



OHIO DEPARTMENT OF TRANSPORTATION
INTER-OFFICE COMMUNICATION
Office of Environmental Services

TO: Ric Queen, Ohio EPA, DSW-Section Manager **DATE:** April 2, 2014
401 WQC, Isolated Wetland, and Wetland Ecology Section

FROM: *Michael Pettigrew for*
Timothy M. Hill, Administrator, ODOT-Office of Environmental Services

SUBJECT: 401 Water Quality Certification Application

PROJECT: **WAS-821-3.68** **PID:** **91295** Plan File Date: 10/27/14
Sale Date: 02/26/15

Dear Mr. Queen:

Enclosed for your review is a copy of the 401 Water Quality Certification application and supplemental information for the subject project. The same package is being submitted concurrently to the USACE for review of the Individual 404 permit application. The Ohio Department of Transportation (ODOT) is seeking authorization under the Minimal Degradation Alternative.

The Ohio Department of Transportation proposes to realign 0.70 miles of State Route 821 to avoid a landslide slip plane. The roadway will be shifted a maximum of 100 feet southeast. The proposed project will require substantial cuts into the adjacent forested hillside; it will eliminate approximately 2,160 linear feet of ephemeral or intermittent tributaries; as well as impact two Category 1 wetlands.

Mitigation for stream impacts will be completed through the use of credits at the Sunday Creek Coal Company Pooled Mitigation Area. Mitigation for wetland impacts will be completed through the use of credits at the Meigs Fairgrounds Wetland Restoration Pooled Mitigation Area. For detailed mitigation and impacts as a result of the Minimal Degradation Alternative, please see the 404 form and Item 10 Analysis, as well as the attached tables and figures included in this application. No work in jurisdictional waters will occur before this activity is authorized.

The Attached 404/401 application package contains the following:

- A complete 401 WQC application form.
- A copy of the United States Army Corps of Engineers; jurisdictional determination letter.
- A complete Ecological Survey Report (ESR).

- If the project impacts a stream for which a specific aquatic life use designation has not been made, a use attainability analysis is provided.
- A specific and detailed mitigation proposal, including the location and proposed legal mechanism for protecting the property in perpetuity.
- Applicable permit fees (Not applicable for ODOT).
- Site Photographs (See ESR).
- Adequate documentation confirming that the applicant has requested comments from the Ohio Department of Natural Resources and the United States Fish & Wildlife Service regarding threatened and endangered species, including the presence or absence of critical habitat.
- Descriptions, schematics, and appropriate economic information of the applicant's preferred alternative, non-degradation alternative, and minimal degradation alternatives for design and operation of the activity.
- The applicant's investigation report of the waters of the United States in support of the 404 permit application (stream and wetland impacts are summarized in the 401 WQC Application).
- A copy of the United States Army Corps of Engineers public notice regarding the 404 permit application. If no public notice is to be issued by the Corps, notification that the project is to be authorized under a general or Nationwide Permit will fulfill this requirement.
- The USACE is currently reviewing the 404 permit application. The 404 Public Notice, or the notification that the project will be authorized under a Regional General or Nationwide Permit, will be forwarded to your office as soon as it is available. ODOT is aware that Under ORC 6111.30 (A) this application is **INCOMPLETE**, but at this time, we request that OEPA proceed with and informal review of the project's 401 WQC application.

Should any question arise, please contact Tara Tarlton at (614) 644-7087 or Adrienne Earley at (614) 466-2159.

TMH:MKP:MP:tdt

Enclosure

cc: project file



OHIO DEPARTMENT OF TRANSPORTATION

CENTRAL OFFICE • 1980 WEST BROAD STREET • COLUMBUS, OH 43223

JOHN R. KASICH, GOVERNOR • JERRY WRAY, DIRECTOR

April 2, 2014

U.S. Army Corps of Engineers
Huntington District Building 10/ Section 10
PO Box 3990 Columbus, OH 43218-3990
Attn: Peter Clingan

Re: **Washington County, Ohio**
WAS-821-3.68 (PID 91295)
Individual 404 Permit Application

Plan File Date: 10/27/14

Sale Date: 02/26/15

Dear Mr. Clingan:

Enclosed for your review is one copy of the Individual 404 permit application and supplemental information for this project. Concurrently, the OEPA is reviewing the 401 Water Quality Certification application for the subject project. (Note: this is a joint 401/404 permit application). The Ohio Department of Transportation (ODOT) is seeking authorization under the Minimal Degradation Alternative.

The Ohio Department of Transportation proposes to realign 0.70 miles of State Route 821 to avoid a landslide slip plane. The roadway will be shifted a maximum of 100 feet southeast. The proposed project will require substantial cuts into the adjacent forested hillside; it will eliminate approximately 2,160 linear feet of ephemeral or intermittent tributaries; as well as impact two Category 1 wetlands.

Mitigation for stream impacts will be completed through the use of credits at the Sunday Creek Coal Company Pooled Mitigation Area. Mitigation for wetland impacts will be completed through the use of credits at the Meigs Fairgrounds Wetland Restoration Pooled Mitigation Area. For detailed mitigation and impacts as a result of the Minimal Degradation Alternative, please see the 404 form and Item 10 Analysis, as well as the attached tables and figures included in this application.

At this time, we are requesting concurrence and authorization for the subject project. No work in jurisdictional waters will occur before this activity is authorized. Should any question arise, please contact Tara Tarlton at (614) 644-7087 or Adrienne Earley at (614) 466-2159.

Respectfully,

Timothy M. Hill
Administrator
Office of Environmental Services

TMH:MKP:AEE:tdt
Enclosures: 1

Department of the Army
Waterway Permit Application
Preconstruction Notification and
401 Water Quality Certification Applications

WAS-821-3.68 (PID 91295)

Realignment of State Route 821
Landslide Repair



Prepared by



1980 West Broad Street
Columbus, Ohio 43223

February, 2014

Table of Contents

404 Permit Application

401 Permit Application

401 Application: Block 10: Antidegradation Analysis

Table 1 – 404 Application Summary of the Streams and Wetlands Affected

Table 2 – 404 Application Summary of Proposed Activity by Impacted Stream and Wetland

Table 3 – 401 Application Summary of Lowering of Water Quality by Antideg Alternative

Table 4 – Stream and Wetland Mitigation

Figure 1 – USGS Project Location Map

Figure 2 – Aerial of Study Area showing Preferred and Minimal Deg. Alignments

Figure 3 – Plan Schematic showing Preferred and Minimal Deg. Alternatives w/work limits

Figure 4 – Aerial showing Alternatives and Stream and Wetland locations and impacts.

Appendix A – Construction Plans (Minimal Degradation)

Appendix B – Data Forms (QHEI – ORAM – Wetland Determination – HHEI - HMFEI)

Appendix C – Photo Location Map and Photographs

Appendix D – Agency Coordination Letters and FEMA Flood Map

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

**OMB APPROVAL NO. 0710-003
Expires: 31 August 2012**

Public reporting burden for this collection of information is estimated to average 11 hours per response, including the time for reviewing the 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, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no persons shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. 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

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Maritime Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated 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 instruction) 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)

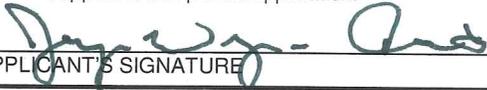
| | | | |
|--------------------|----------------------|------------------|------------------------------|
| 1. APPLICATION NO. | 2. FIELD OFFICE CODE | 3. DATE RECEIVED | 4. DATE APPLICATION COMPLETE |
|--------------------|----------------------|------------------|------------------------------|

(ITEMS BELOW TO BE FILLED BY APPLICANT)

| | |
|--|---|
| 5. APPLICANT'S NAME Jerry Wray, Director Ohio Department of Transportation | 8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required) Adrienne Earley, Waterway Permits Supervisor Ohio Department of Transportation Adrienne.Earley@dot.state.oh.us |
| 6. APPLICANT'S ADDRESS: Ohio Department of Transportation 1980 West Broad Street Columbus, Ohio 43223 | 9. AGENT'S ADDRESS: Ohio Department of Transportation 1980 West Broad Street Columbus, Ohio 43223 |
| 7. APPLICANT'S PHONE NOS. W/AREA CODE (614) 644-0377 | 10. AGENT'S PHONE NOS. W/AREA CODE (614) 466-2159 |

STATEMENT OF AUTHORIZATION

11. I hereby authorize, Adrienne Earley 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.

APPLICANT'S SIGNATURE 

4/4/14
DATE

NAME, LOCATION AND DESCRIPTION OF PROJECT

| | |
|---|--|
| 12. PROJECT NAME OR TITLE (see instructions): WAS-821-3.68 (PID 91295) | |
| 13. NAME OF WATERBODY, IF KNOWN (if applicable) Unnamed Tributaries (7) (Provisional LRW or Class I) to New Years' Creek (Provisional WWH) (HUC05030201120030) | 14. PROJECT STREET ADDRESS (if applicable) Not applicable |
| 15. LOCATION OF PROJECT Latitude: °N 39.4951 Longitude: °W -81.4425 | |

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

The project site is located three miles north of the City of Marietta on SR 821, Muskingum Township, Washington County, Ohio.

17. DIRECTIONS TO THE SITE: From Columbus take IR 70 west to IR 77 south to SR 821 (exist 6). Go north on SR 821 to project area.

18. Nature of Activity (description of project, include all features)

The proposed project involves the realignment of 0.70 mile of SR 821 in order to avoid a landslide slip plane. The roadway is to be shifted a maximum distance of 100 feet southeastward into the forested hillside from the existing centerline to the proposed centerline (Figures 1 and 2). This landslide was declared a Type C emergency by way of the Federal Highway Administration OH-11-02 Flood Emergency and was identified as ODOT District 10's number one landslide repair priority.

