ATTACHMENT 2

Project Description

BLOCK 8A: ACTIVITY - DESCRIBE THE OVERALL ACTIVITY:

The project proposes to improve Wayne Township Road 62 (TR 62) (Kaylor Road), in Tuscarawas County (County) (Attachment 6a-c, Figures 1-3; Attachment 7) by replacing the existing two span continuous steel beam bridge with a corrugated steel deck bridge, overlaid with asphalt (Attachment 8d). The existing bridge (SFN 7931581) was built in 1910 to carry Kaylor Road over South Fork Sugar Creek. The project area is located approximately 0.75 miles north of the intersection of TR 62 and State Route 93.

The proposed project will replace the existing bridge with a 28 foot (ft) wide single-span, non-composite, pre-cast, pre-stressed reinforced concrete box beam bridge on steel capped-pile pier and masonry, sandstone and steel capped abutments, each with a single row of H-beam piling (Attachment 8d). The existing bridge is a one-lane structure with a total span of 55 ft 6 inches (in), while the proposed new bridge will be a two-lane structure with a total span of 90 ft 0 in (Attachment 8d).

Approximately 60 linear feet of South Fork Sugar Creek will be permanently impacted by the proposed project. These impacts will occur through the installation of approximately 35 cubic yards of rock channel protection (RCP) adjacent to the base of each of the new bridge support structures, one at each side of the stream (total 70 cubic yards) (Attachment 8d). Removal of the old bridge will also result in the removal of the existing, mid-channel bridge-support piers. The new bridge will not require the use of in-channel support piers, thereby improving stream flow and hydraulics. In addition, the use of RCP will introduce a habitat type that is currently absent in the silt-bottomed South Fork Sugar Creek.

Portions of two Category 3 wetlands will be permanently filled as a result of the proposed project. Filling of these wetlands is necessary to allow for the installation of the new wider, longer bridge structure, and for construction of the associated roadside drainage and new roadway approaches. It is important to note that the proposed wetland impacts are to two drainage ditches/swales located along each side of Kaylor Road. Although these ditches/swales are part of the overall wetland system and therefore part of a Category 3 wetland, they do not provide the same functions and values as the main body of the wetlands do. In addition, these areas of the wetland have been previously impacted in order to create the roadside drainage ditches/swales, and continue to be impacted by routine maintenance activities.

Traffic will be detoured throughout the duration of construction (approximately 60 days). Small amounts of strip right-of-way will be required to facilitate the bridge replacement project. It is anticipated that construction will begin in the summer of 2012. This project will involve 80% federal funding, and 20% local funding.

On July 7, 2011, the United States Army Corps of Engineers (USACE) field reviewed the project site and determined that the impacted portion of the Category 3 wetland areas are hydrologically connected to South Fork Sugar Creek (see Preliminary Jurisdictional Determination, Attachment 1b). This hydrologic connection is made through the direct discharge from the wetland areas into the stream channel. The impacted portion of South Fork Sugar Creek is a perennial Relatively Permanent Water (RPW), an indirect tributary to the Tuscarawas River (a Traditional Navigable Water, TNW), and therefore, a water of the US, subject to regulation under Section 404 of the Clean Water Act (CWA) (Attachment 1b). The stream is located within 14-digit Hydrological Unit Code (HUC) 05040001-110-060 (Sugar Creek).

ATTACHMENT 3

Purpose and Need

BLOCK 8B: PURPOSE: DESCRIBE THE PURPOSE, NEED AND INTENDED USE OF THE ACTIVITY:

The purpose of the proposed project is to replace a deteriorated and structurally deficient bridge in order to maintain a safe route of travel. The need for the proposed work is based on the County's past inspections of the bridge, the last of which was conducted on April 3, 2010 (Attachment 3b), at which time the bridge exhibited the following deficiencies:

- Superstructure: The stringers, floor beams and end posts are experiencing severe rust and scaling. Because of the rusting severe section loss has occurred;
- Substructure: The steel abutments and wing walls and the steel back walls are rusting, scaling and showing section loss;
- Deck: The corrugated steel deck is rusted/corroded.

Based on this inspection the bridge was assigned a general appraisal rating of 4 (poor condition) and a sufficiency rating of 24.9 (structurally deficient) (Attachment 3b). Bridge sufficiency ratings serve as a composite index for measuring bridge conditions over time and are indicative of a bridge's sufficiency to stay in service. The rating is based on a formula representing an overall judgment of the condition of a bridge from 0 (worst) to 100 (best), where 100 would represent an entirely sufficient bridge and 0 would represent an entirely insufficient or deficient bridge (USDOT Bridge Inspector's Reference Manual 2006). Bridges with a sufficiency rating score of less than 50 points and either functionally obsolete or structurally deficient require replacement in order to provide safe passage for the traveling public (USDOT Bridge Inspector's Reference Manual 2006). Therefore, based on the bridge structure rating of 24.9, the bridge is deficient and needs to be replaced. Additionally, the existing bridge is a one-lane structure located on a two-lane road.

In summary, the current appraisal rating, sufficiency rating, and lane constraint of this bridge fall below the requirements of current design standards, and therefore the County Engineer has determined that the proposed replacement of the bridge is warranted. Current design standards are dictated by the Load and Resistance Factor Design (LRFD) Specifications 4th Edition (as adopted by the American Association of State Highway and Transportation Officials [AASHTO], including the 2009 Interim Specifications), and the 2007 ODOT Bridge Design Manual.

The logical termini for the proposed project were established based on the scope of the problems identified by the County's inspections of the subject bridge. The project will begin at TR 62 (Kaylor Road) straight line mileage (SLM) 0.736 and terminate at TR 62 SLM 0.780. These termini limit the footprint of the project, thereby minimizing impacts to the overall wetland system to the greatest extent possible while still allowing for the project to physically address the needs identified in the past bridge inspections.

District: **11** County **TUSCARAWAS** (101) Location: **1 MI N OF SR 93 JCT** (102) Facility Carried: **WAYNE TWP ROAD 62**
(2)FIPS Code: **WAYNE TWP** (103) Route On Bridge: **TOWNSHIP** (104) Route Under Bridge: **NON-HIGHWAY**
(9) Direction of Traffic: **ONE LANE FOR 2-WAY TRAFFIC** (10) Temporary: **N** (11)Truck Network: **N** (12)Parallel: **N**
(95) Insp: **COUNTY** (96) Maint: **COUNTY** (97) Routine: **COUNTY** (100) Type Serv: (On): **HIGHWAY** (Under): **WATERWAY**

Inventory Route Data

(3) Route On/Under: **ON** Hwy Sys: **COUNTY/TOWNSHIP HIGHWAY**
Route No.: **T0062** Dir: Des: **MAINLINE** Pref:
(4) Feature Intersected: **SUGAR CREEK**
(5) County: **WAY** Mileage: **0305** Special Desig:
(6) Avg. Daily Traffic(ADT): **150** (7) ADT Year: **2004**
(8) Truck Traf: **9** (14) NHS: **NO - X** (15) Corridor: **N**
(16) Functional Class: **LOCAL ROAD-RURAL** (19) Strahnt: **Not Applicable**

Intersected Route Data

(22) Route On/Under: Hwy Sys:
Route No.: Dir: Des: Pref:
(23) Feature Intersected:
(24) County: Mileage: Special Desig:
(25) Avg. Daily Traffic(ADT): **0** (26) ADT Year:
(27) Truck Traf: **0** (28) NHS: - (29) Corridor:
(30) Functional Class: (36) Strahnt: **Not Applicable**

