the area. An attempt was made to sample all of the available habitat located during this study for living mussels.

The Maumee River once supported a diverse mussel fauna including current state and federal endangered species. Table 1 lists the state significant and federally endangered species known to have occurred in the Maumee River and its tributaries in the study area. Two federally endangered species, the clubshell (*Pleurobema clava*) and the northern riffleshell (*Epioblasma torulosa rangiana*) are known from this river (U. S. Fish and Wildlife Service, 1993). Other state significant species known from this river include the purple pimpleback (*Cyclonaias tuberculata*), round pigtoe (*Pleurobema sintoxia*), pondhorn (*Unio merus tetralasmus*), fawnsfoot (*Truncilla donaciformis*), deertoed (*Truncilla truncata*), round hickorynut (*Obovaria subrotunda*), and black sandshell (*Ligumia recta*). An objective of this study was to determine if any of these species, or suitable habitat for these species, occur in the project area.

Should we add that riffleshell is not county listed

Materials and Methods

Fifteen areas were sampled during this study. Figures 1 - 4 show each of the ^{sites} where sampling for mussels occurred during this study. Site 1 was located on Gar Creek, Indiana at the existing U. S. Rt. 24 bridge (Figure 1). Site 2 was approximately 1 mile east of Five Points on Grover Ditch, Indiana (Figure 1). Marsh Ditch, Indiana was Site 3 (Figure 2) while Site 4 was on Viland Ditch, Indiana (Figure 2), and Site 5 was on Litzenberg Ditch at the Indiana - Ohio state line (Figure 2). Site 6 was on South Creek, Ohio at the junction of S. R. 49 and Doctor Road while Site 7 was on North Creek, Ohio between S. R. 49 and Barker Road (Figure 2). Site 8 was on South Creek, Ohio south of Hartman Road and Site 9 was on Zuber Cutoff, Ohio near Knoxdale (Figure 2). Sites 10, 11, and 12 were on the Maumee River, Ohio. Photographs 1 and 2 show the Maumee River at Site 10. Site 10 was the uppermost site (Figure 3), with Site 11 the intermediate site and Site 12 located at the existing U. S. Rt. 24 bridge (Figure 4). Site 13 was on Downy Ditch, Ohio (Figure 4) and Site 14 was on the Tiffin River, Ohio at the existing U. S. Rt. 24 bridge. Site 15 was on Steven's Ditch, Ohio near existing U. S. Rt. 24 (Figure 4).

Living mussels and dead shells were collected from all available habitat at each site. Where possible, habitat structure was examined by wading into the river, ditch or creek. A viewer was used in shallow water and ^{wading} ~~nodding~~ was employed in deeper water. Middens (mostly muskrat middens) were excavated where ever they were found (Photograph 3). All sampling was performed on 4-6 September, 1999 during low water conditions and all living unionids found were returned to the river following identification. A canoe was used in the Tiffin and Maumee rivers to access all of the river areas which might potentially be impacted by this project. Dead shells were collected and taken to the laboratory for identification. These shells were counted and determined to be freshly dead (less than one year old) or weathered or subfossil shells (greater than 20 years old). The freshly dead shells were included with living mussels to indicate an extant population of the mussel at the site while weathered and subfossil shells were counted together and indicated only historical records for these species.

Should put in the * here?

Results

Table 1 identifies the state significant species of freshwater mussels collected from the vicinity of the U. S. Rt. 24 project. Of these species, only the purple pimpleback (*C. tuberculata*) (Photograph 5) and the deerto (*T. truncata*) (Photographs 3 & 4) were found alive or as freshly dead shells. These two species are the only state significant species of mussels thought to currently exist in the corridor of this study. The purple pimpleback was fairly common upstream of the U. S. Rt. 24 bridge over the Tiffin River (Figure 4 and Table 2) and at the lowermost site on the Maumee River (Site 12 at the existing U. S. Rt. 24 bridge). This species was found in stable sand and gravel substrate in one to two feet of water. The deerto was extremely abundant at all sites on the Maumee River (Figures 3 & 4 and Table 2) but was also collected from the lower Tiffin River. It could be found in all types of habitats from silt and sand to cobble and boulders. Dead shells of this species were often very abundant in muskrat middens along the banks of the Maumee River (Photograph 3).

Table 2 demonstrates that 27 species of mussels were collected during the current study. All of the tributaries examined supported (or used to support) populations of three or fewer species while the Maumee and Tiffin rivers support a more abundant fauna. Two streams (ditches) examined were devoid of mussels; Grover Ditch in Indiana, and Dowe Ditch in Ohio. Both ditches had a permanent flow regime, but both were noticeably polluted by failing septic systems. Organic pollution of this type usually reduces oxygen levels to such a low level, especially during the summer months, that any mussel that does become established in the stream is lost to asphyxiation. Neither ditch could support mussels given their current level of water quality.

Of the remaining streams and ditches examined, all but Marsh Ditch, Indiana supported populations of living mussels. Gar Creek, Indiana, Viland Ditch, Indiana, Litzenberg Ditch, Indiana, South Creek, Ohio, North Creek, Ohio, Zuber Cutoff, Ohio, and Steven's Ditch, Ohio supported from one to three species. In some cases, the stream was completely dry except for a bridge pool where the living or freshly dead shells were found (South and North creeks). In other cases, the stream had a permanent flow regime, but provided habitat for only a limited number of species, usually headwaters species such as the creek slippershell (*Anodontoides ferussacianus*) and the lilliput shell (*Toxolasma parvus*). The largest number of living mussels collected from any of the tributary streams examined during this study came from Steven's Ditch. Here the common floater (*Pyganodon grandis*) is abundant in the pool upstream of the railroad tracks south of existing U. S. Rt. 24, in Defiance. However, the stream upstream of this ponded area was dry in early September during this study.

Only the Maumee and Tiffin rivers supported a diverse mussel community within the study area (Table 2). Even in these rivers, however, it was apparent that the community present today was much different than the community present 100 or 200 years before. Most of the intolerant species such as the clubshell (*P. clava*) (Photograph 7) and the northern riffleshell (*E. t. rangiana*) (Photograph 8) have been extirpated from the two rivers. The only evidence of their former abundance is the large number of old

dead, weathered and subfossil shells of these species. Still the Maumee River does support a large and diverse fauna of mussels.

Of the three sites examined for mussels on the Maumee River, Site 11 (see Figure 3 and Table 2) supported the widest variety of mussel species and the largest populations of these species. A total of 19 species of mussels was collected at this site. Five of these species were only of historic interest (the threeridge - *Amblema plicata*, the purple pimpleback - *C. tuberculata*, the clubshell - *P. clava*, the spike - *Elliptio dilatata*, the round hickorynut - *Obovaria subrotunda*, and rainbow shell - *Villosa iris*) since they were collected only as weathered or subfossil shells. Still one specimen of the round pigtoe (*Pleurobema sintoxia*) was found along with hundreds of specimens of the deertoe (*T. truncata*). These two species are of special concern in Ohio. Other common species at this site were the white heelsplitter (*Lasmigona complanata*), the pimpleback (*Quadrula pustulosa*), the mapleleaf (*Quadrula quadrula*), the fragile papershell (*Leptodea fragilis*), and the pink heelsplitter (*Potamilus alatus*). None of these species are particularly rare in the state, and some, such as the white heelsplitter, the fragile papershell, and the pink heelsplitter appear to be increasing their numbers throughout Ohio as a response to the slower water and more abundant fine sediments found in our rivers today.

Sites 10 and 12 on the Maumee River (Figures 3 & 4) supported similar communities of mussels (Table 2). Those species which were most abundant at Site 11 were the dominant species at these two sites as well, however the Wabash pigtoe (*Fusconaia flava*) was more abundant at Site 10 and Site 12 than at Site 11. The only other significant difference, was the occurrence of the purple pimpleback at the existing U. S. Rt. 24 bridge crossing over the Maumee River. Otherwise, the communities of mussels at all three sites was fairly uniform. No S.N.

The Tiffin River once supported a diverse unionid fauna, as the large number of species collected at Site 14 indicates (Table 2). However, many of these species were only found as old dead shells. Of the 17 species of mussels found in the Tiffin River in the vicinity of the U. S. Rt. 24 bridge, only seven were found to have extant populations in the river. The occurrence of a rather large population of the purple pimpleback (*C. tuberculata*), upstream of the existing bridge, was unexpected. In this case, the individuals were found in stable sand and gravel substrate near the center of the channel. Otherwise, the mussel community of the lower Tiffin River was dominated by species often found in modified habitats. Only a few individuals were found from the existing bridge, downstream, where the river is backed up behind the dam on the Maumee River in Defiance.

Endangered Species

As proposed this project will have no impact on federal or state listed endangered mussel species. Although shells of the clubshell (*P. clava*) and the northern riffleshell (*E. t. rangiana*) were found in the Maumee River and/or Tiffin River, no freshly dead shells or living individuals were found. It is apparent that these species no longer occur in the Maumee and Tiffin rivers at these sites. The U. S. Fish and Wildlife Service (1993) concluded that these species were extirpated from both rivers. Of the state significant why?
2 or?

species, only the deerto (*T. truncata*) and the purple pimpleback (*C. tuberculata*) were found alive. The round pigtoe (*P. sintoxia*) was found as a dead shell at Site 11 on the Maumee River. The deerto was found to occur in both the Maumee River (where it was the dominant species collected) and in the Tiffin River. The purple pimpleback was an abundant, but not overly common species, in the lower Tiffin River and was found in the Maumee River at Site 12. No other state significant species of mussel occur as extant populations in these rivers. Old dead shells of the following species were found; *Pleurobema sintoxia* (round pigtoe - Ohio special concern) from the Maumee and Tiffin river at Site 10 and Site 14, *Unio merus tetralasmus* (pondhorn - Ohio threatened) from North Creek, *Truncilla donaciformis* (fawnsfoot - Ohio threatened) from the Tiffin River, and *Ligumia recta* (black sandshell - Ohio threatened) (Photograph 6) from the Maumee River. *Obovaria subrotunda* (round hickorynut - Indiana special concern) was found in the Maumee River in Ohio but it is not listed in Ohio.

Impacts

Freshwater mussels are essentially immobile. Most species, once they detach from their fish host, fall to the bottom of a stream or lake and then remain in the same place throughout the remainder of their life. Construction projects, with instream work, impact these mussels if they are found in the path of the construction. These impacts are of two types; direct impacts (burying and crushing) and indirect impacts (siltation). Marking and Bill (1980) have reported that the downstream relocation of sediment tends to bury mussels and clog their gills. Burying kills the mussels outright with silt on the gills reduces gas exchange and interferes with feeding. Both direct and indirect impacts to the mussel communities of the Maumee and Tiffin rivers and the creeks and ditches are expected as a result of this project.

The major source of impact on the mussel communities of the smaller streams and ditches examined during this study will be direct. Mussels in these habitats will be buried or crushed during the construction phase of this project. The species which occur in these habitats within the study area are not overly sensitive to siltation impacts and so no secondary impacts are anticipated. However, if existing bridge pools and the other permanent water habitats found during this study are modified (including channelization), then the mussels living in these pools will be lost. Furthermore, since the species which occur in these reaches of stream are headwater species, not currently found in the Maumee River in the study area (the Maumee River at their mouths is too large), it is not anticipated that these species would have access to the stream after the construction has been completed and therefore these populations will not recover.

The mussel community within the Tiffin River will only be slightly impacted by the proposed project because the majority of the mussels found in this river were found approximately 200 meters upstream of the existing bridge. From the bridge to the mouth of the river, the Tiffin River is impounded by a dam on the Maumee River in Defiance. This reach of stream supported only a few individual mussels. Therefore, since the majority of impact here will be at the existing bridge downstream, no significant impact to the mussel community will result from this portion of the proposed project. If the alignment were to shift upstream to include the reach of stream where the purple

pimplebacks (*C. tuberculata*) were collected, then there would be a significant impact as this may be the last remaining population of this species in the river (Personal Communication 1999).

The Maumee River has a diverse mussel community within the project area, although it has a much different community than it once did. Still the river does support populations of the deerto (*T. truncata*) and, in its lower reaches, the purple pimpleback (*C. tuberculata*). Of the three sites examined, the uppermost reach of river (Site 10, Figure 3) and the lowermost site (at the existing U. S. Rt. 24 bridge at Site 12, Figure 4) supported the least diverse of the communities. Site 12 supported two special concern species; the deerto and the purple pimpleback. It is expected that construction at any of these sites will result in the elimination of mussels. However, since these same species are widely distributed throughout the reach of this study, it is not anticipated that the elimination of mussels from any reach would result in the elimination of these species from the study area. Since Site 11 is the most diverse it would take a longer period of time for this community to recover.

Literature Cited

- Anderson, R.M. 1991. Interim Report of the 1991 Mussel Survey of Fish Creek, Steuben County, IN, DeKalb County, IN, Williams County, OH. Indiana Department of Natural Resources, Division of Wildlife.
- Cummings, K.S., C.A. Mayer, L.M. Page, and J.M.K. Berlocher. 1987. Survey of the Freshwater Mussels (Mollusca: Unionidae) of the Wabash River Drainage, Phase I: Lower Wabash and Tippecanoe Rivers. Illinois Natural History Survey, Section of Faunistic Surveys and Insect Identification, Technical Report 1987(5).
- Cummings, K.S., C.A. Mayer, and L.M. Page. 1988. Survey of the Freshwater Mussels (Mollusca: Unionidae) of the Wabash River Drainage, Phase II: Upper and Middle Wabash River. Illinois Natural History Survey, Section of Faunistic Surveys and Insect Identification, Technical Report 1988(8).
- Fuller, S.L.H. 1974. Clams and mussels (Mollusca:Bivalvia). Pp 215-273 in: C.W. Hart, Jr. and S.L.H. Fuller (eds.), Pollution ecology of freshwater invertebrates. New York, Academic Press.
- Hoggarth, M.A. 1986. The freshwater mussels (Unionidae) of the upper St. Joseph River basin within Ohio. Final report to the Ohio Department of Natural Resources, Division of Wildlife, Columbus, Ohio. 73 pp.
- Hoggarth, M.A. 1990a. The Unionidae of the Chagrin River: The remnant of a molluscan fauna. Ohio Journal of Science, 90(5):168-170.