The proposed State Route 821 realignment will require substantial cuts into the adjacent forested hillside and will eliminate approximately 2,160 linear feet of ephemeral or intermittent unnamed tributaries that flow perpendicular, and in some cases parallel, to SR 821. The streams will first be "cut" and then filled by being routed through a roadway storm-sewer system. The existing seven (7) streams are provisional Limited Resource Waters or Class I (no biology and QHEI scores < 32) and flow into New Years' Creek (provisional Warmwater Habitat). After construction, the remaining stream channels will continue to flow either under SR 821 by way of culvert pipe or flow parallel to SR 821 by way of a storm sewer culvert pipe system. After construction Stream 1 (intermittent at best) will continue to flow under SR 821 by way of a 24" to 36" pipe. Streams 2 through 7 (ephemeral) will flow parallel to SR 821 by way of graduating pipes (storm sewer) ranging in diameter from 15" to 36" near the outlet. In addition to stream impacts, two (2) provisional Category 1 wetlands totaling 0.064 acre will be filled and eliminated during the hillside cuts. See Tables 1 and 2 for stream and wetland impact details and Appendix A for construction plans.

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

The purpose of the SR 821 realignment is to repair the existing landslide problem in order to allow for continuous and safe travel for the public.

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

There are permanent discharges associated with this project. Discharges in the form of roadway embankment and culvert pipes are needed in order to accommodate the proposed alignment and convey the flow of streams, thus realigning the roadway out of the landslide problem area and onto a stable foundation.

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

| | | | |
|---------------------------------------|--|----------|---------------------------|
| Stream 1 (LRW or Class I) | earth fill and concrete 24" to 36" pipe | 44.44 cy | |
| Stream 2 (LRW or Class I) | earth fill and concrete 15" pipe | 8.51 cy | |
| Stream 3 (LRW or Class I) | Type B rock channel protection and concrete 18" pipe | 66.66 cy | |
| Stream 4 (LRW or Class I) | earthen fill and concrete 21" pipe | 5.55 cy | |
| Stream 5 (LRW or Class I) | earthen fill | 1.481 cy | |
| Stream 6 (LRW or Class I) | earthen fill and concrete 30" pipe | 35.92 cy | |
| Stream 7 (LRW or Class I) | earthen fill and concrete 36" pipe | 28.33 cy | Stream Total - 190.891 cy |
| Wetland 1 (Category 1) – earthen fill | | 11.29 cy | |
| Wetland 2 (Category 1) - earthen fill | | 91.96 cy | Wetland Total - 103.25 cy |

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

| | | | |
|---------------------------------------|--|-----------------|----------------------------------|
| Stream 1 (LRW or Class I) | earth fill and concrete 24" pipe | 200' (0.140 ac) | |
| Stream 2 (LRW or Class I) | earth fill and concrete 15" pipe | 230' (0.005 ac) | |
| Stream 3 (LRW or Class I) | Type B rock channel protection and concrete 18" pipe | 400' (0.027 ac) | |
| Stream 4 (LRW or Class I) | earthen fill and concrete 21" pipe | 150' (0.003 ac) | |
| Stream 5 (LRW or Class I) | earthen fill | 40' (0.001 ac) | |
| Stream 6 (LRW or Class I) | earthen fill and concrete 30" pipe | 970' (0.020 ac) | |
| Stream 7 (LRW or Class I) | earthen fill and concrete 36" pipe | 170' (0.011 ac) | Stream Total – 2,160' (0.207 ac) |
| Wetland 1 (Category 1) – earthen fill | | 0.007 ac | |
| Wetland 2 (Category 1) - earthen fill | | 0.057 ac | Wetland Total – 0.064 ac |

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Overall, ecological impacts associated with the construction of the State Route 821 realignment have been minimized to the fullest extent practicable by minimizing the construction foot print as much as possible. The original foot print would impact 20.53 acres of forest and 2,255 linear feet of stream. The proposed alternative in this application will impact 15.86 acres of forest and 2,160 linear feet of stream. Also, because the stream habitats are provisional Limited Resource Waters they will be mitigated offsite at Sunday Creek Coal Company Mitigation Site at a 1:1 ratio.

24. Is Any Portion of the Work Already Complete? Yes _____ No X If yes, describe the Completed Work

25. Addresses if Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody

Frederick G. an Betty L. Gerber
1670 Gun Club Road
Whipple, OH 45788

Michael L. Rech
3620 State Route 821
Whipple, OH 45788

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

| AGENCY | TYPE APPROVAL* | IDENTIFICATION NUMBER | DATE APPLIED | DATE APPROVED | DATE DENIED |
|--------|------------------------------|-----------------------|--------------|---------------|-------------|
| FHWA | CE 1 | PID 91295 | 12/16/2013 | 12/16/2013 | |
| USFWS | ESR | PID 91295 | 9/5/2013 | 10/21/2013 | |
| ODNR | ESR | PID 91295 | 9/5//2013 | 10/8/2013 | |
| SHPO | Cultural Resources Clearance | PID 91295 | 2/28/2012 | 4/17/2012 | |

27. 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.



4/4/14
DATE



4/3/04
DATE

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 with 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 false, fictitious or fraudulent statements or represents or makes or uses any false writing or document knowingly 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.

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 the 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 the 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 a 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. X requires a Section 401 certification to be authorized by Nationwide Permit # Individual 404 Permit or NWP
 - 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:
 Jerry Wray, Director of Transportation (614) 644-0377 (Office)
 Ohio Department of Transportation (614) 728-7368 (Fax)
 1980 West Broad Street, Columbus, Ohio 43223

3a. Signature of Applicant: *Jerry Wray* Date: *4/4/14*

4. Name, address and title of authorized agent: Telephone number during business hours:
 Adrienne Earley, Office of Environmental Services (614) 466-2159 (Office)
 Ohio Department of Transportation (614) 728-7368 (Fax)
 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: *Jerry Wray* Date: *4/4/14*

5. Location on land where activity exists or is proposed. Indicate coordinates of a fixed referenced point at the impact site (if known) and the coordinate system and datum used.
 The proposed project occurs along State Route 690 5 miles east of the City of Athens in Section 10, Canaan Township, Athens County Ohio. 39.334722, 81.986944

| | | | | | |
|----------------|------------|-----------|------|-------|----------|
| Duck Creek | Washington | Muskingum | na | OH | na |
| HUC - 05030201 | | | | | |
| Watershed | County | Township | City | State | Zip Code |

6. Is any portion of the activity for which authorization is sought complete? ___ Yes x 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 |
|----------------|-----------------------------|--------------------|---------------------|------------------|----------------|
| FHWA | CE 1 | 91295 | 12/16/2013 | 12/16/2013 | |
| USFWS | ESR | 91295 | 9/5/2013 | 10/21/2013 | |
| ODNR | ESR | 91295 | 9/5/2013 | 10/8/2013 | |
| SHPO | Cultural Resource Clearance | 91295 | 2/28/2012 | 4/17/2012 | |

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

8a. Activity: Describe the Overall Activity: The proposed project involves the realignment of 0.70 mile of SR 821 in order to avoid a landslide slip plane. The roadway is to be shifted a maximum distance of 100 feet southeastward into the forested hillside from the existing centerline to the proposed centerline (Figures 1 and 2). This landslide was declared a Type C emergency by way of the Federal Highway Administration OH-11-02 Flood Emergency and was identified as ODOT District 10's number one landslide repair priority.

The proposed State Route 821 realignment will require substantial cuts into the adjacent forested hillside and will eliminate approximately 2,160 linear feet of ephemeral or intermittent unnamed tributaries that flow perpendicular, and in some cases parallel, to SR 821. The streams will first be "cut" and then filled by being routed through a roadway storm-sewer system. The existing seven (7) streams are provisional Limited Resource Waters or Class I (no biology and QHEI scores < 32) and flow into New Years' Creek (provisional Warmwater Habitat). After construction, the remaining stream channels will continue to flow either under SR 821 by way of culvert pipe or flow parallel to SR 821 by way of a storm sewer culvert pipe system. After construction Stream 1 (intermittent at best) will continue to flow under SR 821 by way of a 24" to 36" pipe. Streams 2 through 7 (ephemeral) will flow parallel to SR 821 by way of graduating pipes (storm sewer) ranging in diameter from 15" to 36" near the outlet. In addition to stream impacts, two (2) provisional Category 1 wetlands totaling 0.064 acre will be filled and eliminated during the hillside cuts. See Tables 1 and 2 for stream and wetland impact details and Appendix A for construction plans.

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

The purpose of the SR 821 realignment is to repair the existing landslide problem in order to allow for continuous and safe travel for the public.

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))**

| | | | |
|---------------------------------------|--|----------|---------------------------|
| Stream 1 (LRW or Class I) | earth fill and concrete 24" to 36" pipe | 44.44 cy | |
| Stream 2 (LRW or Class I) | earth fill and concrete 15" pipe | 8.51 cy | |
| Stream 3 (LRW or Class I) | Type B rock channel protection and concrete 18" pipe | 66.66 cy | |
| Stream 4 (LRW or Class I) | earthen fill and concrete 21" pipe | 5.55 cy | |
| Stream 5 (LRW or Class I) | earthen fill | 1.481 cy | |
| Stream 6 (LRW or Class I) | earthen fill and concrete 30" pipe | 35.92 cy | |
| Stream 7 (LRW or Class I) | earthen fill and concrete 36" pipe | 28.33 cy | Stream Total - 190.891 cy |
| Wetland 1 (Category 1) – earthen fill | | 11.29 cy | |
| Wetland 2 (Category 1) - earthen fill | | 91.96 cy | Wetland Total - 103.25 cy |

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

The proposed activity is located along SR 821 approximately 5.73 miles north of Marietta. All unnamed ephemeral streams flow into New Years Creek. New Years Creek is located between 100 feet and 300 feet downstream of these ephemeral drainages. New Years Creek flows into Duck Creek which is 0.58 mile east of the project.