Clearance On the Bridge

(154) Min Hriz on Bridge: NC: **0.0** Ft Card: **10.0** Ft
(155) Prac Max Vert On Brg: **9999.9** Ft
(67) Min Vrt Clr On Brg: NC: **0.0** Ft Card: **9999.9** Ft
(80) Min Latl Clr: NC: **0.0 / 0.0** Ft Card: **0.0 / 0.0** Ft
(81) Vrt Clr Lft: **0.0** Ft

Structure Information

(38) Bypass Length: **10** Miles
(39) Latitude: **40 Deg 39.9 Min** Longitude: **81 Deg 36.1 Min**
(40) Toll: **ON FREE ROAD**
(41) Date Built: **07/01/1910** (42) Major Rehabilitation: **01/01/1979**
(43) No. Lanes On: **1** No. Lanes Under: **0**
(44) Horiz Curve: **Deg. Min.** (45) Skew: **0** Deg
(49) App. Rdw Width: **15** Ft (50) Brg. Rdw Width: **16.0** Ft
(51) Deck Width: **16.0** Ft Deck Area: **926** Sq. Ft
(52) Median Type: **NONE / NON BARRIE / NO JOINT**
(53) Bridge Median: **NO MEDIAN**
(54) Sidewalks: (left) **0** Ft (right) **0** Ft
(55) Type Curb or Sidewalks:
(Left) Matl: **NONE** Type: **NONE**
(Right) Matl: **NONE** Type: **NONE**
(56) Flared: **N** (57) Composite:
(58) Railing: **STEEL POST & STEEL PANEL (DECORATIVE)**
(59) Deck Drainage: **OVER THE SIDE (W/O DRIP STRIP)**
(60) Deck Type: **CORRUGATED STEEL PLATE**
(61) Deck Protection: External: **NONE**
Internal: **NONE**
(62) Wearing Surface: **BITUM (ASPHLT CONCRT)**
Thickness: **3.1** in (119) Date of Wearing Surface:
Slope Protection: **NONE-NATURAL PROTECTION(GRASS,BUSHES)**

(63) Main Spans Number: **2** Type: **STEEL / BEAM / SIMPLE SPAN**
Approach Spans Number: **0** Type: **NONE / NONE / NONE**
Total Spans: **2** (65) Max Span: **32** Ft (66) Overall Leng: **58** Ft

(70) Substructure	(71) Foundation and Scour Information	
Abut-Rear Matl: **STONE**	Type: **GRAVITY**	Fnd: **SPREAD FOOTING**
Abut-Fwd Matl: **STEEL AND CONCRETE**	Type: **STUB-CAPPED PILE (SINGLE**	Fnd: **STEEL H PILES (OTHER SIZE)**
Pier-Pred Matl: **STEEL**	Type: **CAPPED COLUMN**	Fnd: **STEEL H PILES (OTHER SIZE)**
Pier-Other Matl: **NONE**	Type: **NONE**	Fnd: **NONE/NOT APPLICABLE (SUCH AS CULVERTS)**
Pier-Other Matl: **NONE**	Type: **NONE**	Fnd: **NONE/NOT APPLICABLE (SUCH AS CULVERTS)**
No of Piers Predominate: **01**	Other: **NN**	Other: **NN**

(86) Stream Velocity: **UUU** (74) Scour: **STABLE: SCOUR WITHIN LIMITS OF FOOT/PILE**
(189) Dive: **N Freq: 0** Probe: **Y** Freq: **12** (75) Chan Prot: **STONE**
(189) Date of last Dive Insp: (152) Drainage Area: **UUUU** Sq Mi

Clearance Under the Bridge

(156) Min. Horiz Under Clear: NC: **0.0** Ft Card: **0.0** Ft
(157) Prac Max Vrt Under Clear: **0.0** Ft
(77) Min Vert Under Clear: NC: **0.0** Ft Card: **0.0** Ft
(78) Min Lat Under Clear: NC: **0.0 / 0.0** Ft Card: **0.0 / 0.0** Ft

Load Rating Information

(48) Design Load: **H/20**
(83) Operating: **18** Ton
Inventory: **14** Ton
Ohio Percent of Legal Load **75**
Year of Rating: **2004**
(84) Analysis: **ENGINEERING JUDGEMENT [DEFAULT]**
(85) Rate Soft: **NO SOFTWARE USED** Analyzed by:
Analysis on Bars: **NOT ON BARS [DEFAULT]**

(88-89) Appraisal

(Including calculated Items)
(88) Waterway Adequacy **3**
(89) Approach Alignment **4**
Calc Gen Appraisal: **4**
Calc Deck Geometry: **2**
Calc Underclearance: **N**

Approach Information

(109) Approach Guardrail: **NONE**
(110) Approach Pavement: **OTHER** (111) Grade: **POOR**

Culvert Information

(131) Culvert Type: **NONE/NOT APPLICBLE** (127) Length: **0.0** Ft
(129) Depth of Fill: **0.0** Ft (130) Headwalls: **NONE**

General Information

(121) Main Member **WELDED BUILT-UP STEEL** (122) Moment Plate: **NONE**
(169) Expansion Joint: **NONE**
(124) Bearing Devices: **SLIDING (OTHER)/NONE**
(126) Navigation: **Control- N** Vert Clr: **0.0** Ft Horiz Clear:: **0.0** Ft
(193) Spec Insp: **N** Freq: **0** Date:
(188) Fracture Critical Insp: **N** Freq: **0** Date:
(138) Long Member: **NOT APPLICABLE** (135) Hinges: **NOT APPLICABLE**
(141) Structural Steel Memb: **UNKNOWN** (139) Framing: **NONE**
Railing: **UNKNOWN**
Pay Wt: **0** pounds Prime Loc: **UNKNOWN** Paint: **OTHER**
Bridge Dedicated Name:

General Information (Continued)

(---) Hist Significance: **NOT DETERMINED**
(69) NBIS: **Y**
(---) Hist Builder: **NONE N/A**
Hist Build Year:
(69) Hist Type: **NONE N/A**
(161) Special Features (see below):
(105) Border Bridge State: Resp % (106) SFN:

Proposed Improvements

(90) Type Work: **35 - BRG REHAB--GEN DECLINE/INADEQ STRENGTH**
(90) Length: Ft
(90) Bridge Cost ($1000s): **0**
(90) Roadway Cost ($1000s): **0**
(90) Total Project Cost ($1000s): **0**
(90) Year:
(91) Future ADT (On Bridge): **0**
(92) Year of Future ADT: **2029**

Programming Info

PID Number:
PID Status:
PID Date:

Original Plans Information

(142) Fabricator:
(143) Contractor:
(144) Ohio Original Construction Project No.:
(---) Microfilm Reel:
(151) Standard Drawing:
Aperture Cards: Orig: **N** Repair: **N** Fabr: **N**
Plan Information Available: **1PLAN INFORMATION AVAILABLE**

(153) Repair Projects

1. **/ MMM**	2. **/ 020**	3.
4.	5.	6.
7.	8.	9.
10.		