- Hoggarth, M.A. 1990b. A study of the Unionidae of the Olentangy River above Columbus. Final report to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Columbus, Ohio. 27 pp.
- Hoggarth, M.A. 1991. A study of the Unionidae of the Little Beaver Creek system. Final report to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Columbus, Ohio. 30 pp.
- Hoggarth, M.A. 1992. The Unionidae and Corbiculidae of the Little Miami River system in southcentral Ohio. *Walkerana*, 6(16):247-293.
- Hoggarth, M.A. 1995-1996. The Unionidae (Mollusca:Bivalvia) of the Walhonding River, Coshocton County, Ohio, including the federally endangered catspaw (*Epioblasma obliquata obliquata*), fanshell (*Cyprogenia stegaria*), and clubshell (*Pleurobema clava*) mussels. *Walkerana*, 8(20):149-176.
- Hoggarth, M.A., D.L. Rice, and D.M. Lee. 1995. Discovery of the federally endangered freshwater mussel, *Epioblasma obliquata obliquata* (Rafinesque, 1820) (Unionidae), in Ohio. *Ohio Journal of Science*, 95(4):298-299.
- Hoggarth, M.A., D.L. Rice, and T.L. Groove. In press. The correlation of mussels with fish in the upper Blanchard River in Hardin and Hancock counties, Ohio, with special regard to the rayed bean (*Villosa fabalis*).
- Marking, L.L. and T.D. Bills. 1980. Acute effects of silt and sand sedimentation on freshwater mussels, pp. 204-211. In: J.L. Rasmussen, ed., *Proceedings of the Upper Mississippi River bivalve mollusks*. Upper Mississippi River Conservation Committee, Rock Island, Illinois.
- Meyer, E.R. 1974. Unionid Mussels of the Wabash, White, and East Fork White Rivers, Indiana. *The Virginia Journal of Science*, 25(1):20-25.
- Neves, R.J. 1987. Recent die-offs of freshwater mussels in the United States: An overview. Pp 7-18 in: R.J. Neves (ed.), *Proceedings of the workshop on die-offs of freshwater mussels in the United States*. Blackburg: Virginia Polytechnic and State University.
- Neves, R.J. 1993. A state-of-the-unionid address. Pages 1-10 in K.S. Cummings, A.C. Buchanan, and L.M. Koch, eds. *Conservation and management of freshwater mussels*. *Proceedings of a UMRCC symposium, 12-14 October 1992, St. Lewis, Missouri*. Upper Mississippi River Conservation Committee, Rock Island, Illinois.
- Personal Communication. 1999. Dr. G. Thomas Watters (completed at study of the Unionidae of the Tiffin River in 1999).

- Starrett, W.C. 1971. A survey of the mussels (Unionacea) of the Illinois River: A polluted stream. Illinois Natural History Survey Bulletin 30:268-403.
- U. S. Fish and Wildlife Service. 1993. Clubshell (*Pleurobema clava*) and Northern Riffleshell (*Epioblasma torulosa rangiana*) Recovery Plan. Hadley, Mississippi. 55 pp.
- Watters, G.T. 1988. A survey of the freshwater mussels of the St. Joseph River system, with emphasis on the federally endangered white cat's paw pearly mussel. Final Report to the Indiana Department of Natural Resources, Division of Fish and Wildlife. 127 pp.
- Watters, G.T. 1990. 1990 survey of the unionids of the Big Darby Creek system. Final Report to the Nature Conservancy, Ohio Chapter. 118 pp.
- Watters, G.T. 1992. Distribution of the Unionidae in south central Ohio. Malacology Data Net, 3(1-4):56-90.
- Watters, G.T. 1998a. Freshwater mussel surveys of the Big Darby Creek system in central Ohio. Ohio Biological Survey Notes, 1:19-24.
- Watters, G.T. 1998b. Freshwater mussels surveys of the Fish Creek system in Ohio and Indiana. Ohio Biological Survey Notes, 1:25-30.

Table 1. Historic and existing occurrence of state and federal significant species of mussels from the Maumee River and tributaries in the vicinity of U. S. Rt. 24.

Species	Common Name	Status (Federal/Ohio/Indiana)
<i>Cyclonaias tuberculata</i>	purple pimpleback	Ohio special concern
<i>Pleurobema sintoxia</i>	round pigtoe	Ohio special concern
<i>Pleurobema clava</i>	clubshell	Federal endangered
<i>Unio merus tetralasmus</i>	pondhorn	Ohio threatened
<i>Truncilla donaciformis</i>	fawnsfoot	Ohio threatened
<i>Truncilla truncata</i>	deertoe	Ohio special concern
<i>Obovaria subrotunda</i>	round hickorynut	Indiana special concern
<i>Ligumia recta</i>	black sandshell	Ohio threatened
<i>Epioblasma t. rangiana</i>	northern riffleshell	Federal endangered

Table 2. Mussels collected from Maumee River and tributaries in conjunction with the U. S. Rt. 24 project.

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	Ga. Groves	Marsh	Wetland	North	North	Zuber	MR	MR	MR	MR	MR	MR	MR	MR	MR	
<i>Uterbactia imbecillis</i>	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	
<i>Pyganodon g. grandis</i>	-	-	-	2	-	3	-	-	1	7	12	10	-	-	3	13
<i>Aridonitoides ferussacianus</i>	4	-	1*	2	-	-	1	-	1	-	-	-	-	-	-	-
<i>Elkoc</i>	-	-	-	-	-	-	-	-	-	3	17	19	-	-	-	-
<i>Alasmidonta marginata</i>	-	-	-	-	-	-	-	-	-	5	10	3	-	-	2	-
<i>Lasmigona costata</i>	-	-	-	-	-	-	-	-	1	25	100	50	-	-	3	-
<i>Lasmigona complanata</i>	-	-	-	-	-	-	-	-	-	-	1*	1*	-	-	1*	-
<i>Amblema plicata</i>	-	-	-	-	-	-	-	-	-	-	117	59	-	-	5	-
<i>Quadrula pustulosa</i>	-	-	-	-	-	-	-	-	-	105	103	51	-	-	1*	-
<i>Quadrula quadrula</i>	-	-	-	-	-	-	-	-	-	100	103	51	-	-	1*	-
<i>Cyclonaias tuberculata</i>	-	-	-	-	-	-	-	-	-	-	2*	1	-	-	10	-
<i>Fusconaias flava</i>	-	-	-	-	-	-	-	-	-	101	11	53	-	-	1*	-
<i>Pleurobema sintoxia</i>	-	-	-	-	-	-	-	-	-	1*	1	-	-	-	1*	-
<i>Pleurobema clava</i>	-	-	-	-	-	-	-	-	-	2*	5*	1*	-	-	1*	-
<i>Elliptio dilatata</i>	-	-	-	-	-	-	-	-	-	-	2*	1*	-	-	1*	-
<i>Unio tetrasmus</i>	-	-	-	-	-	-	1*	-	-	-	-	-	-	-	-	-
<i>Actinonaias l. carinata</i>	-	-	1*	-	-	-	-	-	-	1*	-	1*	-	-	1*	-
<i>Leptodea fragilis</i>	-	-	-	-	-	-	-	-	-	102	106	106	-	-	5	-
<i>Potamilus alatus</i>	-	-	-	-	-	1	-	1	-	106	103	103	-	-	2	-
<i>Truncilla donaciformis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1*	-
<i>Truncilla truncata</i>	-	-	-	-	-	-	-	-	-	1367	237	152	-	-	9	-
<i>Toxolasma parvus</i>	-	-	1*	1	1	1	-	-	-	-	-	-	-	-	-	-

* collected as
Wearmouth
20+ years
not extant

Table 2. Mussels collected from Maumee River and tributaries in conjunction with the U. S. Rt. 24 project. - Continued

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>found</i> <i>Obovaria subrotunda</i>	-	-	-	-	-	-	-	-	-	-	1*	-	-	-	-
<i>flat sandy</i> <i>Ligumia recta</i>	-	-	-	-	-	-	-	-	-	-	-	1*	-	-	-
<i>rainbow</i> <i>Villosa iris</i>	-	-	-	-	-	-	-	-	-	-	2*	-	-	-	-
<i>Fat mucket</i> <i>Lampsilis r. luteola</i>	-	-	-	-	-	-	-	-	-	3	11	11	-	1	-
<i>low sandy</i> <i>Lampsilis ventricosa</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	1*	-
<i>black</i> <i>Epioblasma t. rangiana</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	1*	-
Total # Species	1	0	3	3	1	3	2	2	3	15	19	16	0	17	1
# Live/Fresh Specimens	4	0	0	5	1	5	1	2	3	694	829	618	0	40	13
# Weathered/Subfossil	0	0	3	0	0	0	1	0	0	4	13	4	0	10	0
Total # Specimens	4	0	3	5	1	5	2	2	3	698	842	622	0	50	13

1 = Gar Creek, Indiana 2 = Grover Ditch, Indiana 3 = Marsh Ditch, Indiana 4 = Viland Ditch, Indiana
 5 = Litzenberg Ditch, Indiana 6 = South Creek, Ohio 7 = North Creek, Ohio 8 = South Creek, Ohio
 9 = Zuber Cutoff, Ohio 10 = Maumee River, Ohio 11 = Maumee, River, Ohio 12 = Maumee River, Ohio
 13 = Dowe, Ditch, Ohio 14 = Tiffin River, Ohio 15 = Steven's Ditch, Ohio

Corridor A
 Corridor X
 @US24

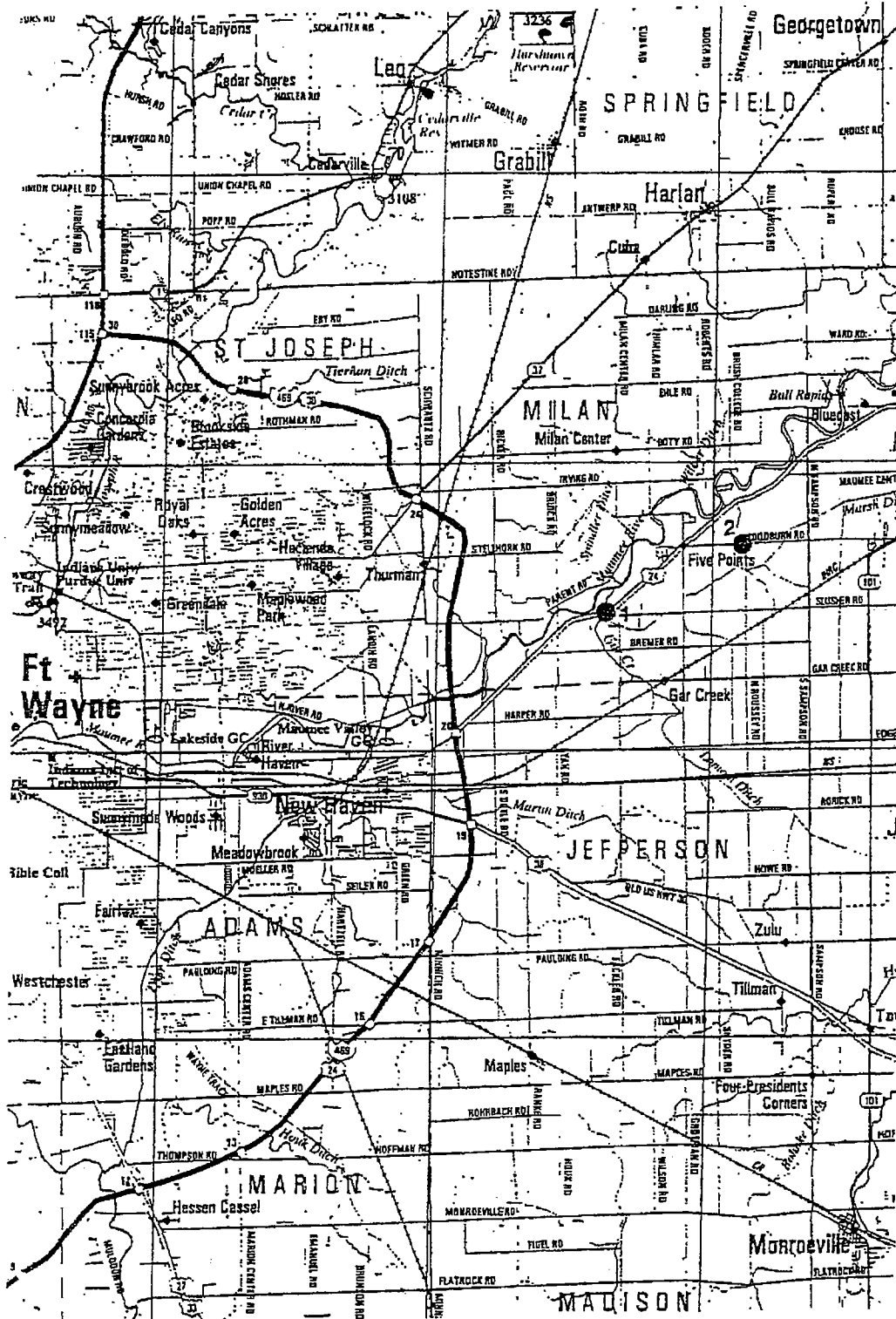


Figure 1. Map showing project locations for Site 1 on Gar Creek, Indiana and Site 2 on Grover Ditch, Indiana.

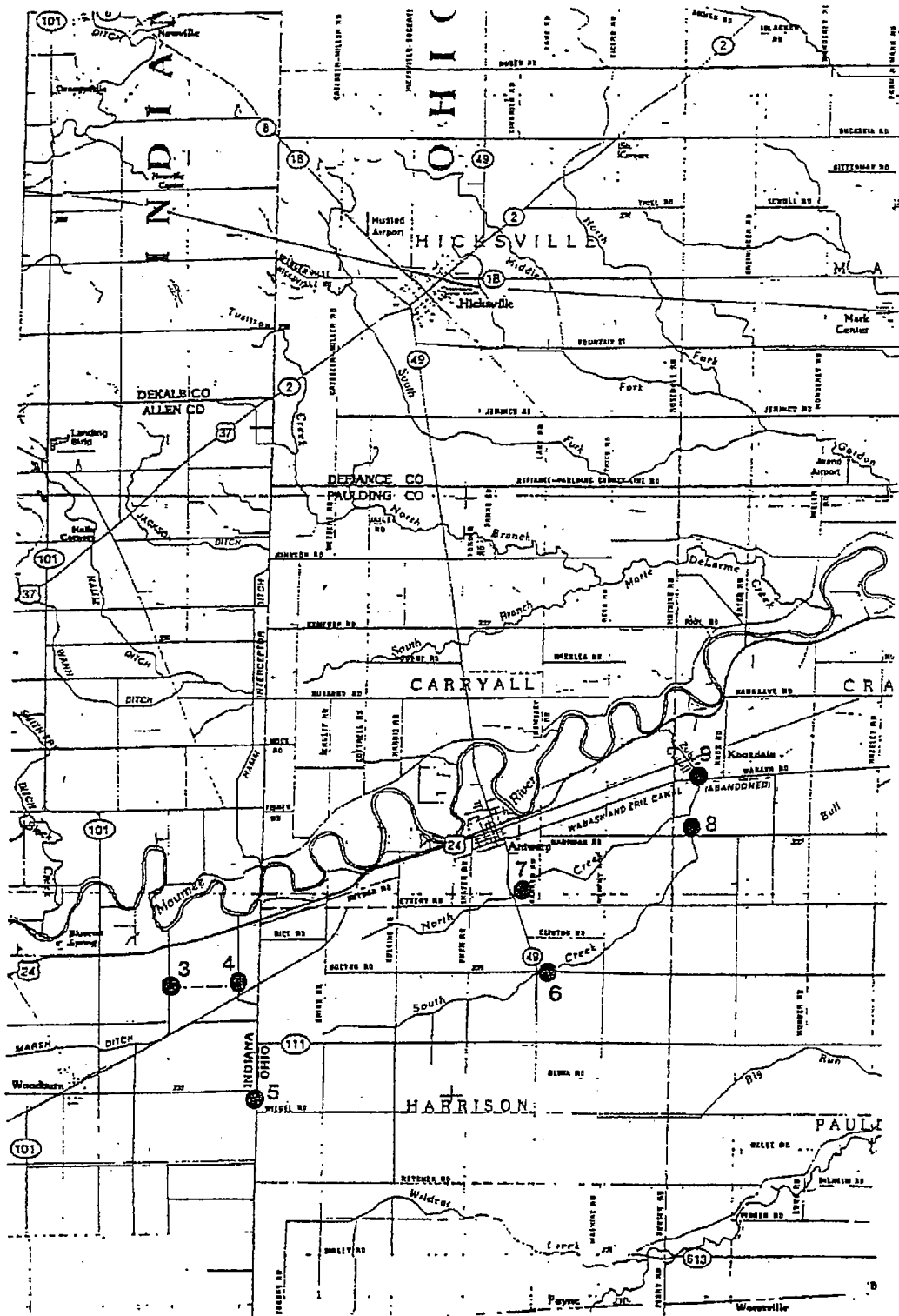


Figure 2. Map showing project locations for Site 3 on Marsh Ditch, Indiana, Site 4 on Viland Ditch, Indiana, Site 5 on Litzenberg Ditch, Indiana, Site 6 on South Creek, Ohio, Site 7 on North Creek, Ohio, Site 8 on South Creek, Ohio, and Site 9 on Zuber Cutoff, Ohio.