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

- Preferred Design (your project) and Mitigative Techniques
- Minimal Degradation Alternative(s) (scaled-down version(s) of your project) and Mitigative Techniques
- 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 of 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 3745-1-05(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)

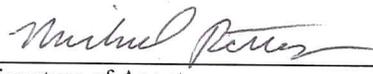
10k) Describe mitigation techniques proposed (except for the non-Degradation Alternative):

- Describe proposed Wetland mitigation (see OAC 3745-1-54)
- Describe proposed Stream, Lake, Pond Mitigation (see Primer)

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


Signature of Applicant

4/4/14
Date


Signature of Agent

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

Ohio EPA
Section 401 Water Quality Certification

Item 10 Antidegradation Alternatives Analysis

Ohio Department of Transportation
Proposed Realignment of State Route 821
Landslide Repair

WAS-821-3.68 (PID 91295)

February 2014

10a) Detailed Project Description

Preferred Alternative

The Preferred Alignment involves realigning 0.70 mile of SR 821 in order to avoid a landslide slip plane. The roadway is to be shifted a maximum distance of 150 feet southeastward into the forested hillside from the existing centerline to the proposed centerline (Figures 2, 3, and 4). The landslide is considered a Type C emergency by way of the Federal Highway Administration OH-11-02 Flood Emergency and is identified as ODOT District 10's number one landslide repair priority.

The Preferred Alignment requires substantial cuts into the adjacent forested hillside impacting approximately 2,555 linear feet of ephemeral or intermittent unnamed tributaries that flow perpendicular, and in some cases parallel (captured streams), to SR 821. The streams will first be "cut" and then filled by being routed through a roadway storm-sewer system. The existing seven (7) streams are provisional Limited Resource Waters or Class I (no biology and QHEI scores < 32) and flow into New Years' Creek (provisional Warmwater Habitat). After construction, the remaining stream channels will continue to flow either under SR 821 by way of culvert pipe or flow parallel to SR 821 by way of a storm sewer culvert pipe system. After construction Stream 1 (intermittent at best) will continue to flow under SR 821 by way of a 24" to 36" pipe. Streams 2 through 7 (ephemeral) will flow parallel to SR 821 by way of graduating pipes (storm sewer) ranging in diameter from 15" to 36" near the outlet. In addition to stream impacts, two (2) provisional Category 1 wetlands totaling 0.064 acre will be filled and eliminated during the hillside cuts. See Tables 1 and 2 for stream and wetland impact details.

Associated terrestrial impacts, outside of the existing roadway and shoulders, includes 20.53 acres of relatively mature mixed deciduous forested hillside and 3.9 acres of farmland. The preferred alternative requires no relocations of people or other known social or economic issues.

Minimal Degradation Alternative

The Minimal Degradation Alignment is nearly the same alignment as the preferred alignment except the footprint of the impact zone has been reduced to the furthest extent practicable in order to reduce impacts to forest, streams, and farmland. The maximum distance the minimal degradation alternative extends from the existing alignment is 100 feet instead of 150 feet. In addition, hillside cuts have been steepened to reduce the footprint where possible (Figures 2, 3, and 4). ODOT is proposing to move forward in project development with the Minimal Degradation Alignment presented below.

The Minimal Degradation will impact approximately 2,160 linear feet of ephemeral or intermittent unnamed tributaries that flow perpendicular, and in some cases parallel (captured streams), to SR 821. The streams will first be "cut" and then filled by being routed through a roadway storm-sewer system. The existing seven (7) streams are provisional Limited Resource Waters or Class I (no biology and QHEI scores < 32) and flow into New Years' Creek (provisional

Warmwater Habitat). After construction, the remaining stream channels will continue to flow either under SR 821 by way of culvert pipe or flow parallel to SR 821 by way of a storm sewer culvert pipe system. After construction Stream 1 (intermittent at best) will continue to flow under SR 821 by way of a 24" to 36" pipe. Streams 2 through 7 (ephemeral) will flow parallel to SR 821 by way of graduating pipes (storm sewer) ranging in diameter from 15" to 36" near the outlet. In addition to stream impacts, two (2) provisional Category 1 wetlands totaling 0.064 acre will be filled and eliminated during the hillside cuts. See Tables 1 and 2 for stream and wetland impact details.

Terrestrial impacts outside of existing roadway and shoulders, after narrowing the foot print and "pulling in" the alignment closer to the existing alignment, include 13.06 acres of relatively mature mixed deciduous forested hillside and 0.9 acre of farmland. The minimal degradation alignment requires no relocations of people or other known social or economic issues.

Non-Degradation Alternative 8

State Route 821 can be repaired in place as needed, thereby eliminating direct impact to streams. However, repairing the roadway in place requires continuous maintenance (adding asphalt), lends to a potential hazardous condition for the traveling public (cracked and dropped pavement sections), and could potentially add heavy sediments loads to New Years' Creek depending on the severity of the slip. Overall, repairing State Route 821 in place does not meet the purpose and need of the project. Also, moving the alignment northwestward was not even considered because it would totally eliminate nearly one mile of New Years' Creek.

10b) Magnitude of Proposed Lowering of Water Quality

Preferred Alternative

The project area is located in the Duck Creek Watershed (Central Ohio Tributaries) (HUC 05030201120030). Based on geotechnical data, the preferred alternative requires the realignment of approximately 0.70 mile of State Route 821 southeastward a maximum distance of 150 feet from the existing centerline to the proposed centerline. The preferred alternative will impact 2,255 linear feet of ephemeral or intermittent streams (provisional LRW or Class I) to New Years' Creek (provisional WWH) and will also require filling 0.057 acre of Category 1 wetland habitat.

Overall, water quality would be temporarily lowered by way of construction sediments and direct filling of marginal stream channel (2,255') and wetland habitat (0.064 ac). However once the project is complete and the site stabilizes and recovers, there should be negligible permanent impacts to water quality as the streams and wetlands to be impacted are of marginal functional value, they contain no biology and only flow during precipitation. Table 3 compares the lowering of water quality across each alternative.

While the ephemeral drainages and two wetland habitats directly impacted by the project are of marginal quality, there may be secondary impacts to New Years' Creek located at the

downstream receiving end of the project. The warmwater fish assemblage found in New Years' Creek, listed in descending order of abundance, includes creek chub, southern redbelly dace, blacknose dace, central stoneroller, and fantail darter. There may be a short term reduction in diversity and abundance of aquatic life downstream as a result of minor temporary sediments generated by construction activities. Sedimentation of aquatic habitats can interfere with the normal spawning activities of fish and other aquatic organisms. These impacts could occur, at least until the disturbed grounds and relocated stream channel are stabilized and vegetated.

Federally listed species with known ranges that may include Washington County are the Indiana bat, northern long-eared bat, fanshell mussel, pink mucket pearly mussel, sheepsnose mussel, snuffbox mussel, eastern hellbender, bald eagle, and timber rattlesnake. Habitat for all of the above listed mussel species and the aquatic eastern hellbender are completely lacking onsite and downstream of the project area. There will be no impacts to these listed species. The bald eagle was not observed in the project area and there are no known nesting sites within ½ mile of the project area. In addition, the timber rattlesnake has not been documented from Washington County within the last 200 years. Impacts to the bald eagle and timber rattlesnake are very unlikely. While habitat (forest with many snags and trees with cavities and peeling loose bark) exist for the Indiana bat and the northern long-eared bat onsite, mitigative techniques (tree cutting restriction dates) will be "carried out" through project development and construction.

No state species were found or are known to exist within one mile of the project area. Because impacted streams are small ephemeral to intermittent headwater drainages, there will be no impacts to commercial or recreational sport fish.

Minimal Degradation Alternative

The minimal degradation alternative is similar to the preferred alternative except that it requires the centerline to be shifted a maximum distance southeastward 100 feet instead of 150 feet. The minimal degradation alternative with a narrower "construction footprint" will impact 2,160 linear feet of ephemeral or intermittent streams (provisional LRW or Class I) to New Years' Creek (provisional WWH) as well as requiring the filling 0.064 acre of Category 1 wetland habitat.

Overall, water quality would be temporarily lowered by way of construction sediments and direct filling of marginal stream channel (2,160') and wetland habitat (0.064 ac). However once the project is complete and the site stabilizes and recovers, there should be negligible permanent impacts to water quality as the streams and wetlands to be impacted are of marginal functional value, they contain no biology and only flow during precipitation. Table 3 compares the lowering of water quality across each alternative.

While the ephemeral drainages and two wetland habitats directly impacted by the project are of marginal quality, there may be secondary impacts to New Years' Creek located at the downstream receiving end of the project. The warmwater fish assemblage found in New Years' Creek, listed in descending order of abundance, includes creek chub, southern redbelly dace, blacknose dace, central stoneroller, and fantail darter. There may be a short term reduction in

diversity and abundance of aquatic life downstream as a result of minor temporary sediments generated by construction activities. Sedimentation of aquatic habitats can interfere with the normal spawning activities of fish and other aquatic organisms. These impacts could occur, at least until the disturbed grounds and relocated stream channel are stabilized and vegetated.

Federally listed species with known ranges that may include Washington County are the Indiana bat, northern long-eared bat, fanshell mussel, pink mucket pearly mussel, sheepsnose mussel, snuffbox mussel, eastern hellbender, bald eagle, and timber rattlesnake. Habitat for all of the above listed mussel species and the aquatic eastern hellbender are completely lacking onsite and downstream of the project area. There will be no impacts to these listed species. The bald eagle was not observed in the project area and there are no known nesting sites within ½ mile of the project area. In addition, the timber rattlesnake has not been documented from Washington County within the last 200 years. Impacts to the bald eagle and timber rattlesnake are very unlikely. While habitat (forest with many snags and trees with cavities and peeling loose bark) exist for the Indiana bat and the northern long-eared bat onsite, mitigative techniques (tree cutting restriction dates) will be “carried out” through project development and construction.

No state species were found or are known to exist within one mile of the project area. Because impacted streams are small ephemeral to intermittent headwater drainages, there will be no impacts to commercial or recreational sport fish.

Non-Degradation Alternative

There would be no lowering of water quality under the non-degradation alternative because no direct impact to streams and wetlands would occur. However, the non-degradation alternative would not meet the purpose and need of the project.

10c) Technical Feasibility, Cost Effectiveness, and Availability

Preferred Alternative and Minimal Degradation Alternative

The construction techniques used to construct the preferred and minimal degradation alternatives have been utilized successfully on many previous transportation projects. The techniques for cuts, fills, and embankment construction have proven to be both reliable and cost effective. The design life for roadway embankment should last indefinitely and require little maintenance as long as the embankments can be built on a stable foundation. Both preferred and minimal degradation cuts, fills, embankment construction will be similar except that the minimal degradation alternative will have slightly steeper cuts in order to reduce the construction footprint (2:1 as opposed to 2.5:1).