Inspection Summary

(I-8) Deck:	**4**
(I-32) Superstructure:	**4**
(I-42) Substructure:	**4**
(I-50) Culvert:	
(I-54) Channel:	**4**
(I-60) Approaches:	**4**
(I-66) General Appraisial:	**4**
(I-66) Operational Status:	**P**
Inspection Date:	**04/03/2010**
(94) Desig Insp Freq:	**12 Months**

(I-69) Survey Items

Railings:	**0 DOES NOT MEET CURRENT STANDARDS**
Transitions:	**0 DOES NOT MEET CURRENT STANDARDS**
Guardrail:	**0 DOES NOT MEET CURRENT STANDARDS**
Rail Ends:	**0 DOES NOT MEET CURRENT STANDARDS**
Pavement Mark:	**0 DOES NOT MEET CURRENT STANDARDS**
Restrict Sign:	**1 MEETS CURRENT STANDARDS**
Warning Sign:	**1 MEETS CURRENT STANDARDS**
End Markers:	**1 MEETS CURRENT STANDARDS**
Insp. Update Date:	**04/26/2010**

Utilities

(46) Electric:	**U**
Gas:	**U**
Sanitary Sewer:	**U**
Telephone:	**U**
TV Cable:	**U**
Water:	**U**
Other:	**U**

Special Features

(161) Lighting:	**N**
Fencing:	**N**
Glare-Screen:	**N**
Splash-Guard:	**N**
Catwalks:	**N**
Other-Feat:	**U**
(184) Signs-on:	**N**
Signs-Under:	**N**
(162) Fence-Ht:	**0.0** Ft
(163) Noise Barr:	**N**

SFNs Replacing this retired bridge: **-**
SFNs That where replaced by this bridge: **-**
This bridge was retired and copied to:
The bridge was copied from:

INV Field Bridge Marker: **TUS-T0062-0305 -**
INT Field Bridge Marker: **---**

PONTIS CoRe elements and Condition States

Elem No.	CoRe Element Description	Total Quantity	Unit Meas.	Condition State Percents(*)				
				1	2	3	4	5
		0						

(*) Percentages Should add to 100%

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

BRIDGE INSPECTION REPORT

BR-86 REV 02-95

7 9 3 1 5 8 1
1 Structure File Number 7

Bridge Number **TUS** (CO) **T0062** (ROUTE) **0305** (UNIT) **WAYNE TWP** **Date Built 07/01/1910 - 1979**

District **11** Bridge Type **STEEL/BEAM/SIMPLE SPAN** Type Service **1** **15 SUGAR CREEK** **TUS**

DECK Out/Out 16.0		3	2. Wearing Surface THCK = 3.1 6-BITUM (ASPHLT CONCRT) 41	3
1. Floor 6-CORRUGATED STEEL PLATE 8				
3. Curbs, Sidewalks, Walkways N-NONE N-NONE 9			4. Median W.S. Date = 42	
5. Railing 6-STEEL POST & STEEL PAN 10		2	6. Drainage 1-OVER THE SIDE (W/O DRI 43	2
7. Expansion Joints N-NONE 11			**8. Summary** 44	4
SUPERSTRUCTURE MAX.SPAN=32		2	10. Beams/Girders/Slab 3-WELDED BUILT-UP STEEL 45	3
9. Alignment 12				
TOT.LGTH=58				
11. Diaphragms or Crossframes 13			12. Joists/Stringers 46	
13. Floor Beams 14			14. Floor Beam Connections 47	
15. Verticals 15			16. Diagonals 48	
17. End Posts 16			18. Top Chord 49	
19. Lower Chord 17			20. Lower Lateral Bracing 50	
21. Top Lateral Bracing 18			22. Sway Bracing 51	
23. Portals 19			A-SLIDING (OTHER) 24. Bearing Devices N-NONE 52	2
25. Arch 20			26. Arch Columns or Hangers 53	
27. Spandrel Walls 21			TYPE = 0-OTHER 28. Protective Coating System DATE = 01/01/1979 54	3
29. Pins/Hangers/Hinges 22			30. Fatigue Prone Connections 55	
31. Live Load Response 23	S		**32. Summary** 56	4
SUBSTRUCTURE 7-STEEL AND CONCRETE		3	PIERS=1 SPANS = 2 34. Abutment Seats 57	2
33. Abutments 1-STONE 24				
35. Piers TYPE = 5-STEEL 25		2	36. Pier Seats 58	2
37. Backwalls 26		2	ABUTMENT:=STEEL H / SPREAD 38. Wingwalls 59	
39. Fenders and Dolphins 27			40. Scour 5-STABLE: SCOUR WITHIN L 60	2 1
41. Slope Protection N-NONE 28			**42. Summary** DIVE DT=N/A 62	4
CULVERTS				
43. General 29			44. Alignment 63	
45. Shape 30			46. Seams 64	
47. Headwalls or Endwalls 31			48. Scour 65	
49. 32			50. Summary 66	
CHANNEL		2	2-STONE 52. Protection 67	3
51. Alignment 33				
53. Waterway Adequacy 34		3	**54. Summary** 68	4
APPROACHES		2		
55. Pavement 0-OTHER 35			56. Approach Slabs 69	
57. Guardrail N-NONE 36			58. Relief Joints 70	
59. Embankment BRDG.WIDTH=16.0 37		3	**60. Summary** PCT.LEGAL=75 71	4
GENERAL			ROUTINE.RESP: 3-COUNTY	
61. Navigation Lights 38			62. Warning Signs MAINT.RESP: 3-COUNTY 72	
MVC ON=9999 UND=0000				
63. Sign Supports 39			64. Utilities 73	
65. Vertical Clearance 40	N		**66. General Appraisal & Operational Status** 74	COND 4 STAT P

67. INSPECTED BY

SIGNED

5 5 4 8 8 — 76 PE

J L W — 78 INITIALS

68. REVIEWED BY

SIGNED

81 PE

83 INITIALS

DOT 2852

DECK AREA 926

Date 0 4 0 3 1 0 — 86 91

31

0 0 0 0 0 1 1 1 — 92 69 Survey 99

Date 100 105

ATTACHMENT 4

Permit Tables

Table A. Streams Affected by the Proposed Project.

Site #/Feature	USGS Coord.	Description and Length Impacted	Drainage Basin	Total Length	Receiving Stream	Distance to Receiving Stream	Drainage Area/Area at Impact Site	QHEI Score/OEPA Use Designation	Riparian Corridor and Adj. Habitats
South Fork Sugar Creek	40.615435, -81.601617	Approximately 60 linear ft of impacts to this perennial, relatively permanent water (RPW)	Tuscarawas River subbasin (8-digit HUC 05040001). South Fork Sugar Creek subwatershed (14-digit HUC 05040001110060).	Total length of South Fork Sugar Creek: approximately 21.6 miles	Tuscarawas River	Approximately 15.6 miles	Total drainage area of South Fork Sugar Creek is approximately 160 mi^2. The drainage area at the location of the proposed project is approximately 125 mi^2.	QHEI Score 34 (see attached datasheet); OEPA use designation of South Fork Sugar Creek is Warmwater Habitat (WWH)	Forested floodplain and forested upland areas immediately adjacent to stream and roadways. Forested areas contain Category 3 wetlands

Table B. Wetlands Affected by the Proposed Project.

Wetland #	USGS Coord.	Drainage Basin	Wetland Description	Cowardin Class*	ORAM v5.0 Score	OEPA Category	Total Size (Area Impacted)	Adjacent Habitats	Proximity to Other Surface Waters
A	40.615508, -81.601905	05040001	Wetland A is a large wetland complex; the proposed project will impact a small ditched portion of this complex. This ditched portion has historically been impacted by roadside drainage maintenance activities	PFO/PEM	77.5	Category 3	>50 acres (Preferred Alternative impacts: 0.192 acres; Minimal Degradation Alternative impacts: 0.01 acres)	Floodplain terrace; additonal wetland areas	Wetland A abuts South Fork Sugar Creek
B	40.615737, -81.601732	05040001	Wetland B is a large wetland complex; the proposed project will impact a small ditched portion of this complex. This ditched portion has historically been impacted by roadside drainage maintenance activities	PFO/PEM	75.5	Category 3	>50 acres (Preferred Alternative impacts: 0.091 acres; Minimal Degradation Alternative impacts: 0.012 acres)	Floodplain terrace; additonal wetland areas	Wetland B abuts South Fork Sugar Creek

* Cowardin et al., 1979 Classification

Table C. Nature of Proposed Activities by Impacted Feature for the Preferred and Antidegradation Alternatives.