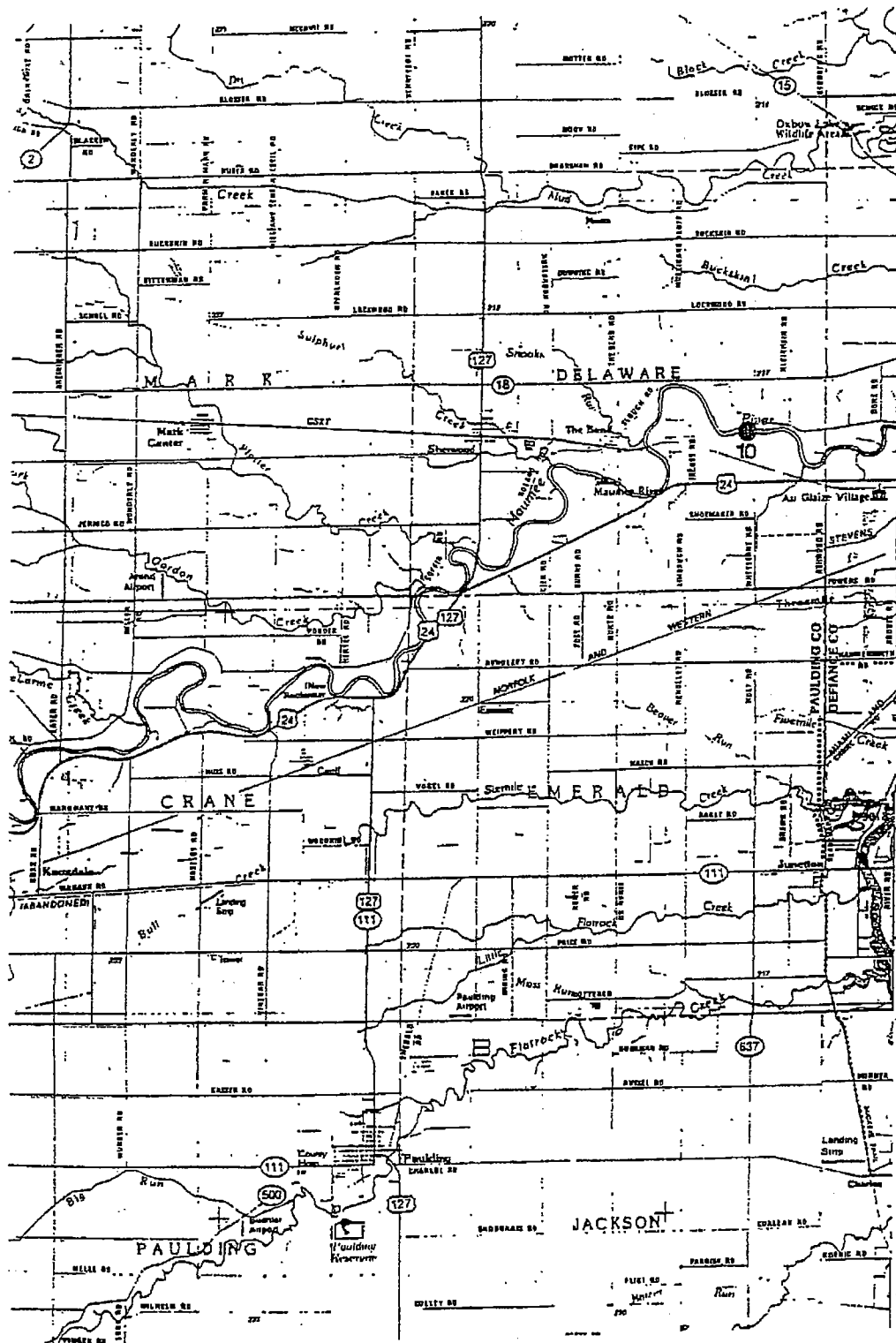


Figure 3. Map showing the location of Site 10 on the Maumee River at the uppermost station on the river.

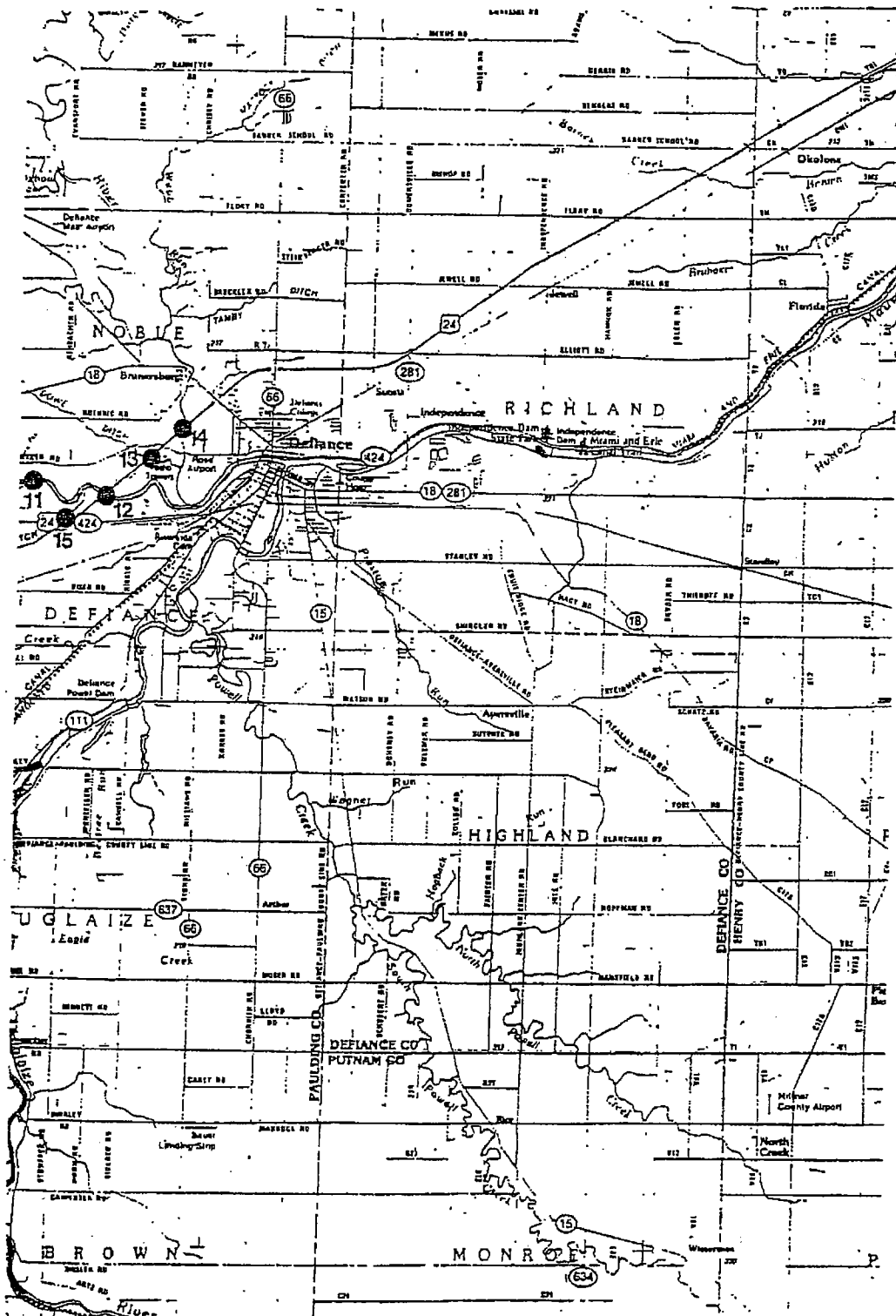
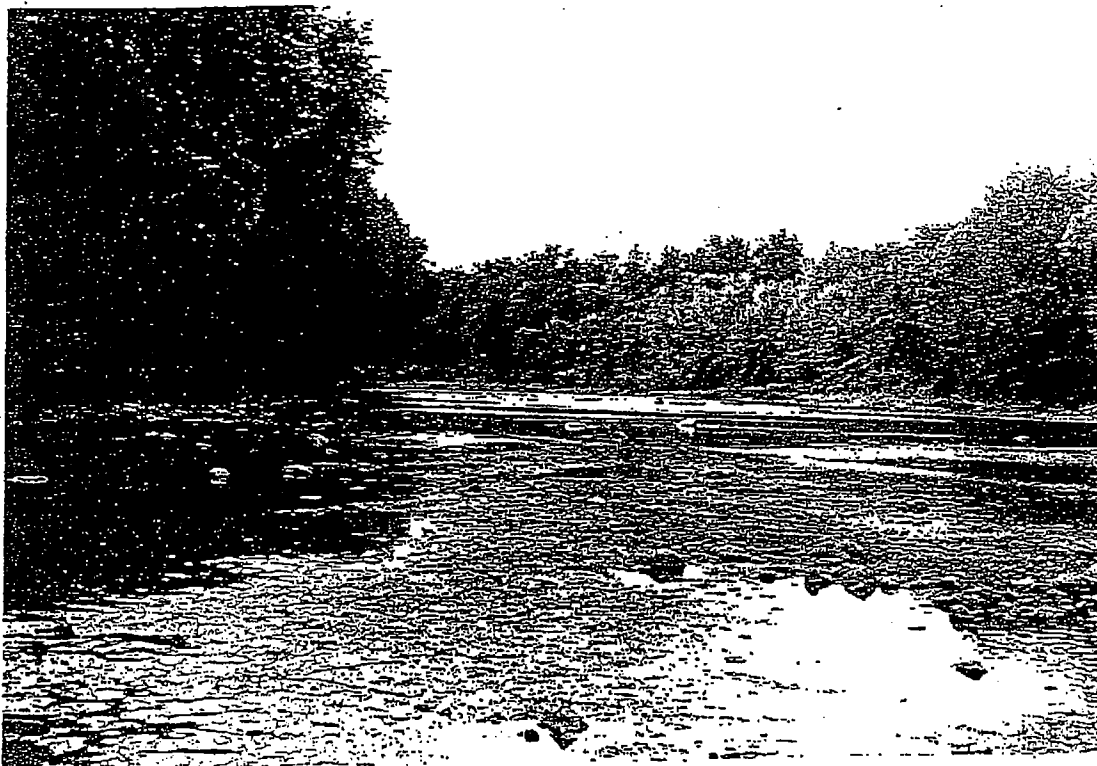


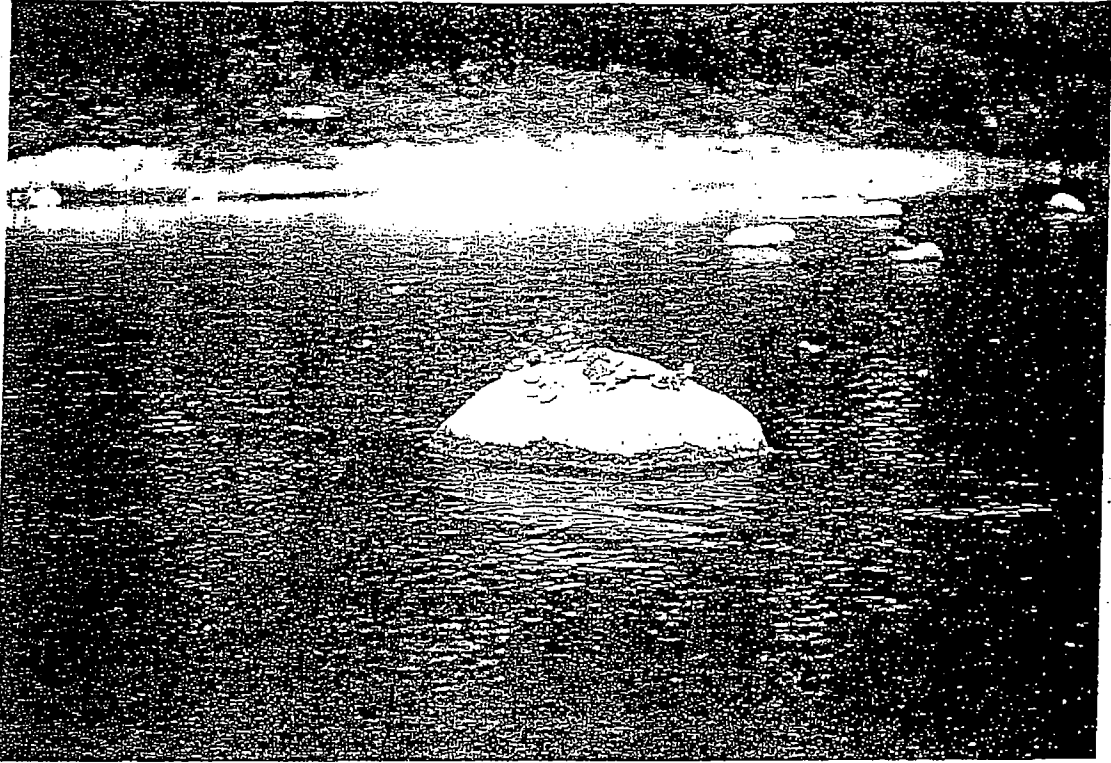
Figure 4. Map showing project locations for Site 11 on the Maumee River, Ohio, Site 12 on the Maumee River, Ohio, Site 13 on Dowe Ditch, Ohio, Site 14 on the Tiffin River, Ohio, and Site 15 on Steven's Ditch, Ohio.