The total construction cost for the preferred alternative is estimated at \$5,195,399.23. The total construction cost for the minimal degradation alternative is \$4,657,679.88.

| COST ESTIMATE COMPARISON TABLE FOR CONSTRUCTION OF THE PROJECT ALTERNATIVES | | | |
|--|---|-----------------------------------|-------------------------------|
| Item No. | ITEM DESCRIPTION | Preferred Alternative Cost | Minimal Deg. Alt. Cost |
| 1 | Clearing, Grubbing, Roadway Removal and Earthwork | \$3,497,204.33 | \$2,911,472.88 |
| 2 | Erosion Control/SWPPP | \$303,979.40 | \$287,707.27 |
| 3 | Drainage | \$275,227.15 | \$242,123.82 |
| 4 | Pavement | \$527,202.72 | \$602,997.57 |
| 5 | Traffic Control | \$15,029.58 | \$15,504.98 |
| 6 | Retaining Wall | \$226,715.85 | \$247,593.39 |
| 7 | Maintenance of Traffic | \$105,540.20 | \$105,779.97 |
| 8 | Incidentals | \$244,500.00 | \$244,500.00 |

Non-Degradation Alternative

There would be a continuous maintenance cost with the non-degradation alternative ranging from less than \$5,000 for patch work to more than \$60,000 to drive piling, depending on the size and location of slip.

10d) Regional Sewage Collection and Treatment Facilities – Not applicable to this project.

10e) Government or Privately Sponsored Conservation Projects

There are no known government and/or privately sponsored conservation projects that exist or have been formed to target improvement of water quality or enhance recreational opportunities for the ephemeral-intermittent streams or New Years’ Creek. However, within Duck Creek and adjacent waterways there are some watershed groups within Washington County. These groups include the Duck Creek Partnership, Friends of the Lower Muskingum River, the Muskingum Watershed Conservancy District, and the Wolf Creek Awareness and Resource Evaluation Project, of which the lower half of Wolf Creek is in Washington County. Currently, there are no known projects related to water quality or stream conservation or preservation within the area. The Duck Creek Partnership is primarily concerned with flooding and looking to fund early warning flood gage stations along Duck Creek.

10f) Cost of Water Pollution Controls Associated with Proposed Activity

Preferred Alternative and Minimal Degradation Alternative

For the preferred design the lump sum for sediment and erosion controls is estimated at \$303,979.40 while \$287,707.27 is estimated for the minimal degradation alternative. Sediment and erosion controls will be placed and used at the discretion of the selected contractor in

accordance with ODOT’s “Construction and Materials Specifications Manual”. See tables below for estimated costs of water pollution controls by alternatives.

Non-Degradation Alternative

There would be no water pollution control costs associated with the non-degradation alternative.

PREFERRED ALTERNATIVE

| Item Description | Quantity | Units | Unit Cost | Total |
|--|-------------|-------|------------|---------------------|
| Tied Concrete Block Mat, Type 2 | 82.000 | SY | \$55.84369 | \$4,579.18 |
| Rock Channel Protection, Type C with Fabric Filter | 249.000 | CY | \$59.63823 | \$14,849.92 |
| Seeding and Mulching as Per Plan | 132,000.000 | SY | \$0.57846 | \$76,356.72 |
| Repair Seeding and Mulching | 6,600.000 | SY | \$0.29845 | \$1,969.77 |
| Commercial Fertilizer | 12.000 | Ton | \$350.0000 | \$4,200.00 |
| Lime | 27.000 | Acre | \$66.15431 | \$1,786.17 |
| Water | 143.00 | Mgal | \$0.26723 | \$38.21 |
| Ditch Erosion Protection | 2,161.000 | SY | \$1.48053 | \$3,199.43 |
| Storm Water Pollution Prevention Plan | 1.00 | LS | \$10,000.0 | \$10,000.00 |
| Erosion Control | 187,000.000 | Each | \$1.00000 | \$187,000.00 |
| Total | | | | \$303,979.40 |

MINIMAL DEGRADATION ALTERNATIVE

| Item Description | Quantity | Units | Unit Cost | Total |
|--|-------------|-------|--------------|---------------------|
| Tied Concrete Block Mat, Type 2 | 82.000 | SY | \$85.88148 | \$7,042.28 |
| Rock Channel Protection, Type B with Fabric Filter | 249.000 | CY | \$53.14519 | \$13,233.15 |
| Rock Channel Protection, Type C with Fabric Filter | 4.000 | CY | \$108.84361 | \$435.37 |
| Paved Gutter, Misc.: Type 4 Modified | 256.000 | SY | \$50.000000 | \$12,800.00 |
| Seeding and Mulching as Per Plan | 101,756.000 | SY | \$0.71535 | \$72,791.15 |
| Repair Seeding and Mulching | 5,088.000 | SY | \$0.26276 | \$1,336.92 |
| Commercial Fertilizer | 9.350 | Ton | \$350.0000 | \$3,272.50 |
| Lime | 21.500 | Acre | \$70.51982.0 | \$1,516.18 |
| Water | 112.00 | Mgal | \$0.75418 | \$84.47 |
| Slope Erosion Protection | 5,000.000 | SY | \$1.55448 | \$7,772.40 |
| Ditch Erosion Protection | 2,161.000 | SY | \$1.58392 | \$3,422.85 |
| Storm Water Pollution Prevention Plan | 1.00 | LS | \$10,000.000 | \$10,000.00 |
| Erosion Control | 154,000.000 | Each | \$1.00000 | \$154,000.00 |
| Total | | | | \$287,707.27 |

10g) Impacts on Human Health and Overall Quality of Water Resource

Preferred Alternative and Minimal Degradation Alternative

Impacts on human health and overall quality of the water resource for both the preferred alternative and the minimal degradation alternative would be similar. The lowering of water quality to the ephemeral stream and intermittent tributaries to New Years’ Creek would not

likely have any impact on human health. The overall water quality of the water resource would incur negative temporary impacts in the way of sedimentation. A decline in diversity and abundance of aquatic fauna may occur within the project area downstream of the project until construction is complete and the disturbed ground has been vegetated and stabilized. Sediments would require time to move through the system. Air and noise quality will undergo minor, temporary impacts due active construction equipment during the project, but would quickly recover upon completion of construction.

Non-Degradation Alternative

The non-degradation alternative could impact the water quality of New Years' Creek with sediments inputs. In addition, human health could have negative impacts because the existing landslide condition could produce safety issues.

10h) Important Social and Economic Benefits Realized

Preferred Alternative and Minimal Degradation Alternative

The proposed project will provide for 20 or more construction jobs during the project duration. The awarded contractor will have employees and subcontractors on the project payroll and working on-site for approximately 12 months. In addition, the contractor will be buying materials from different suppliers and manufacturers and paying applicable local sales taxes. On this project, it is likely that many of the contractors, employees, suppliers, and manufacturers will be from Ohio. Money from this project will likely be spent all over the state of Ohio. Contractors will also stimulate local businesses in the area, such as restaurants, gas stations, and motels. In addition, SR 821 is a rural collector that has an average daily traffic of 840 cars. Repairing the roadway soon and thus avoiding a future road closure because of slipping can only provide important social and potential economic benefits.

To briefly describe Washington County and the local economy, the top employers include Marietta Memorial Health System, Pioneer Pipe, Eramet, Kraton Polymers, and Thermo Fisher. Washington County includes Marietta College and the historic City of Marietta known for becoming the first established settlement in the Northwest Territory in 1788. The historic character of Marietta and its location on the Muskingum and Ohio rivers with several well-known events and festivals provides for year-round tourism. Washington County is also known for its natural resources (ie; Wayne National Forest) and abundant wildlife. Hunting and fishing are popular activities in season. The county has several covered bridges and includes bike paths and several rivers and streams for boating, kayaking and canoeing. The average household income in Washington County is approximately \$37,989.00 with about 14.7% living below the poverty line. Because Washington County is a tourist destination, maintaining and repairing local roads can only enhance the local economy and provide social benefits for the citizens of the county.

Non-Degradation Alternative

Because the non-degradation alternative would result in a no-build alternative situation, the local economy would not experience an increase in jobs or revenue created, nor would any potential enhancement occur for the local economy or citizens. In addition, a landslide that requires road closure could have a detrimental effect on tourism.

10i) Important Social and Economic Benefits Lost

Preferred Alternative and Minimal Degradation Alternative

There should not be any job or economic losses as a result of this project. Businesses should not be negatively impacted by this project as there will be no business or residential relocations or detours to interfere with normal traffic patterns. The preferred and minimal degradation alternative should impact little, if any, in the way of recreation and wildlife opportunities for the public as most impacts will occur to a privately owned single steep hillside adjacent to SR 821. However, the forested hillside is hunted by the landowner. Impacts associated with the commercial uses of the water resources are unlikely because such resources are non-existent in New Years' Creek or its ephemeral or intermittent tributaries. From an economic standpoint, the preferred alternative would impact twice as much farm field (farm field on top of steep hillside located beyond the periphery of the forest habitat) in comparison with the minimal degradation alternative.

Non-Degradation Alternative

In contrast with the preferred and minimal degradation alternatives, jobs and revenues would be lost under this alternative since contractors would not be purchasing goods and services in the area and surrounding Washington County. However, the public would pay for the maintenance costs associated with the constant upkeep of SR 821 in its current location. Maintenance cost could range anywhere from less than \$5,000 for patch work to more than \$60,000 to drive piling, depending on the size and location of slip.

10j) Environmental Benefits Lost and Gained

Preferred Alternative and Minimal Degradation Alternative

Environmental benefits associated with the preferred and minimal degradation alternatives are limited. Both alternatives will result in a stable highway. The current unstable situation of SR 821 lends to a possible future impact to New Years' Creek located in the adjacent valley. It is possible that at some point if the road is not fixed or realigned, portions of the existing embankment can subside into New Years' Creek below obstructing the channel and causing other obvious impacts.