A. Streams

Site/ Feature	Approx. Station Location	Proposed Structure or Action	Existing Channel Disturbed Due to Placement of Proposed Structure, Highway Fill, Channel Change or Channel Protection[1]					Existing Channel Disturbed Due to Temporary Crossing		
			Length of Channel Disturbed	Excavation Below OHW		Fill Below OHW		Length of Channel Disturbed	Excavation/Fill Below OHW	
				Volume	Area	Volume	Area		Volume	Area
Preferred Alternative										
South Fork Sugar Creek	10+00 to 10+90	Bridge replacement/removal of existing bridge	60 linear ft	N/A	N/A	70 cu yds	1200 sq ft	N/A	N/A	N/A
Minimal Degradation Alternative										
South Fork Sugar Creek	10+00 to 10+90	Bridge replacement/removal of existing bridge	60 linear ft	N/A	N/A	70 cu yds	1200 sq ft	N/A	N/A	N/A

[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.

B. Wetlands

Feature(s)	Location	Description		Total Area Impacted	Proposed Action	Direct Impacts (within construction limits)			Indirect Impact Area (outside construction limits)
						Volume Excavated	Volume Filled	Area Excavated and/or Filled	
Preferred Alternative									
Wetland A	40.615508, -81.601905	Wetland A is a large Category 3 wetland complex; the proposed project will impact a small ditched portion of this complex. This ditched portion has historically been impacted by roadside drainage maintenance activities		0.192 ac	Grading and shaley mix fill	N/A	1275 cu yds	0.192 ac	None
Wetland B	40.615737, -81.601732	Wetland A is a large Category 3 wetland complex; the proposed project will impact a small ditched portion of this complex. This ditched portion has historically been impacted by roadside drainage maintenance activities		0.091 ac	Grading and shaley mix fill	N/A	425 cu yds	0.091 ac	None
Minimal Degradation Alternative									
Wetland A	40.615508, -81.601905	Wetland B is a large Category 3 wetland complex; the proposed project will impact a small ditched portion of this complex. This ditched portion has historically been impacted by roadside drainage maintenance activities		0.012 ac	Grading and shaley mix fill	N/A	75 cu yds	0.012 ac	None
Wetland B	40.615737, -81.601732	Wetland A is a large Category 3 wetland complex; the proposed project will impact a small ditched portion of this complex. This ditched portion has historically been impacted by roadside drainage maintenance activities		0.010 ac	Grading and shaley mix fill	N/A	25 cu yds	0.01 ac	None

C. Whole Project Summary of Activities

Total Project Lineal Stream Disturbances			Total Project Excavation						Total Project Fill					
Total Length Disturbed due to Proposed Structures, Highway Fill, Channel Change or Channel Protection	Length Disturbed due to Temporary Crossing	Net Length Disturbed	Stream Excavated		Wetland Excavated		Total Excavation		Stream Filled (standard roadfill, channel protection, temp crossing & other materials)		Wetland Filled		Total Filled	
			Volume	Area	Volume	Area	Volume	Area	Volume	Area	Volume	Area	Volume	Area
Preferred Alternative														
60 linear ft	None	60 linear ft	N/A	N/A	N/A	N/A	N/A	N/A	70 cu yds	0.028 (1200 sq ft)	1700 cu yds	0.283 ac	1770 cu yds	0.311 ac
Minimal Degradation Alternative														
60 linear ft	None	60 linear ft	N/A	N/A	N/A	N/A	N/A	N/A	70 cu yds	0.028 (1200 sq ft)	100 cu yds	0.022 ac	170 cu yds	0.050 ac

Table D. Proposed Lowering of Water Quality by the Preferred and Antidegradation Alternatives.

Alternative	Expected Impacts by Alternative [1]						
	Direct Stream Impacts	Aquatic Hab. (QHEI)/ Use Designation/Stream Flow	Aquatic Biota	T & E Species	Terrestrial Plant/Animals (Riparian Area)	Wetlands	Summary for Alternative
Preferred	60 linear ft	Possible minor temporary lowering of QHEI score, and associated use designation during construction. Permanent addition of RCP to stream may increase QHEI score though introduction of additional boulder/cobble habitat beneficial to macroinvertebrates (as opposed to exisiting silt habitat). Stream would be expected to maintain its perennial (Relatively Permanent Water) flow regime.	Minor loss of already limited aquatic habitat through placement of rock channel protection in the 60 linear ft of aquatic habitat. Some minor, temporary siltation impacts may also occur during construction.	No impacts to federal-listed species: no suitable habitat exisits within the proposed project area. No anticipated impact to the state-listed Sprengel's sedge or Rock-harlequin: no individuals identified within proposed project area.	All riparian and wetland areas located adjacent to the stream, and within the construction limits of the Preferred Alternative, will be impacted to facilitate project execution. Therefore, the limited fauna associated with these areas will also be impacted to allow project construction.	The Preferred Alternative will impact all wetland areas located within the project construction limits for this alternative (approximately 0.283 acres). However, these impacted wetland areas are part of a much larger Category 3 wetland complex (>100 acres). The anticipated impact is considered minimal and will have little impact to the Category 3 status of the entire wetland complex.	The Preferred Alternative is not expected to have a substantial impact on the water quality of the single stream crossed by the project. All impacts to stream channel habitat and adjacent riparian habitat are considered to be minor due to existing limited conditions of the features being impacted. Impacts to the stream will be offset by full implementation of on-site best management practices. Although the Preferred Alternative will impact small portions of two Category 3 wetlands, no substantial impacts to the water quality of the wetlands would be expected. Impacts to the wetlands would be addressed in full through off-site mitigation.
Minimal Degradation	60 linear ft	Possible minor temporary lowering of QHEI score, and associated use designation during construction. Permanent addition of RCP to stream may increase QHEI score though introduction of additional boulder/cobble habitat beneficial to macroinvertebrates (as opposed to exisiting silt habitat). Stream would be expected to maintain its perennial (Relatively Permanent Water) flow regime.	Minor loss of already limited aquatic habitat through placement of rock channel protection in the 60 linear ft of aquatic habitat. Some minor, temporary siltation impacts may also occur during construction.	No impacts to federal-listed species: no suitable habitat exisits within the proposed project area. No anticipated impact to the state-listed Sprengel's sedge or Rock-harlequin: no individuals identified within proposed project area.	All riparian and wetland areas located adjacent to the stream, and within the construction limits of the Minimal Degradation Alternative, will be impacted to facilitate project execution. Therefore, the limited fauna associated with these areas will also be impacted to allow project construction.	The Minimal Degradation Alternative will impact all wetland areas located within the project construction limits for this alternative (approximately 0.022 acres). All impacted wetland areas under this alternative are ditches/swales associated with roadway drainage. Additionally, these impacted wetland areas are part of a much larger Category 3 wetland complex (>100 acres). The anticipated impact is considered minimal and will have little impact to the Category 3 status of the entire wetland complex.	The Minimal Degradation Alternative is not expected to have a substantial impact on the water quality of the single stream crossed by the project. All impacts to stream channel habitat and adjacent riparian habitat are considered to be minor due to existing limited conditions of the features being impacted. Impacts to the stream will be offset by full implementation of on-site best management practices. Although the Minimal Degradation Alternative will impact some small ditched portions of two Category 3 wetlands, no substantial impacts to the water quality of the wetlands are expected. Impacts to the wetlands will be addressed in full through off-site mitigation. Because the Minimal Degradation Alternative has less wetland impacts than the Preferred Alternative, less water quality degradation might be expected as compared to the Preferred Alternative.
Non Degradation	0	QHEI Score 34. OEPA use designation: Warmwater Habitat. No anticipated impact to aquatic habitat, use designation, or stream flow	None	None	None	None	No direct impacts will occur as a result of this alternative.