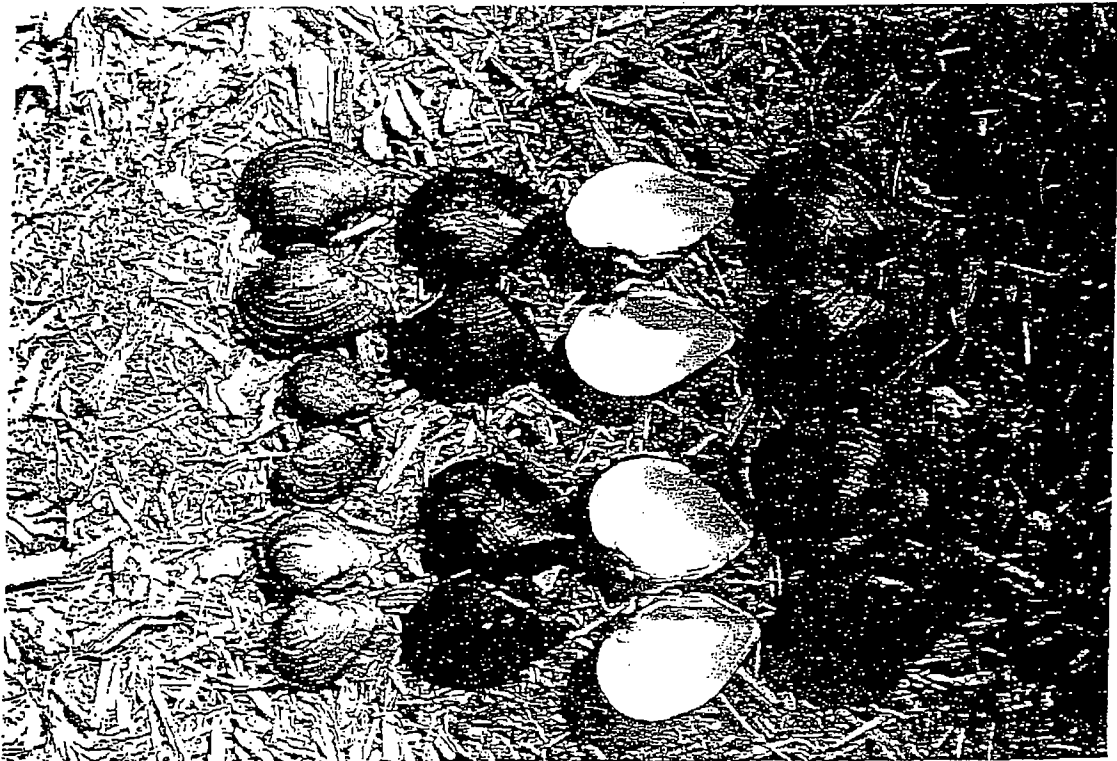
Photograph 1. The Maumee River upstream of the uppermost station at Site 10. Habitats in this river vary from shallow riffle to deeper pool habitats.



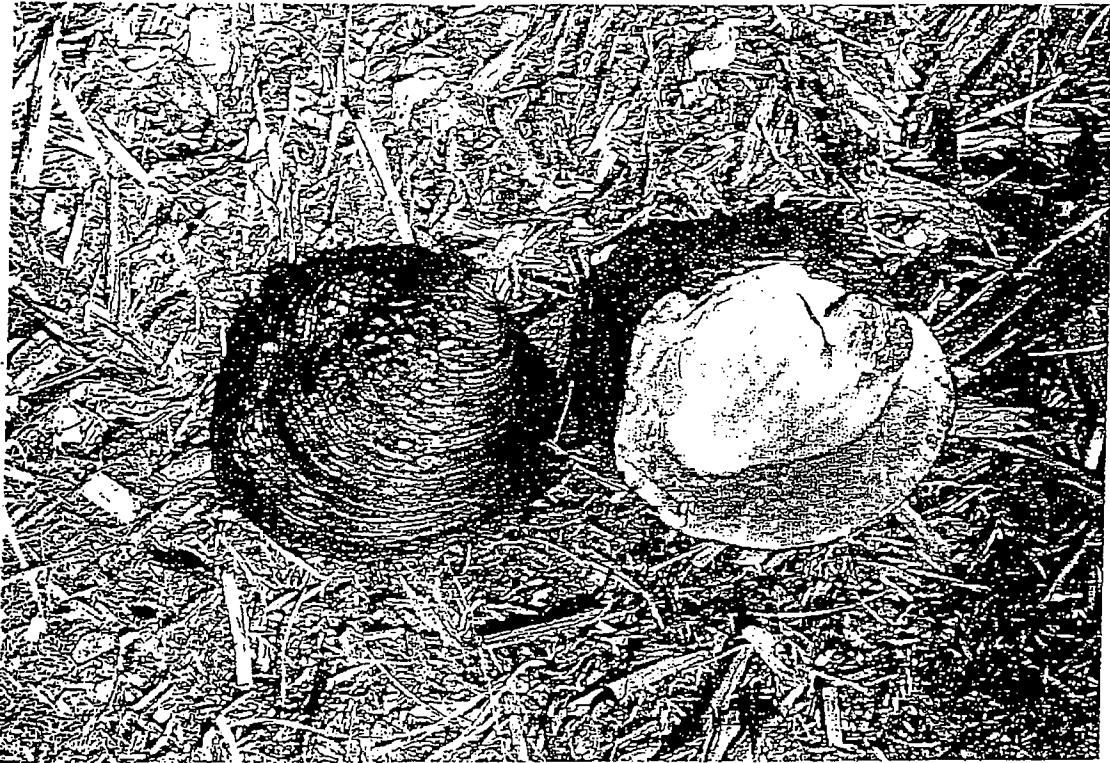
Photograph 2. The Maumee River downstream of the uppermost station at Site 10. This wide shallow river supports an abundant mussel fauna.



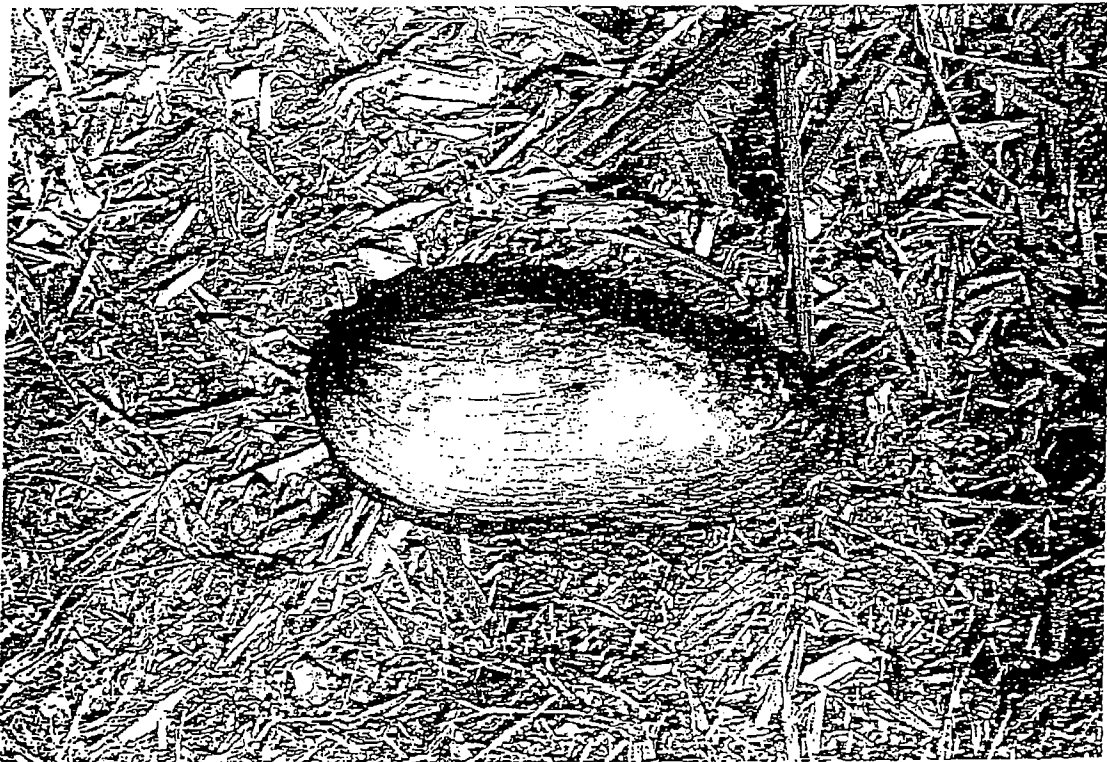
Photograph 3. Rock located in the middle of the Maumee River with a small midden of mostly deertoe mussels (*T. truncata*).



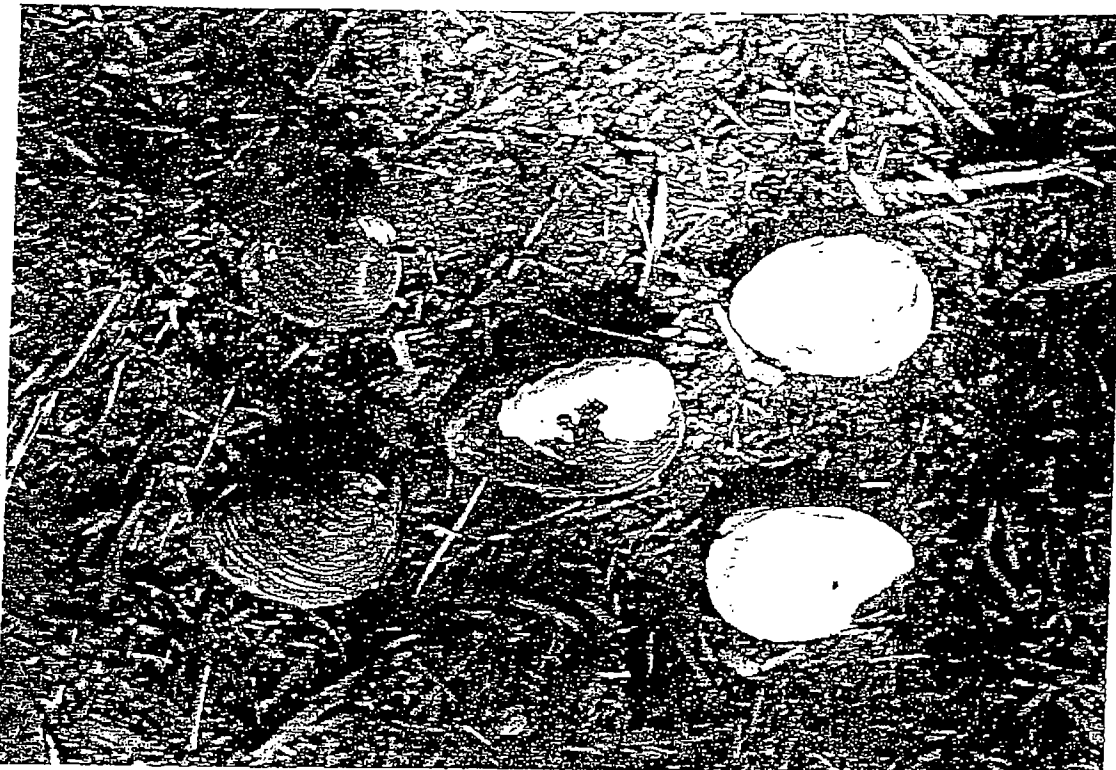
Photograph 4. Shells of the deertoe mussels (*T. truncata*). This highly variable mussel is very abundant in the lower Maumee River.



Photograph 5. Shell of the purple pimpleback (*C. tuberculata*). This species was found alive in the lower Tiffin River and at the lower station on the Maumee River.



Photograph 6. Shell of the black sandshell (*L. recta*) collected from the Maumee River. This Ohio threatened species was not found alive or as a freshly dead shell.



Photograph 7. Shells of the clubshell (*P. clava*) collected from the Maumee River. This federal endangered species was not found alive or as a freshly dead shell.



Photograph 8. Shell of the northern riffleshell (*E. t. rangiana*) collected from the Tiffin River. This federal endangered species was not found alive or as a freshly dead shell.



DIVISION OF NATURAL AREAS & PRESERVES

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George V. Voinovich • Governor
Donald C. Anderson • Director

January 20, 1999

MEC

Brian Swartz
Midwest Environmental Consultants, Inc.
1800 Indian Wood Circle
Maumee, OH 43537

MEC Received

JAN 26 1999

Dear Mr. Swartz:

I have reviewed our Natural Heritage Database for records within the project area involving the upgrade of U.S. Route 24. This project incorporates portions of the following quadrangle maps: Antwerp, Defiance East and West, Hicksville, Junction, Latty, Mark Center, Paulding, Payne, Sherwood, Woodburn North and South Quads. in Defiance and Paulding Counties.

The rare species data for this study area is in a file named OHDATA on the enclosed floppy disk. This file is in a comma delimited ASCII text format and contains thirty-three records. Information sheets that explain the various codes used in this file along with additional file information are also enclosed.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that site. Please note that we inventory only high-quality plant communities and do not maintain an inventory of all Ohio wetlands. The Division of Wildlife has a statewide wetland inventory that may give you additional data. Their phone number is (614) 265-6300 or 1-800-WILDLIFE.

Please contact me at (614) 265-6409 if I can be of further assistance.

Sincerely,

Treva J. Knasel
Ecological Analyst
Division of Natural Areas & Preserves

ATTITUDE	LOC	DE	LAC	DATE	CLASS	FED	STATE	OCCNUM	SCINAME	COMNAME	MGAREA
410957N	0843021W	N	1988	SP				8	VERNONIA FASCICULATA	PRAIRIE IRONWEED	
411411N	0843945W	C	1988	PC				36	MAPLE-ASH-OAK SWAMP		
410411N	0844341W	C	1988	PC				18	FLOODPLAIN FOREST		
411419N	0842402W	N	1994	SA				3	MACROMIA WABASHENSIS		
411109N	0841513W	N	1965	SP				14	CYPRIPEDIUM CALCEOLUS VAR. PUBESCENS	WABASH BELTED SKIMMER	
411513N	0842224W	N	1987	SP				13	ARENARIA LATERIFLORA	LARGE YELLOW LADY'S-SLIPPER	THE TREE FARM
411654N	0841644W	N	1967	SP				12	CYPRIPEDIUM CALCEOLUS VAR. PUBESCENS	GROVE SANDWORT	
410345N	0844408W	C	1993	OT				80	TRUNCILLA TRUNCATA	LARGE YELLOW LADY'S-SLIPPER	
411418N	0843608W	C	1997	SA				27	GREAT BLUE HERON COLONY		
411738N	0841732W	N	1967	SA				5	HIODON TERGISUS	DEERTOE	
411333N	0842327W	C	1987	PC				2	BUR OAK SAVANNA	MOONEYE	
411728N	0841651W	N	1976	SA				42	CYCLONAIAS TUBERCULATA	PURPLE WARTYBACK	
410813N	0842551W	N	1974	OT				24	TURKEY VULTURE ROOST		
411402N	0843946W	C	1989	PC				6	FLOODPLAIN FOREST		
411113N	0842635W	C	1988	OT				48	TURKEY VULTURE ROOST		
411551N	0843306W	C	1991	SP				15	VERNONIA FASCICULATA	PRAIRIE IRONWEED	
410730N	0842446W	C	1987	PC				3	MAPLE-ASH-OAK SWAMP		
412059N	0842559W	N	1976	SP				1	CAREX RADIATA		
410906N	0843318W	C	1988	PC				17	FLOODPLAIN FOREST	RADIATE SEDGE	OXBOW LAKE WILDLIFE AREA
411517N	0843409W	C	1973	SA				43	CYCLONAIAS TUBERCULATA		
411236N	0844352W	C	1988	PC				34	FLOODPLAIN FOREST	PURPLE WARTYBACK	
411216N	0844252W	C	1987	SP				7	SMILAX HERBACEA VAR. LASIONEURA		
411246N	0844143W	C	1988	SA				2	ACCIPITER STRIATUS	PALE CARRION-FLOWER	
411500N	0844654W	N	1985	SA				21	CLONOPHIS KIRTLANDII	SHARP-SHINNED HAWK	
411235N	0842608W	C	1988	SP				9	VERNONIA FASCICULATA	KIRTLAND'S SNAKE	
411402N	0843946W	C	1981	OT				32	GREAT BLUE HERON COLONY	PRAIRIE IRONWEED	
410922N	0843230W	C	1988	PC				39	MIXED EMERGENT MARSH		
410524N	0843926W	C	1993	OT				81	GREAT BLUE HERON COLONY		
411417N	0843738W	C	1988	OT				49	TURKEY VULTURE ROOST		
410227N	0844536W	C	1988	PC				19	FLOODPLAIN FOREST		
411901N	0842433W	C	1976	SP				2	ARENARIA LATERIFLORA	GROVE SANDWORT	
411402N	0843946W	C	1981	SA				40	HEMIDACTYLUM SCUTATUM	FOUR-TOED SALAMANDER	
411959N	0844247W	N	1973	SA				4	MOXOSTOMA VALENCIENNESI	GREATER REDHORSE	

DIVISION OF NATURAL AREAS & PRESERVES
OHIO DEPARTMENT OF NATURAL RESOURCES
JANUARY 15, 1999

Natural Heritage Database Records for Midwest Environmental Consultants, Inc.