Temporary losses in environmental benefits might include the loss of the limited natural-sediment moving capabilities of the ephemeral and intermittent streams impacted. Once vegetation has been established and the highway is constructed, we can expect sediment-moving capabilities to resume.

In general, both alternatives will have an impact on wildlife. Wildlife impacts include potential mortality and displacement; however, some wildlife is mobile and is able to relocate. The most obvious loss is the transformation of complex vertical forest structure to low herbaceous ground cover, at least initially. Listed species, including threatened and endangered animals that may be affected by the preferred and minimal degradation alternative include the Indiana bat and the northern long-eared bat. A mist net survey was carried out during July of 2012 in which seven bats of three species were captured during the survey including big brown bat, red bat, and northern long-eared myotis. No Indiana bats were found. Based on these results and subsequent coordination, USFWS determined that the project may affect, but will not likely adversely affect the Indiana bat. Because the northern long-eared bat is currently listed as “proposed endangered” and there is insufficient information to make an effect call, the USFWS determined that due to project size, type, and location, as proposed the project is not likely to jeopardize the continued existence of the species.

Non-Degradation Alternative

The current unstable situation of SR 821 lends to a possible future impact to New Years’ Creek located in the adjacent valley. It is possible that at some point, portions of the existing embankment can subside into New Years’ Creek obstructing the channel and causing other obvious impacts. The no-build is not completely free from environmental losses. The environmental benefit of the no-build or non-degradation alternative is that the forested hillside would not be impacted.

10k) Mitigation Techniques Proposed

Minimal Degradation Alternative

ODOT has proposed to move forward with the minimal degradation alternative which will impact 2,160 linear feet of ephemeral and intermittent tributaries (provisional Limited Resource Waters). This alternative will also result in 0.064 acre of Category 1 wetland impact. Because the streams and wetlands to be impacted cross perpendicular to the roadway or currently flow (during precipitation events) within the SR 821 roadway ditch, there is little opportunity for natural channel design features or even wetland construction onsite given the limited space available because of the 2:1 slope or rock face that will occur above the new roadway. Furthermore, natural channel design for ephemeral provisional Limited Resource Waters and associated monitoring requirements would not be a wise expenditure of public funds as there is little in the way of lost functions.

Stream impacts will occur within the Little Muskingum-Middle Island watershed (HUC 05030202). At present, there are no existing stream mitigation sites or existing stream mitigation banks within or adjacent to this HUC unit. As indicated above, onsite mitigation is not prudent given the constrained topography (no space available) and because of minimal lost functions due to the nature of the existing streams (ephemeral - limited resource waters – no biology). ODOT proposes to mitigate stream impacts for these Limited Resources Waters at the existing Sunday Creek Coal Company (SCCC) mitigation site within the Hocking Watershed (05030204), which is immediately west of the adjacent Muskingum River watershed (05040004). While ODOT recognizes that this approach is not ideal, it would be a better use of public funds given that the streams at SCCC are of a much higher quality and support a diversity of aquatic macroinvertebrates and vertebrates (salamanders adapted to cool water) and that the stream mitigation ratio would be 1.5:1. ODOT suggest that this approach would satisfy (b)(6) *Permittee-responsible mitigation through off-site and/or out-of-kind* of the USACE's 2008 Mitigation Rule. Although not the preferred approach, mitigation beyond adjacent watersheds from the project location has been approved by the USACE on other ODOT projects. In summary, ODOT proposes to mitigate all stream impacts (2,160 linear feet) at Sunday Creek Coal Company Mitigation Land Site 1 (HUC05030204) at a ratio of 1.5:1. Wetland impacts will be mitigated at a ratio of 1.5:1 at the Meigs-124-21.26 (Meigs County Fairgrounds – HUC05030202) (adjacent watershed) thereby satisfying satisfy (b)(6) *Permittee-responsible mitigation through off-site and/or out-of-kind* of the USACE's 2008 Mitigation Rule.

Preferred Alternative

The preferred alternative will impact 2,555 linear feet of ephemeral and intermittent tributaries (provisional Limited Resource Waters). This alternative will also result in 0.064 acre of Category 1 wetland impact. Because the streams and wetlands to be impacted cross perpendicular to the roadway or currently flow (during precipitation events) within the SR 821 roadway ditch, there is little opportunity for natural channel design features or even wetland construction onsite given the limited space available because of the 2:1 slope or rock face that will occur above the new roadway. Furthermore, natural channel design for ephemeral provisional Limited Resource Waters and associated monitoring requirements would not be a wise expenditure of public funds as there is little in the way of lost functions.

Stream impacts will occur within the Little Muskingum-Middle Island watershed (HUC 05030202). At present, there are no existing stream mitigation sites or existing stream mitigation banks within or adjacent to this HUC unit. As indicated above, onsite mitigation is not prudent given the constrained topography (no space available) and because of minimal lost functions due to the nature of the existing streams (ephemeral - limited resource waters – no biology). ODOT proposes to mitigate stream impacts for these Limited Resources Waters at the existing Sunday Creek Coal Company mitigation site within the Hocking Watershed (05030204), which is immediately west of the adjacent Muskingum River watershed (05040004). While ODOT recognizes that this approach is not ideal, it would be a better use of public funds given that the streams at this location are of a much higher quality and support a diversity of aquatic macroinvertebrates and vertebrates (salamanders adapted to cool water) and that the stream mitigation ratio would be 1.5:1. ODOT suggests that this approach would satisfy (b)(6)

Permittee-responsible mitigation through off-site and/or out-of-kind of the USACE's 2008 Mitigation Rule. Although not the preferred approach, mitigation beyond adjacent watersheds from the project location has been approved by the USACE on other ODOT projects. In summary, ODOT proposes to mitigate all stream impacts (2,160 linear feet) at Sunday Creek Coal Company Mitigation Land Site 1 (HUC05030204) at a ratio of 1.5:1. Wetland impacts will be mitigated at a ratio of 1.5:1 at the Meigs-124-21.26 (Meigs County Fairgrounds – HUC05030202) (adjacent watershed) thereby satisfying satisfy (b)(6) *Permittee-responsible mitigation through off-site and/or out-of-kind* of the USACE's 2008 Mitigation Rule.

Non-Degradation Alternative

There is no mitigation technique proposed for the Non-Degradation Alternatives there are no direct stream impacts associated with the construction of repairing the road in place.

Table 1a – Streams Affected by the Proposed State Route 821 Realignment (Minimal Degradation Alternative)

| Stream | Latitude Longitude | Description And Length Impacted (feet) | Drainage Basin | Total Length In Study Area (feet) | Receiving Stream | Distance to Receiving Stream | Drainage Area (mi ²) | QHEI; HHEI; HMFEI Score Provisional Use Designation | Riparian Corridor and Adjacent Habitats |
|----------|--------------------|--|-----------------------------------|-----------------------------------|------------------|------------------------------|----------------------------------|---|---|
| Stream 1 | 39.4951 81.4425 | Intermittent RPW 200 | Duck Creek (Central Oh. Tribs) | 460 | New Years Creek | 75' | 0.010 | 36/LRW 45/Class II 0/Class I | Mixed Deciduous Upland Forest |
| Stream 2 | 39.4950 81.4420 | Ephemeral Non-RPW 230 | Duck Creek (Central Oh. Tribs) | 330 | New Years Creek | 125' | 0.002 | 25/LRW 20/Class I 0/Class I | Mixed Deciduous Upland Forest |
| Stream 3 | 39.4960 81.4423 | Ephemeral Non-RPW 400 | Duck Creek (Central Oh. Tribs) | 670 | New Years Creek | 150' | 0.005 | 33/LRW 21/Class I 0/Class I | Mixed Deciduous Upland Forest |
| Stream 4 | 39.4960 81.4420 | Ephemeral Non-RPW 150 | Duck Creek (Central Oh. Tribs) | 190 | Stream 3 | 190' | 0.002 | 33/LRW 17/Class I 0/Class I | Mixed Deciduous Upland Forest |
| Stream 5 | 39.4560 81.4420 | Ephemeral Non-RPW 40 | Duck Creek (Central Oh. Tribs) | 60 | Wetland 2 | 60' | 0.001 | 31/LRW 17/Class I 0/Class I | Mixed Deciduous Upland Forest |
| Stream 6 | 39.5000 81.4370 | Ephemeral Non-RPW 970 | Duck Creek (Central Oh. Tribs) | 970 | Stream 7 | 970' | 0.002 | 33/LRW 27/Class I 0/Class I | Mixed Deciduous Upland Forest |
| Stream 7 | 39.5001 81.4372 | Ephemeral Non-RPW 170 | Duck Creek (Central Oh. Tribs) | 560 | New Years Creek | 200' | 0.021 | 35.5/LRW 29/Class I 0/Class I | Mixed Deciduous Upland Forest |

Table 1b – Wetlands Affected by the Proposed State Route 821 Realignment (Minimal Degradation Alternative)

| Wetland # | USGS Coordinate | Drainage Basin | Wetland Description | Cowardin et al., 1979 Classification | ORAM V5.0 Score | OEPA Category | Total Size (Area Impacted) | Adjacent Habitats | Proximity to Other Surface Waters |
|-----------|--------------------|------------------------------------|------------------------------|--------------------------------------|-----------------|---------------|----------------------------|----------------------------------|--|
| Wetland 1 | 39.4990 81.4390 | Duck Creek (Central Ohio Tribs) | Jewel Weed Depression | Palustrine Emergent | 18 | Category 1 | 0.007ac/0.007 ac | Upland Forest Mixed Deciduous | 100' to Stream 3 By non-jurisdictional connection |
| Wetland 2 | 39.4991 81.4390 | Duck Creek (Central Ohio Tribs) | Jewel Weed Linear Depression | Palustrine Emergent | 25 | Category 1 | 0.057ac/0.057 ac | Upland Forest Mixed Deciduous | Drained by Stream 4 |