[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, 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 (8 Digit HUC)		QHEI Score	HHEI Score	Mitigated Length	
			Impacted	Mitigated			On-site	Off-site
Preferred Alternative								
South Fork Sugar Creek	60 linear ft	On-site: best management practices	05040001	05040001	34	N/A	60 linear ft	N/A
Minimal Degradation Alternative								
South Fork Sugar Creek	60 linear ft	On-site: best management practices	05040001	05040001	34	N/A	60 linear ft	N/A

Table F. Proposed Wetland Mitigation for the Preferred and Antidegradation Alternatives.

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
Preferred Alternative								
A	0.192	Non-Isolated	05040001	05040001	77.5	3	0	1.728*
B	0.091	Non-Isolated	05040001	05040001	75.5	3	0	0.819*
Minimal Degradation Alternative								
A	0.01	Non-Isolated	05040001	05040001	77.5	3	0	0.09
B	0.012	Non-Isolated	05040001	05040001	75.5	3	0	0.11

* Mitigation for the Preferred Alternative is conceptual only; for comparative purposes the mitigation for this alternative is set at the same proposed ratio (9:1) as the Minimal Degradation Alternative

Table G. Cost Comparison Table for Construction of the Project Alternatives.

Alternative	Construction Costs[1]	Mitigation Costs	Total Project Cost
Preferred Alternative*	$660,000	$71,316	**$731,316**
Minimal Degradation Alternative	$436,410	$5,600	**$442,010**
Non-Degradation (No-Build) Alternative	$0	$0	**$0**

* Mitigation for the Preferred Alternative is conceptual only; for comparative purposes the mitigation for this alternative is set at the same proposed ratio (9:1) as the Minimal Degradation Alternative (i.e., $28,000 per acre at the Wilderness Center's Brewster Wetland Mitigation Bank)

[1] This figure is inclusive of all labor, materials, and services required for project completion

ATTACHMENT 5

Antidegradation Evaluation

ANTIDEGRADATION EVALUATION

Block 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)):

The existing bridge, bridge support structures, and existing roadway will be removed to allow for the replacement bridge, new support structures, and new roadway to be constructed. Full project description details, including specifics of both the old and replacement bridges, are provided in Attachment 2. The purpose of the proposed project is to replace a deteriorated and structurally deficient bridge in order to maintain a safe route of travel. The need for the proposed work is based on the Tuscarawas County Engineer's Office's (County) past inspections of the bridge, the last of which was conducted on April 3, 2010. Full details of the purpose and need for the proposed project are described in Attachment 3a. All agency coordination previously completed for this project, and primarily completed for compliance with the Ohio Department of Transportation's (ODOT) environmental process, is provided in Attachments 1a-1i. Where applicable, ODOT's responses to specific agency comments are addressed in the project's approved Categorical Exclusion document (see Attachments 1h and 12).

The current footprint of the proposed project evolved through both design requirements and the NEPA process with emphasis, in part, on avoiding and minimizing impacts to streams and wetlands in the project vicinity. The project location within the approved NEPA corridor was evaluated and documented in the project's 2011 Level 2 Categorical Exclusion Document (Final CE), approved by ODOT on November 15, 2011 (see Attachments 2 and 3a which respond to Blocks 8a and 8b of the application form for further discussion, and Attachment 12 for a copy of the approved Final CE). In general, a change in the current alignment location (e.g., an alignment shift) within the approved NEPA corridor would not further reduce stream and wetland impacts since: (a) the stream and wetlands in the area of proposed impact (i.e. ditch/swale portions of the wetland) exhibit limited value uniformly within the project corridor in comparison to the large wetland complex located outside of the project limits (see Block 10b discussion below), (b) the impacted stream in the project area is perpendicularly-oriented to the project alignment (unavoidable impacts) and (c) wetland areas are located immediately adjacent to all roadway areas to the north of South Fork Sugar Creek (unavoidable impacts).

Preferred Alternative

The Preferred Alternative is considered the "preferred" alternative due to its improved roadway geometry (vertical alignment), and improved roadway drainage as compared to the Minimal Degradation Alternative. The information provided herein for the Preferred Alternative has been conceptually analyzed as required for the Section 401 Water Quality Certification (WQC) process, and this alternative can be feasibly completed from design through construction; however, the Minimal Degradation Alternative (see below) was the alternative selected and progressed into detailed design. The Preferred Alternative's impacts and construction/mitigation costs are much greater than the Minimal Degradation Alternative (see Tables A-G in Attachments 4a-4g). The Preferred Alternative's impacts to wetlands and streams are summarized in the table below, on the project plans (Attachment 8a), and in Figures 4 (Attachment 6d) and 6 (Attachment 6f). A complete unmarked set of the Preferred Alternative's project plans are provided in Attachment 8c.

Summary of Actions by the Preferred Alternative

Feature	Preferred Alternative Crossing Structure[1]	Acreage of Impacts to Forested Portion of Wetlands	Acreage of Impact to Emergent Ditch/Swale Portions of Wetlands	Expected Impacts to Streams (linear ft) and Wetlands (acres)
South Fork Sugar Creek	Construct/install new bridge abutments, rock channel protection	N/A	N/A	60 linear ft of stream
Wetland A	Grading and fill	0.171	0.021	0.192 acre
Wetland B	Grading and fill	0.065	0.026	0.091 acre

[1]*Preliminary structure estimates only; see discussion above*

The conceptual Preferred Alternative would raise the vertical alignment of the new bridge (compared to the existing bridge) by approximately five (5) feet (ft) to provide better roadway drainage, thereby helping to alleviate flood issues (see Attachments 5b and 8c). The horizontal alignment of the Preferred Alternative would be located along a similar alignment as the existing bridge and roadway. To enable the elevated roadway profile of the Preferred Alternative to meet current design standards, the project length would need to extend to 480 ft, the existing pavement along this project length would need to be widened to 20 ft, and eight-ft shoulders would also need to be constructed along the project length (Attachments 5b and 8c). Additionally, the existing roadside emergent wetland ditches/swales would also require relocation; 235 ft of wetland ditch/swale relocation northwest of the bridge, and 210 ft of wetland ditch/swale relocation northeast of the bridge (Attachments 5b and 8a). A total of 5,000 cubic yards of fill material would be required to implement the Preferred Alternative (Attachment 5b)

Construction under the Preferred Alternative would proceed in two phases, and would begin in summer 2012 with an approximate duration of 74 days (the currently scheduled project sale date is July 1, 2012). In Phase 1, the existing bridge deck structure and in-stream pier h-pile supports would be vibrated loose and removed, and the existing steel and sandstone support structures on each bank would be removed. The existing Kaylor Road approaches would also be removed to allow for construction of the new roadway approaches to the replacement bridge. All removed materials would be properly disposed. Phase 2 will consist of the grading and widening of the Kaylor Road approaches to the new bridge's support structures and bridge deck. Also included in Phase 2 is the installation of the new support structures and the new bridge deck. The new bridge's piling and abutments would be constructed outside of the existing waterway limits, however rock channel protection will be placed in-stream on both banks to prevent steam scour in these locations. It is not anticipated that any hydro demolition, in-stream work pad, or use of cofferdams would be required during either phase of the project. It is expected that all construction work can be completed from the top of the existing banks.