File Documentation

File Type: Comma delimited ASCII text

File Name: OHDATA

of Records: 33

Bytes: 2,258

Fields:

Quadrangle - name of 7.5 minute U.S.G.S. map

Locational Accuracy Code - see enclosed sheet

Latitude - degrees, minutes, seconds (xxxxxxN)

Longitude - degrees, minutes, seconds (0xxxxxxW)

Federal Status - see enclosed sheet

Ohio Status - see enclosed sheet

Occurrence Number - three digit number used to identify individual records

Scientific/Element Name

Common Name

Managed Area Name

...
DIVISION OF NATURAL AREAS & PRESERVES
OHIO DEPARTMENT OF NATURAL RESOURCES

ENDANGERMENT CODES

Federal Status Codes

LE = Legally Endangered
LT = Legally Threatened
PE = Proposed Endangered
PT = Proposed Threatened

CLASS CODES

SP = Special Plant
SA = Special Animal
PC = Plant Community
GF = Geological Feature
OT = Other Things

Ohio Status Codes

Animals (Assigned by the *Ohio Division of Wildlife*)

E = State Endangered
*T = Threatened
*S = Special Interest
*X = Extirpated from Ohio
No Status Listed = Animals without an Ohio status are included in the Natural Heritage inventory, but have not been assigned a state status by the *Division of Wildlife*.

Statuses for birds are based on *nesting* records and do not include migrating or wintering individuals.

Plants (Assigned by the *Division of Natural Areas & Preserves*)

E = State Endangered
T = State Threatened
*P = Potentially Threatened
*A = A species recently added to the inventory and/or a status has not yet been determined
*X = Presumed Extirpated - a species which has not been recorded from Ohio in the last 20 years

* Administrative Statuses - these are not legal designations

LOCATIONAL ACCURACY CODES

C = Exact Location
N = Accuracy is at most one square mile (≤ 1 square mile)
G = General Location; Accuracy is greater than one square mile (> 1 square mile)
P = Center of a Population with several collection points

APPENDIX C - CONCEPTUAL WETLAND AND STREAM MITIGATION PLAN

**Wetland and Stream Mitigation for the
USACE 404 Permit Application, Ohio EPA 401 Water Quality Certification
Application and Ohio EPA Isolated Wetland Permit Application
PAU/DEF-24-0.00/0.00 PID No. 18904**

Wetland Mitigation:

In order to comply with the wetland mitigation requirements for the PAU/DEF 0.00/0.00 project, ODOT has selected a potential wetland and stream mitigation site, known as the Plummer Property, located in the SE 1/4 of Section 29 and the N 1/2 of Section 32, Defiance Township, Defiance County (Exhibit 1).

The Plummer Property, which is located south of the existing US 24/SR 424 intersection, east of Krouse Road and north of the Maumee & Western Railroad, consists of two parcels, identified as 291-WD and 291-WD1 (Exhibit 2). Parcel 291-WD occupies 42 acres, which includes 33 acres of mature woodland, 7.6 acres of forested, Category 3 wetland, 4,328 feet of undisturbed streambed (Stevens Ditch and an unnamed tributary) and nine acres of agricultural land. The parcel also contains a small pond at the most downstream reach of Stevens Ditch.

Parcel 291-WD1 occupies 121 acres south of 291-WD. This portion of the property contains 92 acres of mature deciduous woodland, including 53 acres of forested Category 3 wetlands, and 29 acres of agricultural land. The northern portion of this wetland/upland complex drains into the wetlands located on Parcel 291-WD and eventually into Stevens Ditch. The southern portion of the parcel appears to drain to the south, towards the Maumee & Western railroad. Approximately 26 acres of the farmed portion of the property lies west of and adjacent to the 92-acre woodland. The remaining 3 acres of farmland lies on the east side of the woodlot.

Use of the Plummer property as a mitigation site for PAU/DEF 0.00/0.00 offers an opportunity to:

- Preserve approximately 61 acres of forested Category 3 wetlands and 72 acres of mature, forested, upland buffer;
- Restore approximately 24 acres of wetlands; and
- Preserve approximately 4,328 feet of undisturbed stream channel, including 3,268 feet of Stevens Ditch and 1,060 feet of unnamed tributary.

Characterization of Wetland Restoration Site:

As part of this wetland mitigation plan, ODOT proposes to restore approximately 26 acres of wetlands on farmland located west of the woodland on Parcel 291-WD1 within the existing woodlot. Several factors make this portion of Parcel 291-WD1 suitable for wetland restoration. First, the Defiance County Soil Survey indicates that this portion of the property contains two predominant soil types:

1. Paulding clay (Pa); and
2. Roselms silty clay on 0 to 3 percent slopes (RsA)(Exhibit 2).

Paulding clay is hydric. Roselms silty clay on 0 to 3 percent slopes is non-hydric, but is known to contain hydric inclusions of Paulding soils on broad flats.

Table 1 contains a comparison of Paulding clay to Roselms silty clay, to illustrate their similarities. Both soils vary only slightly with respect to the percent clay content and percent organic matter within the uppermost seven to nine inches of the soil profile, as well as the depth of the seasonal high water table. Because of its lower position in the landscape, Paulding clay tends to have slightly more organic matter and a wider range of clay content in the surface layer of the soil. The seasonal high water table is also deeper in Roselms silty clay, again, due to the higher position of Roselms silty clay in the landscape. Below seven to nine inches, both soils have similar clay contents and identical permeabilities, making them similarly suited as soils for the development of wetlands on the property. Both soils also have perched seasonal high water tables, due to their low permeabilities.

Table 1
Comparison of Paulding Clay and Roselms Silty Clay, 0- 3 percent slopes

Soil Type	Depth (inches)	Clay Content (percent)	Permeability (inches/hour)	Organic Matter (percent)	High Water Table
Paulding clay (Pa)	0-7	40-65	0.06-0.2	3-5	+1.0 - 0.5 feet Perched Jan. - April
	7-33	60-80	<0.06		
	33-60	60-75	<0.06		
Roselms silty clay, 0-3 percent slopes (RsA)	0-9	40-50	0.06-0.2	2-3	1.0 - 2.5 feet Perched Jan.- April
	9-32	60-80	<0.06		
	32-60	60-75	<0.06		

Second, existing topography on the proposed wetland restoration site is relatively flat, with elevations varying from about 709 to 711 feet above mean sea level (Exhibit 4). The highest elevations occur along the southern end of the parcel. The lowest elevations occur in the northernmost corner of the site, in a shallow ravine that carries surface runoff northward to Stevens Ditch. The flat topography and the low-permeability soils combine to create drainage problems on the site. In fact, runoff and percolation of surface water is so slow that systematic tiling is not effective. A review of records at the Defiance Soil and Water Conservation District Office revealed no records of systematic tiling on the property (personal communication from Jeff Ankney, May 24, 2004). Instead of tiling, landowners have excavated several shallow swales to carry water off the farm field and into Stevens Ditch.

Due to the flat nature of the area, insufficient topographic information currently exists on a USGS topographic map of the site, which displays 5-foot contours, to allow for a detailed estimation of the contributing watershed area to the agricultural field. However, in the adjacent wooded area to the east, 53 of the 92 acres of land were determined to be wetland by The Mannik & Smith Group, Inc. This equates to approximately 58 percent of the total woodland area on Parcel 291-WD1. The USGS topographic map of the site does suggest that the topography of the agricultural field is similar to the adjacent woodland (Exhibit 1). The Defiance County Soil Survey also suggests that these two areas are similar to one another with respect to soil type. These similarities, combined with the known drainage problem on the site, suggest that wetlands can be successfully restored by disrupting the drainage swales that currently exist on the site.

Table 2 contains a summary of wetland impacts in Ohio, as well as the required on-site mitigation ratios and the number of acres required if preservation is used for mitigation of wetland impacts. Based on this information, approximately 37 acres of Category 3 wetlands will need to be preserved. Since as many as 53 acres of Category 3 wetlands exist in Parcel 291-WD1 and eight acres exist in Parcel 291-WD, the use of the Plummer property will provide adequate Category 3 wetland for preservation.

**Table 2
Summary of Isolated and Non-Isolated Wetland Impacts and
Required Acreage for Preservation**

Wetland Type	Category	Acreage Impacted	On-Site Mitigation Ratio	Preservation Acreage Required ²
Forested	3	2.95	2.5:1	8.85
Forested	2	8.63	2.0:1	17.26
Non-forested	3	0.16	2.0:1	0.32
Non-forested	2	10.20	1.5:1	10.20
Non-forested	1	0.11	1.5:1	0.11
	-	22.05	-	36.74

²Based on the following formula:

$$p = [(lmr - 1) \times 2] \times n, \text{ where}$$

p = minimum number of acres of wetlands required to be preserved

lmr = left side of on-site mitigation ratio

n = number of acres impacted

In addition to preserving approximately a minimum of 36.74 acres of Category 3 wetlands, ODOT will be required to restore at least 22.05 acres of wetlands. Approximately 26 acres of wetlands can be successfully restored on the agricultural portion of the property and within the existing woodland (via the creation of vernal pools).

Conceptual Wetland Design:

The wetland restoration site will be developed by regrading the existing agricultural field located west of Parcel 291-WD1 to capture and hold surface water on the parcel (Exhibits 3 and 4). The shallow drainage swales that currently exist on the field will be eliminated and shallow depressional areas will be created throughout the site. Shallow berms will be placed along the perimeter of the site, where necessary, to ensure that enough water is retained to develop a diverse wetland habitat on the property.

During construction, topsoil will be removed from the site and stockpiled in an upland location. Subsoil excavated from the site will be utilized for construction of berms. Excess soil will be removed from the site. Topsoil will be placed back onto the site after the subgrade has been graded to the desired elevations. One outflow structure will be placed at the northern corner of the property, in an earthen berm, to regulate water levels in the wetland.

Vegetation will be planted in order to potentially create a Category 3 wetland that satisfies the mitigation requirements for the project. Species selected for the project will be native to the area

and will be similar to those found in wetlands located in the adjacent woodlot and other high quality wetlands throughout the project area.

Vernal pools will also be created within the woodlot adjacent to existing Category 3 wetlands. Vernal pools with a maximum depth of 1 foot will be excavated in several strategically placed areas in the western half of the woodlot.

Erosion control and other Best Management Practices will be utilized during construction to minimize silt-laden runoff from leaving the site. For example, the wetland seed mix will contain an annual cover crop to minimize erosional losses immediately after construction. Woody vegetation will help anchor the soil and increase not only the possibility of success but speed up the development of the community.

Based on the mitigation credits proposed for HAN/WAY-3.0-3.0/0.00, we have assumed that 1:1 credit (credit:area impacted) will be given to new wetland acreage, including vernal pool creation, 0.5:1 credit will be given for preservation of Category 3 wetlands and 0.25:1 credit will be given for forested upland buffer protection. Table 3 provides a summary of potential wetland mitigation credits that are available at the Plummer property, when both parcels are considered for preservation

**Table 3
Summary of Proposed Mitigation Credits**

Mitigation Type	Acreage	Ratio	Proposed Mitigation Credits
Wetland Creation	26	1:1	26
Wetland Preservation	61	0.5:1	30.5
Upland Buffer	72	0.25:1	18
Totals	159		74.5

Project Development:

Due to the presence of sufficient hydrology, suitable soil conditions and its proximity to a large (92 acres), mature woodland complex containing Category 3 wetlands and undisturbed stream channel, we predict that the proposed wetland restoration site will mature into a Category 3 mitigation wetland. Upon approval of this conceptual wetland mitigation plan by the regulatory agencies, final construction plans and specifications will be developed and incorporated into the highway construction plans for PAU/DEF 0.00/0.00.

Wetland Mitigation Monitoring:

Beginning the first year after completion of the wetland construction of the Plummer Pooled Wetland Mitigation Area, ODOT will monitor and submit annual monitoring reports for five years to the Ohio EPA and USACE. The monitoring reports will document wetland success/failure through the reporting of water levels, plant material establishment/survival, and color photographs from permanent photo locations established during the first year of monitoring.

Vegetation monitoring at the Plummer Mitigation Site will follow those methods described in the most current version of the Ohio EPA, Field Manual for the Vegetation Index of Biotic Integrity for Wetlands (Ohio EPA Technical Report WET 2004/9).

Summary:

For this project, ODOT will be required to mitigate approximately 22.05 acres of wetland impacts (20.03 acres of non-isolated wetlands and 2.02 acres of isolated wetlands). Based on existing conditions at the Plummer Property, a wetland mitigation plan has been developed that will achieve the following wetland mitigation goals:

- Preservation of approximately 61 acres of forested Category 3 wetlands (53 acres in Parcel 291-WD and eight acres in Parcel 291-WD1) and 72 acres of mature, forested, upland buffer; and
- Restoration of 26 acres of palustrine forested wetlands on what is now agricultural land

In addition to providing ample opportunity for wetland mitigation, preservation of Parcel 291-WD1 will allow for preservation of approximately 4,328 feet of undisturbed stream channel, including 3,268 feet of Stevens Ditch and 1,060 feet of unnamed tributary.

Stream Mitigation:

The general approach to reducing impacts to surface waters is to avoid and minimize impacts to the greatest extent possible, then to compensate for any unavoidable impacts. This project impacts a total of 7,944 feet of jurisdictional stream channel. Replacement ratios will be based on the quality and length of stream being impacted.