TABLE 2. IMPACT QUANTITIES

| STREAMS | | | | | Existing Culvert | Existing Culvert Replaced (overlap) | Permanent Fill Below OHWM | | | | | | | | | | | | Temporary Fill Below OHWM | | | TOTAL IMPACT (Upstream to Downstream) | | | TOTAL NEW IMPACT (Total - Existing) |
|-------------|--|----------------------------------|-------------------------|-------------------------|------------------|-------------------------------------|---|-----------|-------------|--------------|-----------|-------------|--|-----------|-------------|------------------------------|-----------|-------------|---------------------------|-----------|-------------|---------------------------------------|-----------|-------------|-------------------------------------|
| Resource ID | Description of Impacts/Activities below OHWM | Total Length Within Project Area | Stream Width (avg) (ft) | Stream Depth (avg) (ft) | | | Proposed Concrete (Includes Culvert, Piers, Walls, Abutments, etc.) | | | Proposed RCP | | | Proposed Earthen, Granular, or Embankment Fill | | | Proposed Other (Steel, Etc.) | | | Length (LF) | | | Area (AC) | | | |
| | | | | | Length (LF) | Length (LF) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) |
| Stream 1 | Embankment Fill 36" culvert Storm Sewer | 460 | 3 | 2 | 50.0 | 50.0 | 175.0 | 0.012 | 38.880 | 10.0 | 0.001 | 2.220 | | | | | | | 200.0 | 0.140 | 44.440 | 150.0 | | | |
| Stream 2 | Embankment Fill 15" culvert Storm Sewer | 330 | 1 | 1 | 50.0 | na | | | | | | | 230.0 | 0.005 | 8.510 | | | | 230.0 | 0.005 | 8.510 | 180.0 | | | |
| Stream 3 | Embankment Fill 21" culvert Storm Sewer | 670 | 3 | 1.5 | 50.0 | na | | | | 50.0 | 0.003 | 8.330 | 350.0 | 0.024 | 58.330 | | | | 400.0 | 0.027 | 66.660 | 350.0 | | | |
| Stream 4 | Embankment Fill 21" culvert Storm Sewer | 190 | 1 | 1 | 50.0 | na | | | | | | | 150.0 | 0.003 | 5.550 | | | | 150.0 | 0.003 | 5.550 | 100.0 | | | |
| Stream 5 | Embankment Fill | 60 | 1 | 1 | na | na | | | | | | | 40.0 | 0.001 | 1.481 | | | | 40.0 | 0.001 | 1.481 | 40.0 | | | |
| Stream 6 | Embankment Fill 30" culvert Storm Sewer | 970 | 1 | 1 | 100.0 | na | | | | | | | 970.0 | 0.020 | 35.920 | | | | 970.0 | 0.020 | 35.920 | 870.0 | | | |
| Stream 7 | Embankment Fill 36" culvert Storm Sewer | 560 | 3 | 1.5 | 100.0 | na | 20.0 | 0.001 | 3.330 | | | | 150.0 | 0.010 | 25.000 | | | | 170.0 | 0.011 | 28.330 | 270.0 | | | |

| WETLANDS | | | | | Existing Culvert ¹ | Existing Culvert Replaced (overlap) | Permanent Fill Below OHWM | | | | | | | | | | | | Temporary Fill Below OHWM | | | TOTAL IMPACT | | | TOTAL NEW IMPACT | | | |
|-------------|--|-----------------------------------|------------|------------|-------------------------------|-------------------------------------|---|-----------|-------------|--------------|-----------|-------------|--|-----------|-------------|------------------------------|-----------|-------------|---------------------------|-----------|-------------|--------------|-----------|-------------|------------------|-------------|-------------|---------|
| Resource ID | Description of Impacts/Activities below OHWM | Total Acreage Within Project Area | Width (FT) | Depth (FT) | | | Proposed Concrete (Includes Culvert, Piers, Walls, Abutments, etc.) | | | Proposed RCP | | | Proposed Earthen, Granular, or Embankment Fill | | | Proposed Other (Steel, Etc.) | | | Length (LF) | | | Area (AC) | | | | Volume (CY) | | |
| | | | | | Length (LF) | Length (LF) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Acreage |
| Wetland 1 | Emankment Fill | 0.007 AC | | | | | | | | | | | 30.000 | 0.007 | 11.29000 | | | | 30.000 | 0.007 | 11.29000 | 0.007 | | | | | | 0.007 |
| Wetland 2 | Emankment Fill | 0.057 AC | | | | | | | | | | | 190.000 | 0.057 | 91.96000 | | | | 190.000 | 0.057 | 91.96000 | 0.057 | | | | | | 0.057 |

Table 3. Proposed Lowering of Water Quality by the Preferred and Minimal Degradation Alternatives of the State Route 821 Realignment.

| Alternative | Expected Impacts by Alternative | | | | | | Summary for Alternative |
|-----------------------|---------------------------------|--|-------------------------------------|---|---|---|--|
| | Direct Stream Impacts | Aquatic Hab. (QHEI)/Use Designation/Stream Flow | Aquatic Biota | T & E Species | Terrestrial Plant/Animals (Riparian Area) | Wetlands | |
| Preferred Alternative | 2,255 Linear Feet | All streams provisional LRW or Class I. Streams 1 – 6 ephemeral Stream 7 – poss. Intermittent. QHEI/HMFEI Score Stream 1 – 31/0 Stream 2 – 25/0 Stream 3 – 31.5/0 Stream 4 – 31 /0 Stream 5 – 31/0 Stream 6 – 28/0 Stream 7 – 31/0 | No Aquatic Biology Found in Streams | Not likely to affect the fanshell, pink mucket pearly mussel, sheepnose, snuffbox, bald eagle, eastern hellbender, timber rattlesnake. The Indiana bat may be affected but is not likely to be adversely affected. The Northern Long-eared bat is not likely to be adversely affected | Impact approximately 20.53 acres of mixed deciduous forest Commensurate loss in available habitat for forest species. Displacement and mortality within construction foot print. | Impact 0.064 acre Cat – 1 Palustrine Emergent –Jewel Weed | 2,255 linear feet of stream impacted 20.53 acres of forest impacted 0.064 acre of wetland impacted Likely to affect not likely to adversely affect Indiana bat Northern Long-eared bat not likely to be adversely affected |
| Minimal Degradation | 2,160 Linear Feet | All streams provisional LRW or Class I. Streams 1 – 6 ephemeral Stream 7 – poss. Intermittent. QHEI/HMFEI Score Stream 1 – 31/0 Stream 2 – 25/0 Stream 3 – 31.5/0 Stream 4 – 31 /0 Stream 5 – 31/0 Stream 6 – 28/0 Stream 7 – 31/0 | No Aquatic Biology Found in Streams | Not likely to affect the fanshell, pink mucket pearly mussel, sheepnose, snuffbox, bald eagle, eastern hellbender, timber rattlesnake. The Indiana bat may be affected but is not likely to be adversely affected. The Northern Long-eared bat is not likely to be adversely affected | Impact approximately 13.06 acres of mixed deciduous forest Commensurate loss in available habitat for forest species. Displacement and mortality within construction foot print. | Impact 0.064 acre Cat – 1 Palustrine Emergent –Jewel Weed | 2,160 linear feet of stream impacted 13.06 acres of forest impacted 0.064 acre of wetland impacted Likely to affect not likely to adversely affect Indiana bat Northern Long-eared bat not likely to be adversely affected |
| No Build | None | No Impact | No impact | No Impact | No Impact | No Impact | No Impact |

Table 4a – Proposed Stream and Wetland Mitigation for the Preferred Design Alternative for the SR 821 Realignment.