Best Management Practices (BMP's) would be used to control impacts due to erosion of exposed stream bank and channel work in strict accordance with ODOT's "Construction and Material Specifications" (CMS) and the project Stormwater Pollution Prevention Plan. Downstream sedimentation would be temporary and the impacted stream would be expected to recover shortly after the area was stabilized and construction completed. See Block 10b for a detailed description of anticipated impacts to water quality as a result of the Preferred Alternative.

The Preferred Alternative would impact approximately 0.746 acres of land outside of the existing roadway foot print. In these areas, approximately 0.463 acres of upland area, approximately 0.236 acres of forested wetland area, and approximately 0.047 acres of the ditches/swales wetland area will be disturbed and impacted by this alternative. See Table 1 (Attachment 4) for a summary of the proposed impacts as part of the Preferred Alternative.

The Preferred Alternative would impact one stream, South Fork Sugar Creek. Impacts to this stream by the Preferred Alternative are shown in Attachment 6f (Figure 6) and in the conceptual plan sheets provided in Attachment 8a. This stream will be impacted for a total of 60 linear ft as a result of the placement of rock channel protection (RCP) to be placed adjacent to the new bridge's supporting structures, and the removal of the existing in-stream support structures. Approximately 70 cubic yards of RCP fill will be placed below the Ordinary High Water Mark (OHWM), 35 cubic yards on each bank. Although Attachments 6d and 8a show construction limits for the Preferred Alternative to be greater than 60 ft at the crossing of South Fork Sugar Creek, impacts to the stream will be restricted to the 60 linear ft of impact as described above. No temporary stream crossings are expected for the Preferred Alternative.

The Preferred Alternative will impact two wetlands, Wetland A and Wetland B. Impacts to wetlands by the Preferred Alternative are shown in Attachment 6d (Figure 4) and in the conceptual plan sheets provided in Attachment 8a (Preferred Alternative Plan Sheet). The Preferred Alternative wetland impacts total 0.283 acre, through the fill activities required to implement this alternative. The proposed wetland impacts are a result of the necessary grading activities associated with removal of the existing bridge structure/supports, removal of the existing roadway approaches, installation of new bridge structure/supports, and construction of the new roadway approaches. Grading for the new bridge and roadway approaches will require the filling of the existing roadside ditches/swales which are the wetlands being discussed. New roadside ditches/swales will be required as part of the new roadway development, however these areas will be excavated from the current upland areas adjacent to the Category 3 wetland. An estimated 1,700 cubic yards of grading materials (clean, native, shaley mix fill) will be placed within the wetland areas (see project plan sheets in Attachment 8a). The shaley mix material consists of a combination of mostly shale and clay with some gravel or sand.

A breakdown of activities and discharge quantities by impacted feature, and a whole-project summary of activities are presented in Table C (Attachment 4c) of this 401 application. Mitigative techniques proposed for impacts to streams and wetlands by the Preferred Alternative are further described in Block 10k.

The majority of construction activity will be completed within the existing right-of-way; however, construction under the Preferred Alternative will require 0.40 acres of permanent take and 0.57 acres of temporary take from the single affected property owner, the Muskingum Water Conservancy District.

Detailed structure design for the Preferred Alternative has not been developed; however, the preliminary structure dimensions (noted in the table above) and the Preferred Alternative's costs were estimated for comparative purposes for this antidegradation evaluation (see cost comparisons in Attachment 4g, Table G). Estimated construction costs for implementation of the Preferred Alternative are projected at $660,000.

A direct comparison of the Preferred and Minimal Degradation Alternatives is provided in Attachment 5b.

Minimal Degradation Alternative

The Minimal Degradation Alternative is the preferred NEPA alternative, and is the alternative for which detailed engineering plans have been completed (Attachment 8d). These Stage 2 design plans were approved by ODOT on December 29, 2008. A complete unmarked set of these project plans is provided in Attachment 8d. Through its location essentially on the same vertical alignment (the new bridge will be raised approximately one ft higher than the existing bridge) as the current bridge structure, this alternative minimizes impacts to wetlands. The impacts and necessary mitigation required under this alternative are much reduced as compared to the Preferred Alternative. The Minimal Degradation Alternative's impacts to streams and wetlands are summarized in the table below.

The Minimal Degradation Alternative's construction procedures, methods, and design are similar to the Preferred Alternative; however, the elevation of the new bridge and approaches will be more similar to the existing configuration, therefore allowing for a much shorter project length than the Preferred Alternative (see Attachments 5b and 8d). The horizontal alignment of the Preferred Alternative will be located along a similar alignment as the existing bridge and roadway. To enable the minimally elevated roadway profile of the Minimal Degradation Alternative (the vertical profile of the new bridge will be approximately one ft higher than the existing) to meet current design standards, the project length would need to be 250 ft (see Attachments 5b and 8d). To accommodate this design, the pavement and shoulders immediately adjacent to the new structure will need widening, but will taper back to the existing pavement and shoulders within 50 ft of the new bridge supports (Attachments 5b and 8d). The existing roadside emergent wetland ditches/swales would also require relocation: 84 ft of ditch relocation northwest of the bridge, and 63 ft of ditch relocation northeast of the bridge (Attachments 5b and 8b). A total of 260 cubic yards of fill material would be required to implement the Minimal Degradation Alternative (Attachment 5b). The decrease in the proposed road and bridge elevation of the Minimal Degradation Alternative, as compared to the Preferred Alternative, reduces the required slope grading from the roadway and therefore, reduces the impact to the adjacent wetland ditches/swales. Additionally, although these ditches/swales are part of the overall wetland system and therefore part of a Category 3 wetland, they do not provide the same functions and values as the main body of the wetlands do. In addition, these areas of the wetland have been previously impacted in order to create the roadside drainage ditches/swales, and continue to be impacted by routine maintenance activities.

Summary of Actions by the Minimal Degradation Alternative

Feature	Minimal Degradation Alternative Crossing Structure[1]	Acreage of Impacts to Forested Portion of Wetlands	Acreage of Impact to Emergent Ditch/Swale Portions of Wetlands	Expected Impacts to Streams (linear ft) and Wetlands (acres)
South Fork Sugar Creek	Construct/install new bridge abutments, rock channel protection	N/A	N/A	60 linear ft of stream
Wetland A	Grading and fill	0	0.010	0.010 acre
Wetland B	Grading and fill	0	0.012	0.012 acre

The construction process for the Minimal Degradation Alternative is the same as the Preferred Alternative, with a two phase approach to construction (see details under the Preferred Alternative above). Although construction under the Minimal Degradation Alternative is also expected to begin in summer 2012, the construction timeframe is shorter with an approximate duration of 60 days. Construction techniques for the Minimal Degradation Alternative are also the same as for the Preferred Alternative: the new bridge's piling and abutments will be constructed outside of the existing waterway limits; however rock channel protection will be placed in-stream on both banks to prevent steam scour in these locations. It is anticipated that no hydro demolition, in-stream work pad, or use of cofferdams will be required during either phase of the project; and the expectation is that all construction work can be completed from the top of the existing banks.

The BMP's utilized under the Minimal Degradation Alternative reflect those of the Preferred Alternative (see above). See Block 10b for a detailed description of anticipated impacts to water quality as a result of the Minimal Degradation Alternative.

The Minimal Degradation Alternative would impact approximately 0.166 acres of land outside of the existing roadway foot print. In these areas, approximately 0.144 acres of upland area, and approximately 0.022 acres of the ditches/swales wetland area will be disturbed and impacted by this alternative. See Table 1 (Attachment 4) for a summary of the proposed impacts as part of the Preferred Alternative.