Avoidance to all surface waters would not be possible. Therefore, impacts to streams and rivers will be minimized during design and construction. Mitigation measures for stream impacts will include:

- Implementation of an Erosion and Sediment Control Plan.
- Construction of stormwater detention/treatment facilities to minimize the impact from highway contaminants on surface water quality.
- Properly sized and engineered culverts for stream crossings to minimize impacts attributed to flood height and flood duration.
- Culverted stream crossings, which are properly sized and engineered to provide unobstructed, continuous flow for fish and macroinvertebrates.
- Perpendicular stream crossings.
- Stream enhancement techniques such as creation of pool and riffle zones, planting stream-shading vegetation, construction of low-flow channels and pools and placing boulders and channel deflectors in unavoidable stream relocations.
- Utilization of BMP's in accordance with ODOT's *Construction and Materials Specifications* (2002).
- Use of conservation easements.

- Utilization of an environmental monitor during construction.
- Property acquisition for stream channel preservation.

Table 4 provides a summary of the proposed stream mitigation credits proposed for the construction of this project.

**Table 4
Proposed On-Site Stream Mitigation**

Proposed Mitigation Type	Length (ft)	Ratio	Proposed Credits (ft)
2-Stage Natural Channel Design	2,025	1:1	2,025
Preservation on Plummer Property	4,328	1:1	4,328
Conservation Easement on Maumee River (Smith Parcel)	4,932.02	1:1	4,932.02
Conservation Easement on Maumee River (Forrest Parcel)	273.7	1:1	273.7
Total Credits			11,558.72

ODOT has proposed a total of 11,558.72 feet of on-site stream mitigation to compensate for the 7,944 feet of jurisdictional stream impact resulting from this project. This equates to a 1.5:1 mitigation of these resources. More details of the proposed stream mitigation is provided below.

On-Site Natural Channel Design (Stevens Ditch):

The Preferred and Minimal Degradation Alternatives for the project include the incorporation of an on-site, two-stage natural channel design for a relocated portion of Stevens Ditch. Stevens Ditch is an Ohio EPA designated Warmwater Habitat (WWH) stream. This stream attained a QHEI score of 60.5 (July 2003), indicating Warmwater Habitat potential. It is a USGS mapped perennial stream. Proposed stream mitigation measures in this vicinity include the following:

Design Criteria: Rosgen (1999) stream classification and delineation criteria collected from an unmodified reach of Stevens Ditch located at the southwest end of the proposed relocated channel segment (just upstream of relocation) was used as the design goal for the constructed channel, since the stream at this location best represented the natural (non-disturbed), meandering and stable conditions of this feature in the project vicinity. Rosgen information for the existing channel is included in this Conceptual Stream and Wetland Mitigation Plan.

Design Features: Design features to be incorporated into the constructed channel for Stevens Ditch are presented on conceptual plans shown in the Conceptual Stream and Wetland Mitigation Plan in Exhibits 5 and 6. Key features include the following:

- Construction of 2,025 feet of a natural two-stage channel,
- Construction of gradual sloping "benches" (10:1 to 24:1 slopes) along the channel to provide for bankfull width; these gradual slopes will provide areas for hydrophytic vegetation to become established and habitat for biotic communities; vegetation planting along these slopes (see below) will also provide channel stability, cover and shading.
- Construction of riffle habitat at several locations along the constructed channel length (based on Newbury riffle design methodology),

- Use of erosion protection along outer banks at meander locations for channel stability, and
- The planting of native trees, shrubs and seeding along the constructed channel banks and benches; riparian planting will include four tree species (red maple, pin oak, American sycamore, black willow), one shrub (buttonbush) and will include seeding gradual sloping "bench" areas with ODOT low growing slope mix (ODOT CMS Supplement Spec 870, 3A); overtime, riparian replanting will provide cover and shading for the constructed channel and will provide bank stability and erosion protection.

Other Stream Mitigation (all impacted streams):

- a. Plummer Parcel Fee Simple Acquisition: The Plummer Property, which is located south of the existing US 24/SR 424 intersection, east of Krouse Road and north of the Maumee & Western Railroad, consists of two parcels, identified as 291-WD and 291-WD1 (Exhibits 1 and 2). Parcel 291-WD occupies 42 acres, which includes 33 acres of mature woodland, 7.6 acres of forested, Category 3 wetland, 4,328 feet of undisturbed streambed (Stevens Ditch and an unnamed tributary) and nine acres of agricultural land. The parcel also contains a small pond at the most downstream reach of Stevens Ditch.

Parcel 291-WD1 occupies 121 acres south of 291-WD. This portion of the property contains 92 acres of mature deciduous woodland, including 53 acres of forested Category 3 wetlands, and 29 acres of agricultural land. The northern portion of this wetland/upland complex drains into the wetlands located on Parcel 291-WD and eventually into Stevens Ditch. The southern portion of the parcel appears to drain to the south, towards the Maumee & Western railroad. Approximately 26 acres of the farmed portion of the property lies west of and adjacent to the 92-acre woodland. The remaining 3 acres of farmland lies on the east side of the woodlot. Use of the Plummer property as a mitigation site for PAU/DEF 0.00/0.00 offers an opportunity to:

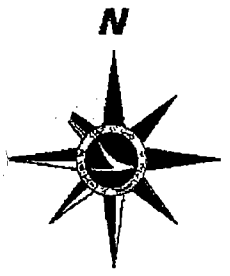
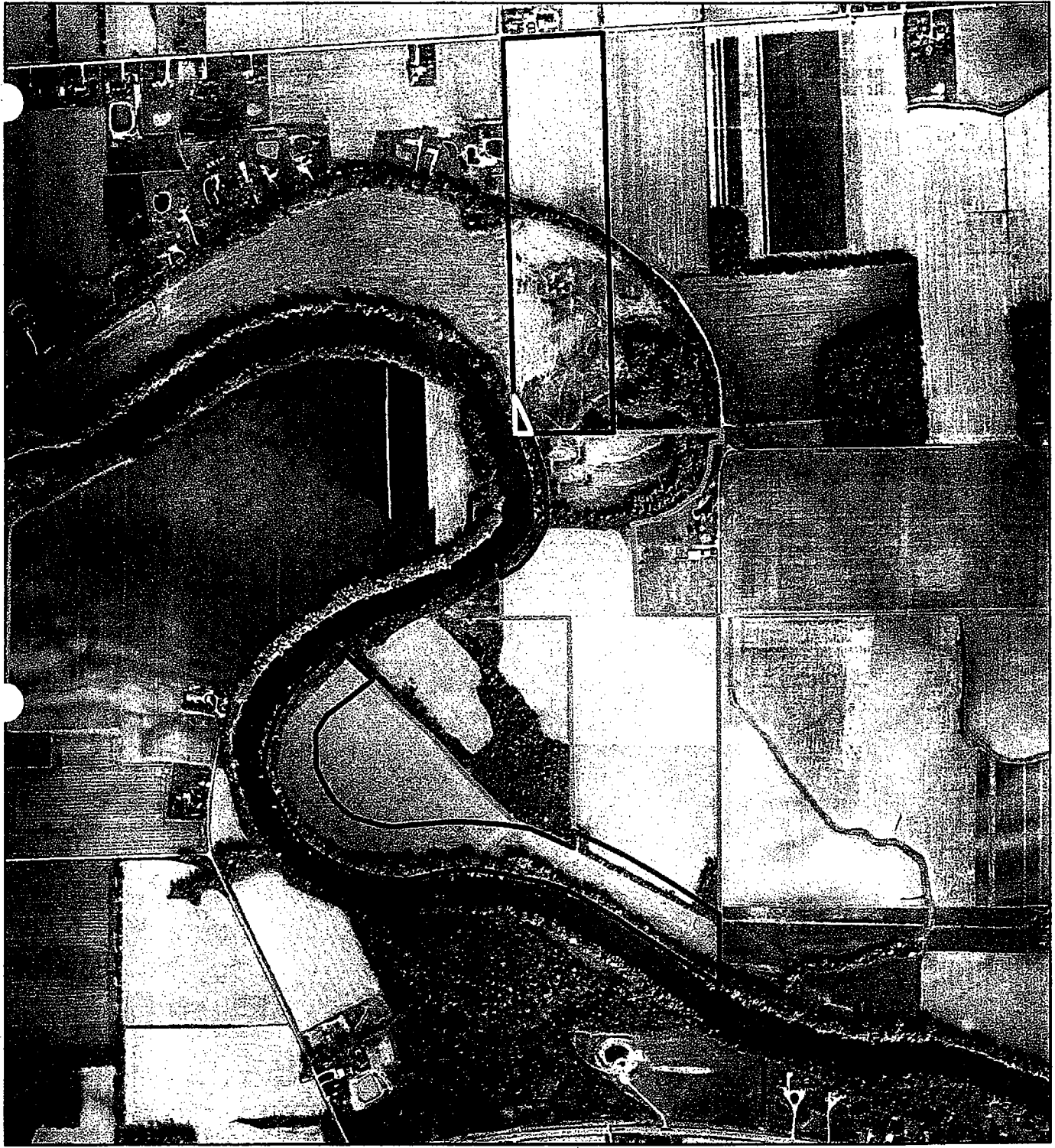
- Preserve approximately 61 acres of forested Category 3 wetlands and 72 acres of mature, forested, upland buffer;
- Restore approximately 26 acres of wetlands; and
- Preserve approximately 4,328 feet of undisturbed stream channel, including 3,268 feet of Stevens Ditch and 1,060 feet of unnamed tributary.

- b. Purchase of Conservation Easements from Willing Sellers: ODOT is currently negotiating the purchase of conservation easements from two willing sellers. This will effectively preserve, in perpetuity, a portion of the Maumee River riparian corridor, in Paulding County, Ohio (See Figure 8). The two conservation easements are described as follows:

1. Smith Parcel: The "Smith" conservation easement will consist of 4,932.02 lineal feet of riparian corridor located along the east bank of the Maumee River. The total area of the easement is 34.8 acres and consists of wooded riparian corridor and agricultural land, as indicated in Figure 8. The minimum width of this easement is 100 feet from the edge of the stream into the property, although the majority of the easement will be 400 feet wide, from the edge of the river into the property.

2. The "Forrest" conservation easement will consist of a 100 foot wide, 273.7-foot long segment of riparian corridor located along the east bank of the Maumee River, north of and adjacent to the "Smith" conservation easement. The total area for this easement will be 0.3 acre. Like the Smith conservation easement, this area will be preserved in perpetuity.

Together, the Smith and Forrest conservation easements will allow ODOT to preserve 5,205.72 lineal feet of riparian corridor along the State Scenic Maumee River. Combining this total with the amount of stream channel that ODOT will preserve on the Plummer Property (4,328 feet of stream channel) and the two-stage natural channel design (2,025 feet) raises the amount of preserved stream channel/riparian corridor to a total of 11,558.72 feet.



Forest Easement - Maumee River: 273.7 LF (.3 acres)

- Forest
- Smith Easement - Maumee River: 4,932.02 LF (34.8 acres)
- Smith

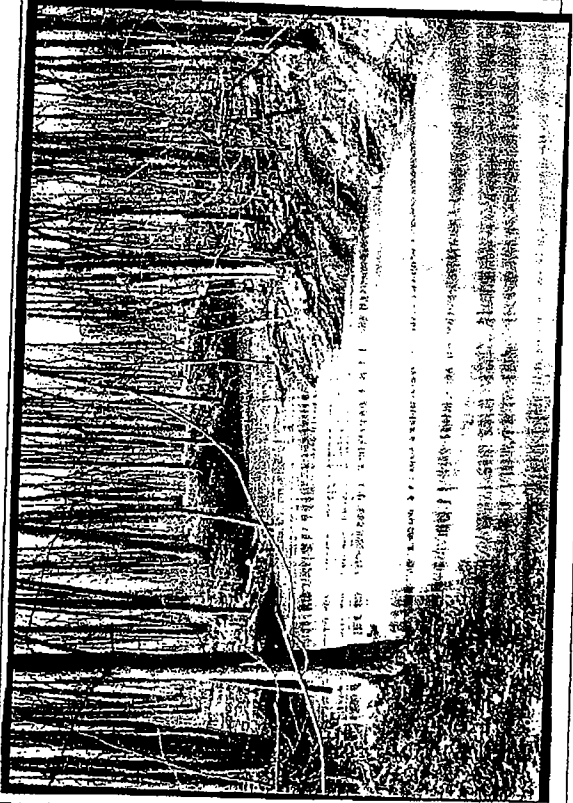
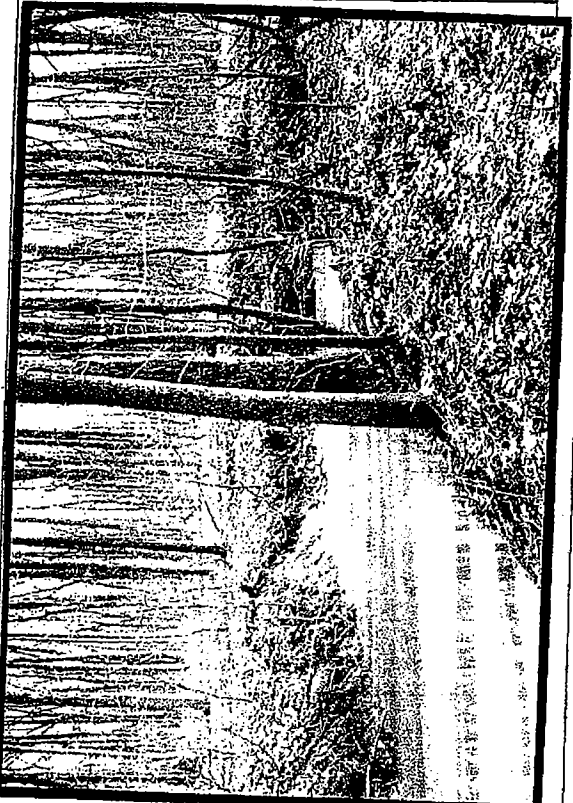
Grand Total = 5,205.72 LF

Ohio Department of Transportation
 Office of Aerial Engineering
 Stream Mitigation PAU/DEF 24
 PID 18904
 1602 West Broad St.
 Columbus, OH 43223
 May 17, 2005

FIGURE 8

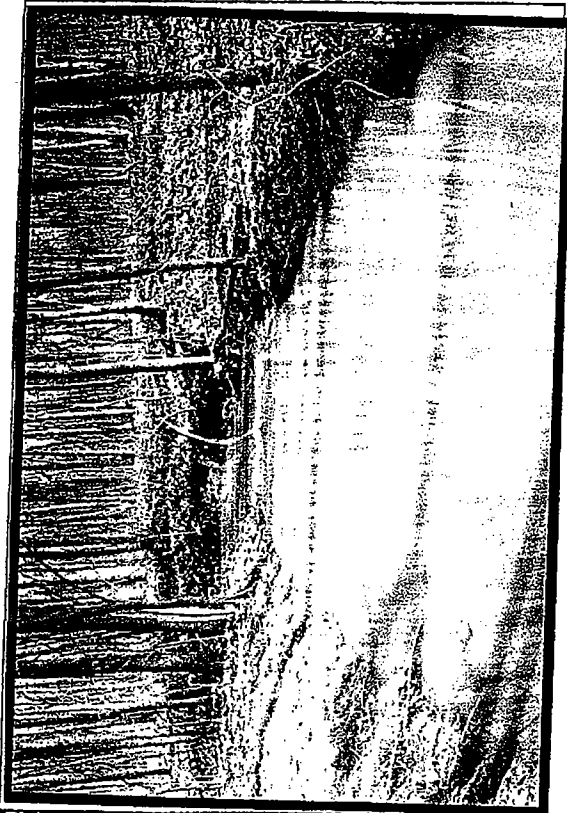

Rosgen Stream Reference Field Data Forms

Sample 1
TABLE 5-3. Reference reach field data form for stream classification.