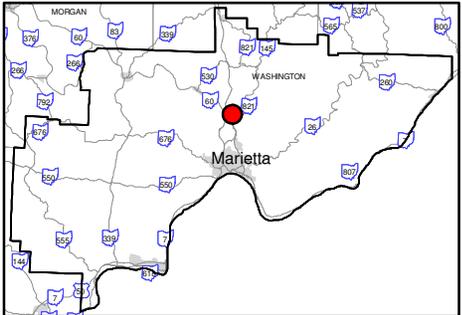
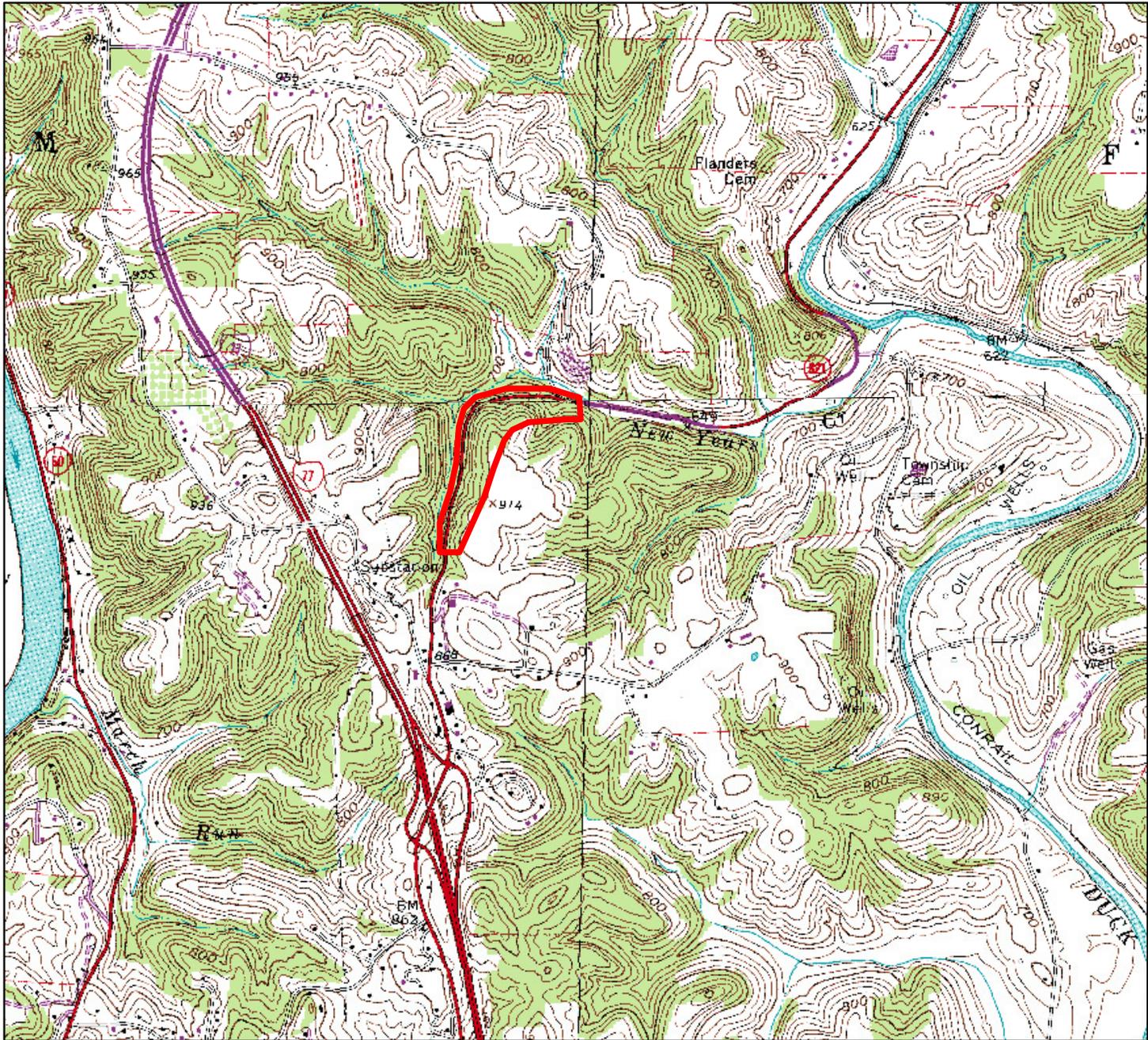
| Stream Name Unnamed Tributaries to New Years' Creek | Impacted Length | Type of Mitigation | Watershed (8 Digit HUC) | | QHEI Score | Mitigated Length | |
|---|--------------------|-----------------------|-------------------------|-----------|---------------|------------------|--|
| | | | Impacted | Mitigated | | On-site | Off-site |
| Stream 1 | 130 | Preservation Off-Site | 05030201 | 05030204 | 31 | 0 | 130 (1.5:1) = 195 Sunday Ck. Coal Co. 1 |
| Stream 2 | 270 | Preservation Off-Site | 05030201 | 05030204 | 25 | 0 | 270 (1.5:1) = 405 Sunday Ck. Coal Co. 1 |
| Stream 3 | 440 | Preservation Off-Site | 05030201 | 05030204 | 31.5 | 0 | 440 (1.5:1) = 660 Sunday Ck. Coal Co. 1 |
| Stream 4 | 215 | Preservation Off-Site | 05030201 | 05030204 | 31 | 0 | 215 (1.5:1) = 322.5 Sunday Ck. Coal Co. 1 |
| Stream 5 | 80 | Preservation Off-Site | 05030201 | 05030204 | 31 | 0 | 80 (1.5:1) = 120 Sunday Ck. Coal Co. 1 |
| Stream 6 | 970 | Preservation Off-Site | 05030201 | 05030204 | 28 | 0 | 970 (1.5:1) = 1,455 Sunday Ck. Coal Co. 1 |
| Stream 7 | 150 | Preservation Off-Site | 05030201 | 05030204 | 31 | 0 | 150 (1.5:1) = 225 Sunday Ck. Coal Co. 1 |
| Total | 2,255 | | | | | 0 | 3,382.5 |

| Wetland ID Number | Impacted Area | Type of Wetland (Isolated/Non-Isolated) | Watershed (8 Digit HUC) | | ORAM v5.0 Score | OEPA Category | Mitigated Area | |
|----------------------|------------------|--|-------------------------|-----------|--------------------|------------------|----------------|---|
| | | | Impacted | Mitigated | | | On-site | Off-site |
| Wetlands 1 | 0.007 | Non-Isolated Wetlands | 05030201 | 05030204 | 18 | 1 | 0 | 0.007 (1.5:1) = 0.010 Meigs Fairgrounds Wetland Restoration |
| Wetland 2 | 0.057 | Non-Isolated Wetlands | 05030201 | 05030204 | 25 | 1 | 0 | 0.057 (1.5:1) = 0.085 Meigs Fairgrounds Wetland Restoration |
| Total | 0.064 | | | | | | 0 | 0.095 |

Table 4b – Proposed Stream and Wetland Mitigation for the **Minimal Degradation** Alternative for the SR 821 Realignment.

| Stream Name Unnamed Tributaries to New Years' Creek | Impacted Length | Type of Mitigation | Watershed (8 Digit HUC) | | QHEI Score | Mitigated Length | |
|---|--------------------|-----------------------|-------------------------|-----------|---------------|------------------|--|
| | | | Impacted | Mitigated | | On-site | Off-site |
| Stream 1 | 130 | Preservation Off-Site | 05030201 | 05030204 | 31 | 0 | 200 (1.5:1) = 300 Sunday Ck. Coal Co. 1 |
| Stream 2 | 270 | Preservation Off-Site | 05030201 | 05030204 | 25 | 0 | 230 (1.5:1) = 345 Sunday Ck. Coal Co. 1 |
| Stream 3 | 440 | Preservation Off-Site | 05030201 | 05030204 | 31.5 | 0 | 400 (1.5:1) = 600 Sunday Ck. Coal Co. 1 |
| Stream 4 | 215 | Preservation Off-Site | 05030201 | 05030204 | 31 | 0 | 150 (1.5:1) = 225 Sunday Ck. Coal Co. 1 |
| Stream 5 | 80 | Preservation Off-Site | 05030201 | 05030204 | 31 | 0 | 40 (1.5:1) = 60 Sunday Ck. Coal Co. 1 |
| Stream 6 | 970 | Preservation Off-Site | 05030201 | 05030204 | 28 | 0 | 970 (1.5:1) = 1,455 Sunday Ck. Coal Co. 1 |
| Stream 7 | 150 | Preservation Off-Site | 05030201 | 05030204 | 31 | 0 | 170 (1.5:1) = 255 Sunday Ck. Coal Co. 1 |
| Total | 2,160 | | | | | 0 | 3,240 |

| Wetland ID Number | Impacted Area | Type of Wetland (Isolated/Non-Isolated) | Watershed (8 Digit HUC) | | ORAM v5.0 Score | OEPA Category | Mitigated Area | |
|----------------------|------------------|--|-------------------------|-----------|--------------------|------------------|----------------|---|
| | | | Impacted | Mitigated | | | On-site | Off-site |
| Wetlands 1 | 0.007 | Non-Isolated Wetlands | 05030201 | 05030204 | 18 | 1 | 0 | 0.007 (1.5:1) = 0.010 Meigs Fairgrounds Wetland Restoration |
| Wetland 2 | 0.057 | Non-Isolated Wetlands | 05030201 | 05030204 | 25 | 1 | 0 | 0.057 (1.5:1) = 0.085 Meigs Fairgrounds Wetland Restoration |
| Total | 0.064 | | | | | | 0 | 0.095 |



Location of project in Washington County, Ohio.



Location of Washington County, Ohio



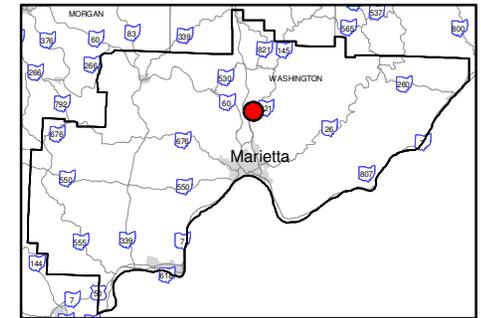
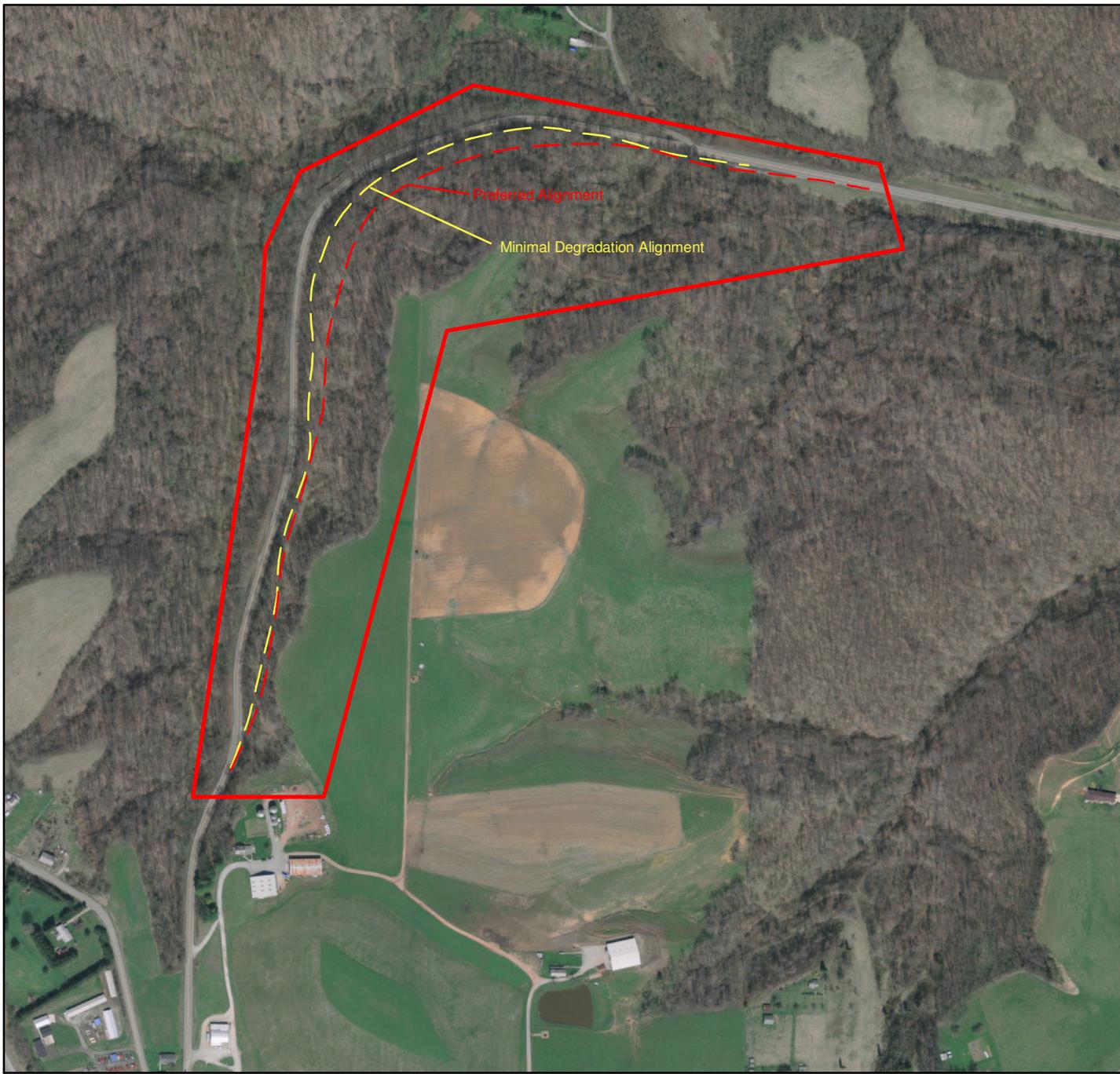
OHIO DEPARTMENT OF TRANSPORTATION
 DISTRICT 10, 338 MUSKINGUM DRIVE
 MARIETTA, OH 45750
 CREATED BY: M AUSTIN
 DATE CREATED: 10/2/2012