Impacts to South Fork Sugar Creek by the Minimal Degradation Alternative are identical to those identified in the Preferred Alternative (see above) and as shown in Attachment 6f (Figure 6) and in the plan sheets provided in Attachment 8b (Minimum Degradation Alternative Plan Sheets and Relevant Cross Section Sheets).

The Minimal Degradation Alternative will impact two wetlands, Wetland A and Wetland B. Impacts to wetlands by the Minimal Degradation Alternative are shown in Attachment 6e (Figure 5) and plan sheets provided in Attachment 8b. The Minimal Degradation Alternative impacts two wetlands, for a total of 0.022 acres, through the excavation and/or fill activities required to implement this alternative. The proposed wetland impacts are a result of the necessary grading activities associated with removal of the existing bridge structure/supports, removal of the existing roadway approaches, installation of new bridge structure/supports, and construction of the new roadway approaches. An estimated 100 cubic yards of grading materials (clean, native shaley mix fill) will be placed within the wetland areas (see project plan sheets in Attachment 8b). The shaley mix material consists of a combination of mostly shale and clay with some gravel or sand. The creation of the new roadside ditches/swales will be required as part of the new roadway development; however these areas will be excavated from the current upland areas adjacent to the Category 3 wetland.

A breakdown of activities and discharge quantities by impacted feature, and a whole-project summary of activities are presented in Table C (Attachment 4c) of this 401 application. Mitigative techniques proposed for impacts to streams and wetlands by the Minimal Degradation Alternative are further described in Block 10k.

The majority of construction activity will be completed within the existing right-of-way; however, construction under the Minimal Degradation Alternative will require 0.16 acres of permanent take and 0.03 acres of temporary take from the single affected property owner, the Muskingum Water Conservancy District.

Detailed structure design for the Minimal Degradation Alternative has been developed, therefore, accurate

structure dimensions (noted in the table above) and the Minimal Degradation Alternative's costs were available for comparative purposes for this antidegradation evaluation (see cost comparisons in Attachment 4g, Table G). Estimated construction costs for implementation of Minimal Degradation Alternative are projected at $436,410.

As noted in the table above, impacts to the South Fork Sugar Creek, Wetland A, and Wetland B were determined to be unavoidable (due to replacement of the existing bridge, support abutment structures, and other engineering constraints). Therefore, this alternative does not avoid all stream or wetland impacts but seeks to minimize these impacts, while still allowing for project execution. However, impacts to wetlands (0.022 acre) by the Minimal Degradation Alternative are much reduced as compared to the Preferred Alternative (0.283 acre of wetland impacts). Stream impacts are the same under both alternatives. A direct comparison of the Preferred and Minimal Degradation Alternatives is provided in Attachment 5b.

Non-Degradation Alternative

The Non-Degradation Alternative (No Build) would result in no impacts to streams or wetlands. However, implementation of the Non-Degradation Alternative is not practicable because the identified project purpose and transportation need, including public safety, in the project area would not be met.

Block 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):

Existing Stream, Wetland and Threatened and Endangered Species Conditions

The proposed project occurs in the following subwatershed: South Fork Sugar Creek below Walnut Creek to Sugar Creek (14-digit Hydrologic Unit Code [HUC] 05040001110060). This is located within the Tuscarawas River subbasin (8-digit HUC 05040001). As currently configured, the project is expected to impact one surface stream (South Fork Sugar Creek) and two wetlands (Wetlands A & B). No impacts to threatened and endangered species are anticipated.

Ecological information presented below is summarized from data and conclusions reported in the project Level 2 Ecological Survey Report prepared and coordinated with the agencies in June, 2011.

Total impacts of the proposed project for streams and wetlands are summarized as follows:

60 linear ft of impact to Warmwater Habitat (same impacts for both the Preferred Alternative and the Minimal Degradation Alternative)

0.283 acre of impact to portions of two herbaceous wetland ditches/swales and a small portion of a forested wetland; all are Category 3 wetlands (Preferred Alternative)
0.022 acre of impact to two herbaceous wetland ditches/swales that are components of Category 3 wetlands (Minimal Degradation Alternative)

Streams

Existing conditions of the single stream to be impacted by the project are summarized in Table A (Attachment 4a) and Table C (Attachment 4c) of this 401 application, and a summary of the proposed lowering of water quality by the Preferred and Antidegradation Alternatives is presented in Table D (Attachment 4d). A photolog and photographs of the impacted stream are presented in Attachments 7a and 7b respectively.

The single stream impacted by the Preferred and Minimal Degradation Alternative has an official OEPA Aquatic Life Use designation of Warmwater Habitat (WWH) (Attachment 10a). This stream, South Fork Sugar Creek, is a perennial stream with a drainage area of approximately 125 square miles (mi^2) at the impact site. The Qualitative Habitat Evaluation Index (QHEI) assessment completed for the project Ecological Survey Report recorded a score of 34 for this stream (Attachment 9a). Additionally, South Fork Sugar Creek has the following OEPA use designations: Primary Contact Recreation (PCR), agricultural water supply (AWS), and industrial water supply (IWS) (Attachment 10a). Additional stream conditions for this feature are summarized in Table A (Attachment 4a) of this 401 application, and in the project Ecological Survey Report, prepared and submitted in 2011. The Preliminary Jurisdictional Determination (PJD) completed by the USACE (Attachment 1b) indicates that South Fork Sugar Creek may be a water of the U.S. A PJD is non-binding and only provides a written indication that waters of the U.S. may be present on site. However, for the purposes of this determination of impacts, mitigation, and other resource

protection measures for activities that require authorization from the USACE, the streams and wetlands identified in the PJD are evaluated as if they are waters of the U.S.

Wetlands

Existing conditions of the wetlands to be impacted by the project are summarized in Table B (Attachment 4b) and Table C (Attachment 4c) of this 401 application, and a summary of the proposed lowering of water quality by the Preferred and Antidegradation Alternatives is presented in Table D (Attachment 4d). A photolog and photographs of the impacted wetland features are presented in Attachments 7a and 7b respectively.

Two wetlands were identified within and immediately adjacent to the project area (see Table B, Attachment 4b). These wetlands form part of a very large wetland complex located immediately adjacent to the project area. Detailed field assessments of the project area determined that both these wetlands (Wetlands A and B) are large (over 50 acres) Category 3 wetlands (see datasheets provided in Attachments 9b-9e), that are connected to the abutting South Fork Sugar Creek (see Attachments 6d-6e). The project Ecological Survey Report and the PJD completed by the USACE (Attachment 1b) indicates that there are no isolated wetlands present in the project area.

Threatened and Endangered Species

According to the Ecological Survey Report prepared for the proposed project, the project area is located within the known range of the following federally-listed species: the federally endangered Indiana bat (*Myotis sodalis*), and two federal species of concern, the bald eagle (*Haliaeetus leucocephalus*), and the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*). Additionally, the Ohio Biodiversity Database search completed in support of the project identified records of Sprengel's sedge (*Carex sprengelii*), a state threatened species, and the rock-harlequin (*Corydalis sempervirens*), a state potentially threatened species, within one mile of the proposed project area (see Attachment 12). Field studies completed in support of the project Ecological Survey Report documented that no suitable habitat for any of these species, with the exception of Sprengel's sedge, exists within the proposed project area. Although suitable habitat for Sprengel's sedge was identified within the project area, no individuals of this species were found during field survey. On June 3, 2011, the Ecological Survey Report was coordinated with the United States Fish and Wildlife Service (USFWS), the Ohio Department of Natural Resources (ODNR) Environmental Services Section, the Ohio Environmental Protection Agency (OEPA), and the U. S. Army Corps of Engineers (USACE). The response letters from the USFWS and ODNR concurred that the project area is located within the range of the Indiana bat (see Attachments 1c and 1d, respectively). The USFWS also concurred that the project area was within the ranges of the bald eagle and the eastern hellbender. However, USFWS concluded that none of these species will be affected by the project (Attachment 1c). Additionally, although ODNR commented that records exist near the project area for Sprengel's sedge and the rock-harlequin (Attachment 1d), they concluded that based on the location of these records in relation to the project area, the project is not likely to impact these plant species (Attachment 1d). OEPA (Attachment 1e) and USACE (Attachment 1f) offered no comment on potential impacts to threatened and endangered species.