REFERENCE REACH FIELD FORM STREAM CHANNEL CLASSIFICATION LEVEL II		STREAM TYPE: <u>Cc</u>	
STREAM NAME: <u>Steven's Ditch</u>	DRAINAGE AREA: <u>1.87</u> mi ²	BASIN NAME: <u>MAJONCE RIVER</u>	
OBSERVERS: <u>ME WWS (MSA)</u>	DATE: <u>11/30/04</u>	Sec. <u>29 E 22</u>	Qtr. <u></u>
LOCATION: <u>Approx. 2 miles West of Defiance on Us 24 Twp. 4N</u>	Rge. <u>4E</u>	Channel Slope <u>0.01</u> Ft/Ft	%
Bankfull Width <u>17.87</u> Ft. (W _{bf})	Bankfull Max Depth <u>2.56</u> Ft. (d _{max})	Valley Slope <u></u> Ft/Ft	%
Bankfull Mean Depth <u>2.16</u> Ft. (d _{av})	Flood Prone Area Width <u>121.36</u> Ft. (W _{fp})	SINUOSITY (Stream Dist/Valley Dist.) <u>1.3</u>	
WIDTH/DEPTH Ratio <u>8.27</u>	ENTRENCHMENT Ratio <u>6.8</u>		
Channel MATERIALS: (Pebble Count)	D15 <u></u> mm	D50 <u></u> mm	D84 <u></u> mm
	D34 <u></u> mm	D95 <u></u> mm	
			

LEVEL II: THE MORPHOLOGICAL DESCRIPTION

Sample 2
TABLE 5-3. Reference reach field data form for stream classification.

REFERENCE REACH FIELD FORM STREAM CHANNEL CLASSIFICATION LEVEL II		STREAM TYPE: <u>Clc</u>	
STREAM NAME: <u>Steven's Ditch</u>		DRAINAGE AREA: <u>1.7/10.2</u>	
OBSERVERS: <u>AME, WWS (NISE)</u>		BASIN NAME: <u>Hawnee River</u>	
LOCATION: <u>Approx. 2 miles West of Defiance, Co. US 24</u>		DATE: <u>11/30/84</u>	
Twp. <u>4 N</u> Rge. <u>4 E</u> Sec. <u>29 E 28</u> Qtr.			
Bankfull WIDTH <u>20.5</u> Ft. (W _{bf})	Bankfull MAX. DEPTH <u>3.25</u> Ft. (d _{max})	Channel SLOPE <u>0.01</u> Ft/Ft	%
Bankfull Mean DEPTH <u>2.56</u> Ft. (d _{bar})	Flood Prone Area WIDTH <u>104.76</u> Ft. (W _{FP})	Valley SLOPE	%
WIDTH/DEPTH Ratio <u>8.0</u>	ENTRENCHMENT Ratio <u>5.12</u>	SINUOSITY (Stream Dist/Valley Dist.) <u>1.3</u>	
Channel MATERIALS: (Pebble Count)	D15 _____ mm	D50 _____ mm	D84 _____ mm
			

Sample 3

TABLE 5-3. Reference reach field data form for stream classification.





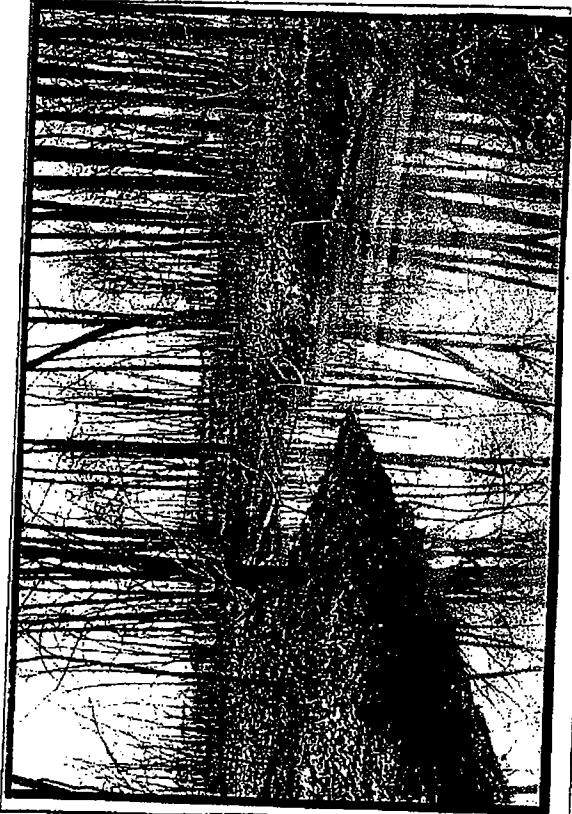

REFERENCE REACH FIELD FORM		STREAM TYPE: <u>CC</u>	
STREAM CHANNEL CLASSIFICATION LEVEL II			
STREAM NAME: <u>Steven's Ditch</u>	DRAINAGE AREA: <u>1.51</u> sq mi	BASIN NAME: <u>FINCHER CREEK</u>	
OBSERVERS: <u>NTC F WWS</u> (MS6)	DATE: <u>11/30/04</u>		
LOCATION: <u>Approx. 2 miles West of Defiance on Us 24</u>	Twp. <u>4N</u> Rge. <u>4E</u> Sec. <u>29</u> of <u>28</u> Qtr.		
Bankfull WIDTH <u>17.22</u> Ft. (W _{bf})	Bankfull MAX DEPTH <u>3.14</u> Ft. (d _{max})	Channel SLOPE <u>0.01</u> F/FT	%
Bankfull Mean DEPTH <u>2.8</u> Ft. (d _{av})	Flood Prone Area WIDTH <u>28.24</u> Ft. (W _{Fr})	Valley SLOPE _____ F/FT	%
WIDTH/DEPTH Ratio <u>6.15</u>	ENTRENCHMENT Ratio <u>6.3</u>	SINUOSITY (Stream Dist/Valley Dist.) <u>1.3</u>	
Channel MATERIALS: (Pebble Count) D15 _____ mm	D34 _____ mm	D50 _____ mm	D84 _____ mm
			D95 _____ mm
			

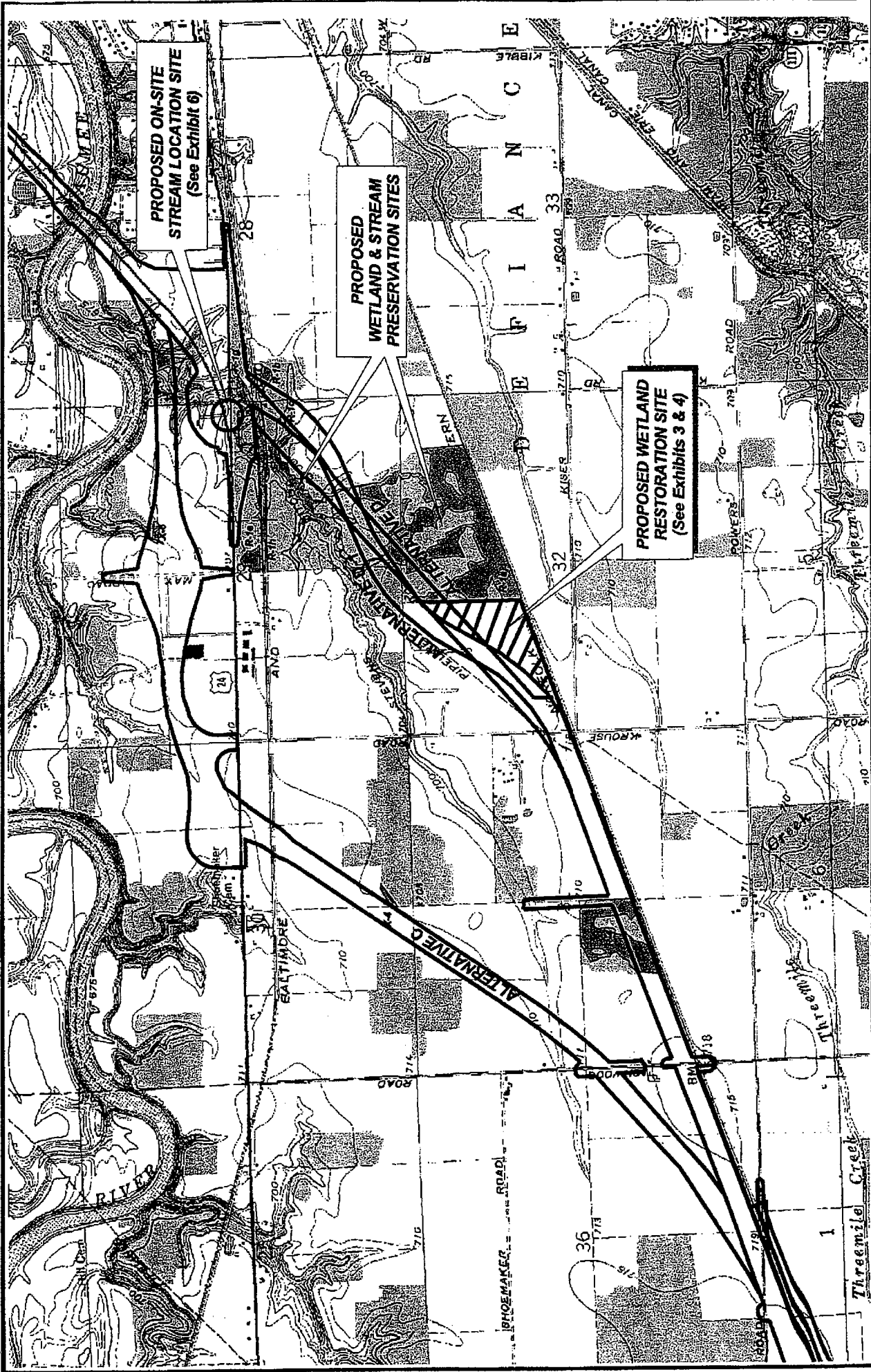
TABLE 5-3. Reference reach field data form for stream classification. *Sample 4*

REFERENCE REACH FIELD FORM STREAM CHANNEL CLASSIFICATION LEVEL II		STREAM TYPE: <u>Co</u>	
STREAM NAME: <u>Stevens Stream</u>		DRAINAGE AREA: <u>1.81 mi²</u>	
OBSERVERS: <u>Joe & WWS (M56)</u>		BASIN NAME: <u>Madamee River</u>	
LOCATION: <u>Approx. 2 miles West of Defiance on US 24</u>		DATE: <u>11/30/04</u>	
Twp. <u>4N</u> Rge. <u>4E</u> Sec. <u>25</u> of <u>25</u> Qtr.		Channel Slope <u>4.01</u> % Valley Slope <u> </u> % SINUOSITY (Stream Dist/Valley Dist) <u>1.3</u>	
Bankfull WIDTH <u>18.7</u> Ft. (W _{bf})	Bankfull MAX. DEPTH <u>2.72</u> Ft. (d _{max})	Channel Slope <u>4.01</u> %	
Bankfull Mean DEPTH <u>2.57</u> Ft. (d _{av})	Flood Prone Area WIDTH <u>91.84</u> Ft. (W _{FP})	Valley Slope <u> </u> %	
WIDTH/DEPTH Ratio <u>7.4</u>	ENTRENCHMENT Ratio <u>4.9</u>	SINUOSITY (Stream Dist/Valley Dist) <u>1.3</u>	
Channel MATERIALS: (Pebble Count)	D15 <u> </u> mm	D50 <u> </u> mm	D84 <u> </u> mm
			

Sample 5
TABLE 5-3. Reference reach field data form for stream classification.

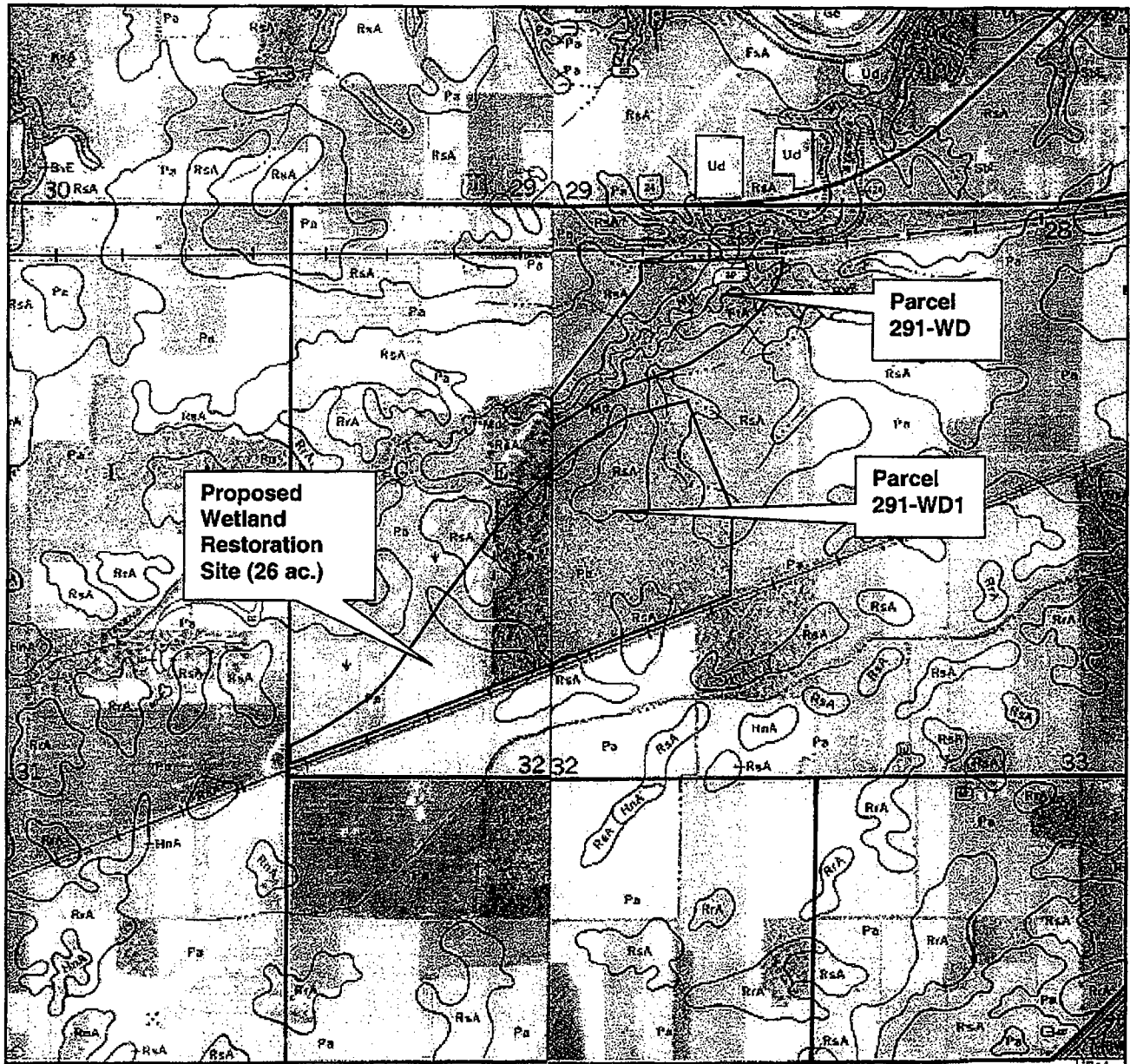
REFERENCE REACH FIELD FORM STREAM CHANNEL CLASSIFICATION LEVEL II		STREAM TYPE: <u>CG</u>	
STREAM NAME: <u>Stewart's Ditch</u>		DRAINAGE AREA: <u>1.61</u> ^{mi²}	
OBSERVERS: <u>AME & WS (MSG)</u>		BASIN NAME: <u>Manassas River</u>	
LOCATION: <u>Approx. 2 miles West of DeFance on US 24</u>		DATE: <u>11/30/04</u>	
Twp. <u>4N</u> Rge. <u>4E</u> Sec. <u>29</u> <u>28</u> Qtr.		Channel Slope <u>0.01</u> Ft/Ft %	
Bankfull Width <u>22.14</u> Ft. (W _{bf})	Bankfull Max Depth <u>3.02</u> Ft. (d _{max})	Valley Slope _____ Ft/Ft %	Sinuosity (Stream Dist/Valley Dist.) <u>1.3</u>
Bankfull Mean Depth <u>2.82</u> Ft. (d _{mf})	Flood Prone Area Width <u>24.64</u> Ft. (W _{fp})		
Width/Depth Ratio <u>7.85</u>	Entrenchment Ratio <u>5.6</u>		
Channel Materials: (Febble Count)	D15 _____ mm	D50 _____ mm	D84 _____ mm
			