BASE MAP: Marietta and Lower Salem, OH - 7.5 Minute USGS Topographic Quads.

 Study Area



Figure 1. WAS-821-3.79 (PID 91295)
 Location and Study Area for Landslide Repair
 Realignment of SR 821



Location of project in Washington County, Ohio.



Location of Washington County, Ohio



OHIO DEPARTMENT OF TRANSPORTATION
 DISTRICT 10, 338 MUSKINGUM DRIVE
 MARIETTA, OH 45750
 CREATED BY: M AUSTIN
 DATE CREATED: 11/18/2013

Figure 2 - WAS-821-3.68 (PID 91295)
 Study Area



MINIMAL DEGRADATION
ALIGNMENT AND WORK LIMITS

PREFERRED DESIGN
ALIGNMENT AND WORK LIMITS

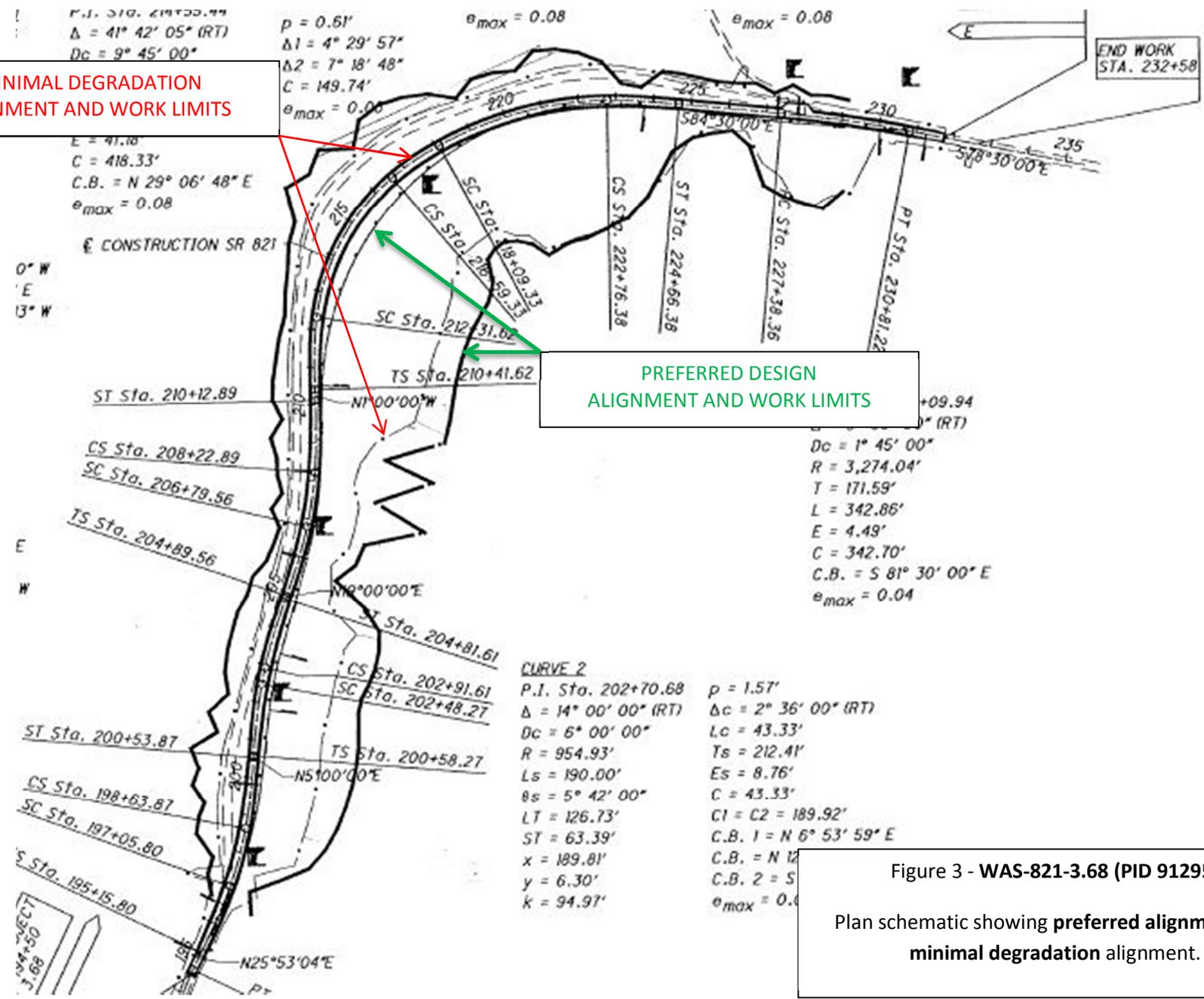


Figure 3 - WAS-821-3.68 (PID 91295)
Plan schematic showing preferred alignment and minimal degradation alignment.

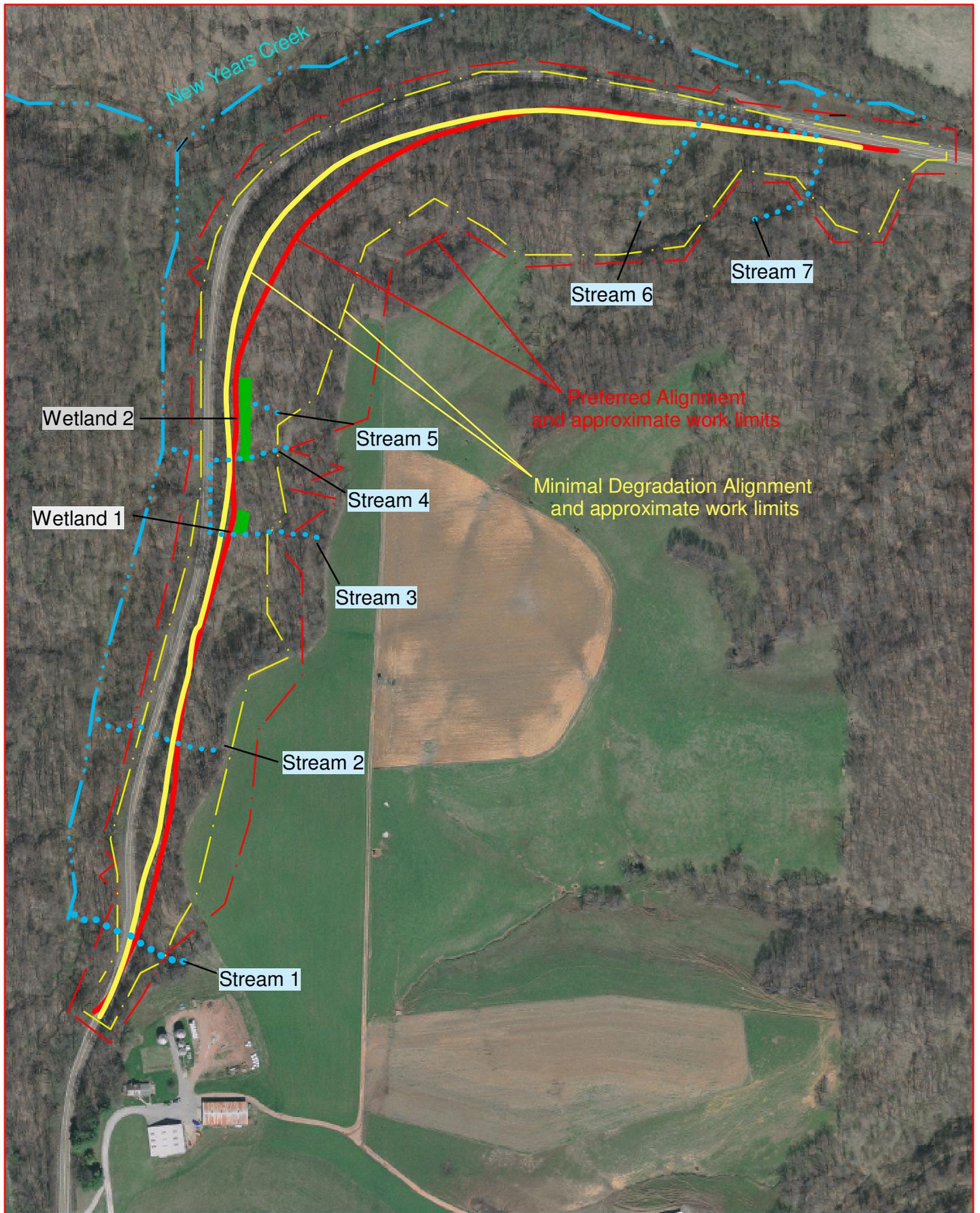


Figure 4 - WAS-821-3.68 (PID 91295)
 Aerial Photograph showing Preferred and
 Minimal Degradation Alignments.