EXHIBITS



Mannik & Smith
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 Maumee, Ohio 43537
 Civil Engineering, Surveying and Environmental Consulting
 TOLEDO • MONROE • DETROIT

EXHIBIT 1
PROPOSED ON-SITE STREAM AND WETLAND MITIGATION
SITE LOCATIONS FOR PAU/DEF 24-0.00



LEGEND



**Approximate
Parcel
Boundary**

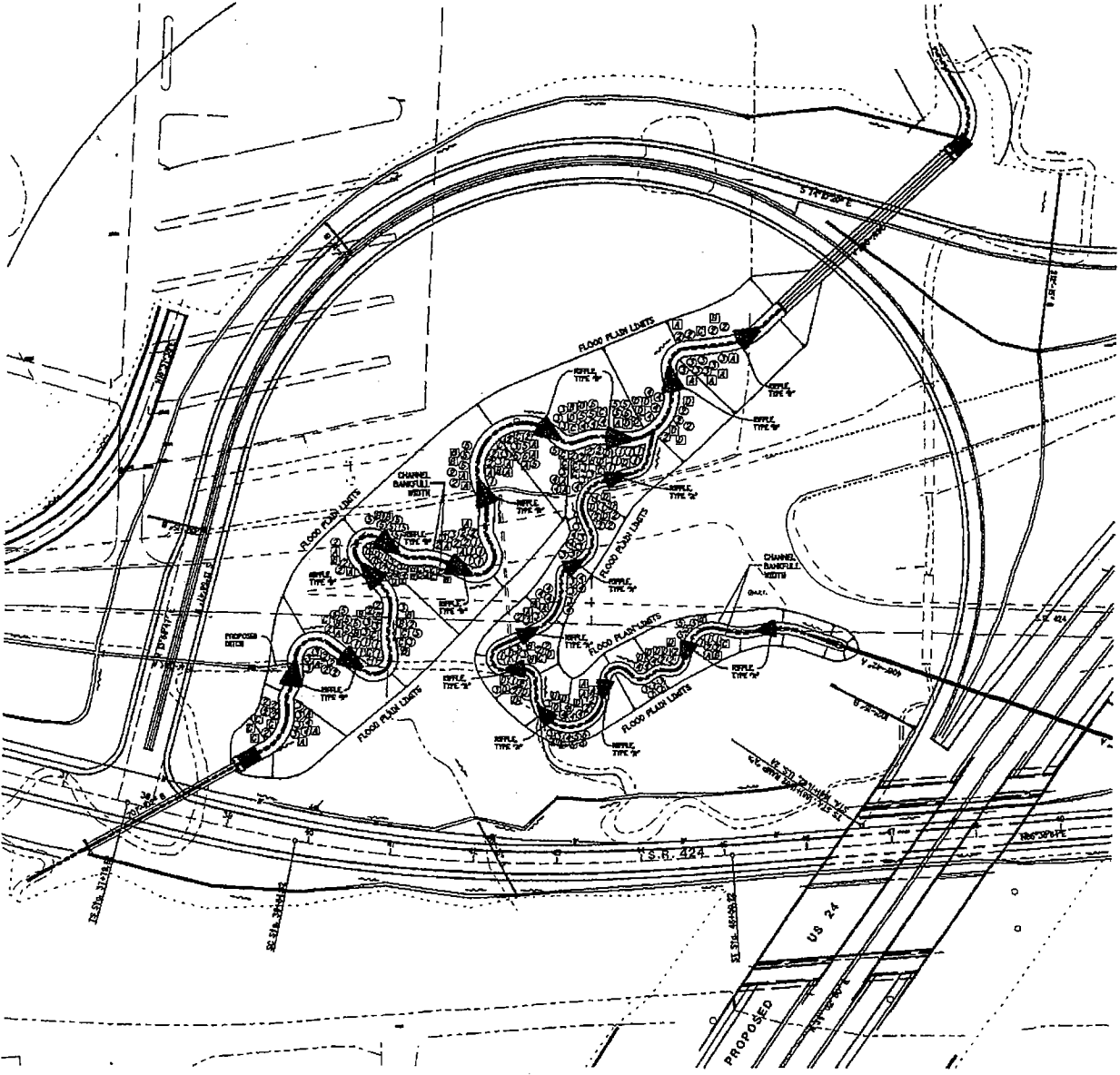
P201A1E3B J 11/17/05

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Civil Engineering, Surveying and Environmental Consulting
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Exhibit 2
Defiance County Soil Survey
Natural Resource Conservation Service
1984



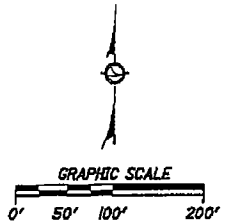


FOR RIFLE DETAILS,
SEE SHEET —

Relocated Ditch Riparian Planting Schedule

KEY	BOTANICAL NAME/COMMON NAME	SIZE	DESCRIPTION	QUANTITY
(A)	<i>Acer rubrum</i> /Red maple	1" caliper	B B B	35
(B)	<i>Platanus occidentalis</i> /American Sycamore	1" caliper	B B B	20
(C)	<i>Salix alba</i> /Blank willow	1" caliper	B B B	25
(D)	<i>Quercus pehavia</i> /Pin oak	1" caliper	B B B	30
(E)	<i>Deplacanthus occidentalis</i> /Butternut	3" height	1 gallon containerized	40
(F)	<i>Cornus stolonifera</i> /Red-osier dogwood	3" height	1 gallon containerized	55
(G)	<i>Sambucus racemosa</i> /Elderberry	3" height	1 gallon containerized	35
(H)	<i>Viburnum lentago</i> /Hawthorn	3" height	1 gallon containerized	30
(I)	<i>Cornus amomum</i> /Silky dogwood	3" height	1 gallon containerized	35

Low Growing Slope Mix (Spec. 872.11.3A) Plant along slopes



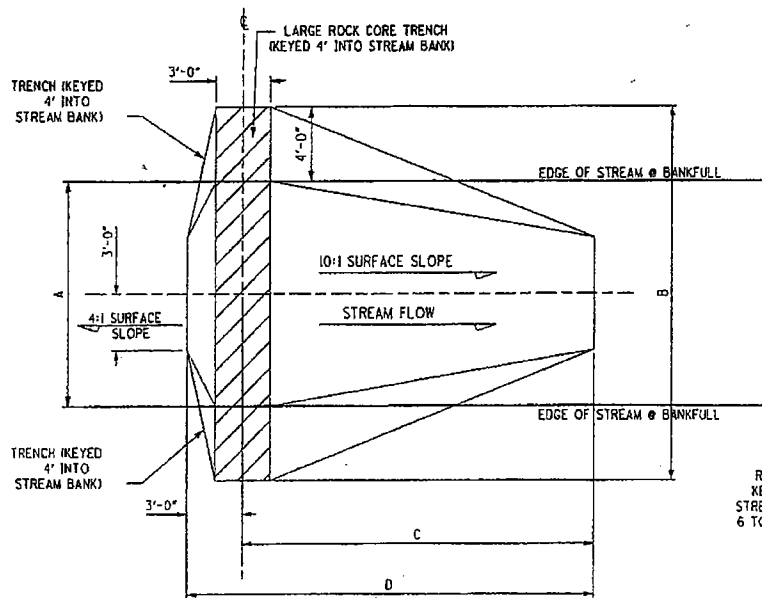
ON-SITE STREAM RELOCATIONS MITIGATION LANDSCAPING PLAN

OHIO DEPARTMENT OF TRANSPORTATION
U.S. ROUTE 24
PAU/DEF-24-0.00 PID 18904

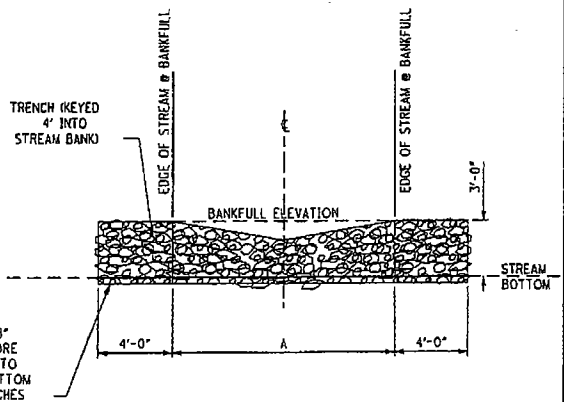
U.S. Army Corps of
Engineers 404 Permit
and OEPA Section 401
Water Quality
Certification
Application

Date: 1-21-05

Exhibit 6



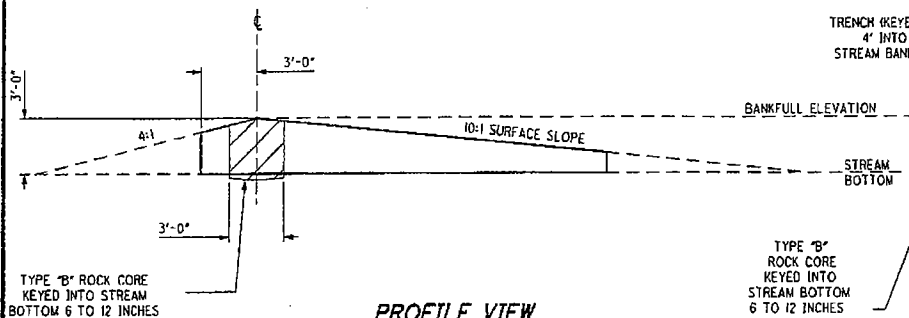
PLAN VIEW



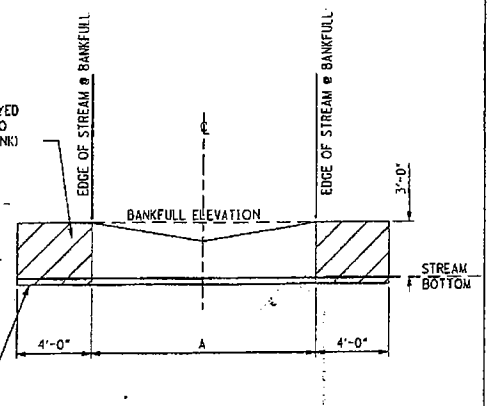
DETAILED ILLUSTRATION OF RIFFLE CROSS SECTION

RIFFLE DIMENSIONS

DIMENSION LABEL	TYPE "A"	TYPE "B"
A	12'-0"	18'-0"
B	20'-0"	27'-0"
C	19'-0"	28'-0"
D	22'-0"	31'-0"



PROFILE VIEW



CROSS SECTION VIEW

- ROCK RIFFLES ARE TO BE CONSTRUCTED WITH TYPE "B" ROCK AND TYPE "C" ROCK.
- TYPE "B" ROCK WILL BE USED TO CREATE THE RIFFLE CORE AS DETAILED.
- TYPE "C" ROCK WILL BE USED TO CREATE THE RIFFLE EXCEPT FOR THE CORE.
- THE CONTRACTOR WILL CONSTRUCT THE RIFFLE FURTHEST DOWNSTREAM, THEN CONSTRUCT EACH RIFFLE THEREAFTER STARTING AT THE RIFFLE FURTHEST UPSTREAM AND WORKING TOWARD THE RIFFLE FURTHEST DOWNSTREAM.
- PAYMENT FOR ALL THE MATERIALS AND LABOR FOR THE CONSTRUCTION OF THE RIFFLES WILL BE DONE ACCORDING TO 601 (5000) CHANNEL PROTECTION, MISD-ROCK RIFFLE AT THE UNIT PRICE OF CUBIC YARD.

NO.	DATE	BY	DESCRIPTION

The Mannik & Smith Group, Inc.
Civil Engineering, Surveying and Environmental Consulting

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TITLE: **RIFFLE DETAILS**

NO.	DATE	BY	DESCRIPTION

ESTIMATED QUANTITIES

ITEM	DESCRIPTION	QUANTITIES PER TYPE "A" RIFFLE	QUANTITIES PER TYPE "B" RIFFLE
601	TYPE "B" ROCK 12 TO 24 INCHES	26.7 CUBIC YARDS	36.0 CUBIC YARDS
601	TYPE "C" ROCK 6 TO 18 INCHES	55.8 CUBIC YARDS	103.8 CUBIC YARDS

QUANTITIES ABOVE ARE ESTIMATED FOR ONE RIFFLE. THE TOTAL QUANTITIES FOR PROJECT MUST BE MULTIPLIED BY TOTAL NUMBER OF RIFFLES. THIS PROJECT (PID 18904) HAS A TOTAL OF 8 TYPE "A" RIFFLES AND 10 TYPE "B" RIFFLES. THE TOTAL ESTIMATED AMOUNT OF TYPE "B" ROCK IS 573.8 CUBIC YARDS. THE TOTAL ESTIMATED AMOUNT OF TYPE "C" ROCK IS 1084.4 CUBIC YARDS. THE CMS STANDARD FOR THESE TYPES OF ROCK INCLUDES FINES.