Impacts to threatened and endangered species are summarized in Table D (Attachment 4d).

Magnitude of the Proposed Lowering of Water Quality by the Preferred Alternative

Streams

The Preferred Alternative is not expected to have a substantial impact on the water quality of the single stream crossed by the project. This stream has an official OEPA aquatic life use designation of Warmwater Habitat (WWH).

Activities associated with the removal of the old bridge structure, installation of the new bridge structure, and construction of the associated roadway approaches would impact existing aquatic habitat and may temporarily increase siltation during construction at the impacted stream site. However, overall impacts are expected to be relatively minor and localized. Impacts from erosion and siltation will be minimized through the use of BMPs for sediment and erosion control. The footprint of the Preferred Alternative includes areas around the base of the new bridge support structures where energy and erosion control components (RCP channel protection).

A total of 60 linear ft of stream channel will be permanently impacted by the installation RCP fill material as a result of the project. Impacts to streams will be offset through strict compliance with BMPs throughout the construction process.

Removal of the old bridge will result in the removal of the existing, mid-channel bridge-support piers. The new bridge will not require the use of in-channel support piers, thereby improving stream flow and hydraulics. In addition, the use of RCP will introduce a habitat type that is currently absent in the silt-bottomed South Fork Sugar Creek.

Wetlands

The project will not result in any impacts to unique wetland habitats or any significant impacts to the flood attenuation abilities of wetlands in the Tuscarawas River subbasin. The two impacted portions of the wetlands impacted by the Preferred Alternative, Wetlands A and B, are very small portions of a much larger wetland complex of a least 100 acres. The impacted wetland portions are 0.192 acres (Wetland A) and 0.091 acres (Wetland B) in size, and both wetlands are OEPA ORAM Category 3, palustrine emergent/palustrine forested wetland. The preferred alternative would impact approximately 0.236 acres of the larger palustrine forested wetland complex, and approximately 0.047 acres of emergent wetland drainage ditch/swale (see summary table in Block 10a above, Tables B and C in Attachments 4b and 4c; and Attachment 6d).

The loss of these wetland areas will not have a substantial impact on water quality, the Category 3 wetlands outside of the project area, or the overall availability of wetland habitat within the Tuscarawas River subbasin. All wetland impacts will be mitigated for through both on-site and off-site techniques (See Block 10k for details of wetland mitigation). The relocation of the emergent wetland roadside ditches/swales will also restore/re-create a small portion of the existing emergent wetland roadside ditches/swales that will be impacted by project construction. However, this restoration/re-creation of emergent wetland is of minimal value due to the likelihood that these emergent wetland roadside ditches/swales will themselves be regularly maintained.

Threatened and Endangered Species

Minor impacts to potential habitat for the state-threatened Sprengel's sedge (see above under existing conditions) may result from the project, although no individuals of this species were identified during ecological field surveys. Additionally, in their response letter to the project Ecological Survey Report, ODNR concluded that the project is not likely to impact this plant species (Attachment 1d).

No impacts to any other federal- or state-listed species with known ranges that include the project area (see above under existing conditions) are expected because no suitable habitat for these species was identified within the project area. These findings were fully documented inthe Ecological Survey Report prepared in support of the proposed project. In their response letters to the project Ecological Survey Report, the USFWS and ODNR concurred with these findings (see Attachments 1c and 1d respectively).

Magnitude of the Proposed Lowering of Water Quality by the Minimal Degradation Alternative

The proposed lowering of water quality by the Minimal Degradation Alternative is summarized in Table D (Attachment 4d), including expected impacts to streams, aquatic habitat/biota, riparian corridors, wetlands, and threatened and endangered species. The types of impacts associated with the Minimal Degradation Alternative are very similar to the Preferred Alternative; however, the extent of wetland impacts would be minimized by reducing the change in elevation/profile of the approach roadway to the new bridge structure, thereby reducing the extent of grading required for project execution.

Streams

Under the Minimal Degradation Alternative, impacts to the single stream crossing within the project area will be identical to the Preferred Alternative (see above): a total of 60 linear ft (see Attachments 6f, 8b).

Wetlands

The types of wetland impacts under the Minimal Degradation Alternative are similar to those for the Preferred Alternative (see above). However, the significant modifications to the existing profile and alignment, as proposed for the Minimal Degradation Alternative, considerably minimize impacts to waters of the U.S. over those shown for the Preferred Alternative, i.e., total of 0.022 acres of emergent ditch/swale wetland impacts under the Minimal Degradation Alternative (see Attachments 6e, 8b), as compared to the Preferred Alternative's 0.283 acres of wetland impact. Additionally, although Wetlands A and B are considered Category 3 wetlands, the portions of both these wetlands impacted under the Minimal Degradation Alternative appear to have limited habitat quality; field observations indicated that regular disturbance to these resources is caused through ditch-clearing maintenance activities. The Minimal Degradation Alternative will impact only the ditch/swale portions of the Category 3 wetlands, and not the higher quality forested portions of Wetlands A or B.

The Minimal Degradation alternative significantly reduces impacts to the Category 3 wetlands surrounding the project site. Additionally, the use of a new bridge and roadway elevation similar to the existing alignment is a more cost-effective and more practicable engineering solution for crossing those resources impacted by the project. The relocation of the emergent wetland roadside ditches/swales will also restore/re-create a small portion of the existing emergent wetland roadside ditches/swales that will be impacted by project construction. However, this restoration/re-creation of emergent wetland is of minimal

value due to the likelihood that these emergent wetland roadside ditches/swales will themselves be regularly maintained.

Threatened and Endangered Species

Under the Minimal Degradation Alternative, impacts to threatened and endangered species within the project area will be identical to the Preferred Alternative (see above).

Magnitude of the Proposed Lowering of Water Quality by the Non-Degradation Alternative

The Non-Degradation Alternative (No-Build) would result in no direct impacts to streams, wetlands, or threatened and endangered species, and no direct water quality degradation. This alternative, however, does not meet the transportation need in the project area for addressing the safety problems discussed in Block 8b of this 401 application. As traffic and safety problems are exacerbated along existing routes in the project area, the Non-Degradation Alternative may indirectly result in the lowering of water quality in area streams and wetlands over time. A high accident rate, for example, results in greater potential for accidental spills of hazardous/toxic materials which could eventually reach and adversely affect area streams and/or wetlands.

Block 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 has not been developed to the same level of engineering detail as the Minimal Degradation Alternative; however, design has been approximated through production of conceptual plans (see Attachment 8c), and this alternative is considered to be technically feasible, although not as environmentally friendly and practicable from an engineering or cost standpoint. The construction methods and design life of structures associated with the Preferred Alternative are essentially the same as the Minimal Degradation Alternative. However, operational and maintenance costs may be higher for the Preferred Alternative due the proposed increase in profile/grade. While construction of this alternative is technically possible, the type of design required by the Preferred Alternative is generally not cost-effective for the type of stream and wetland areas crossed by the project. The design service life for the proposed structures installed under the Preferred Alternative is 50 years.

Presented in Table G (Attachment 4g) are estimated construction and mitigation costs for the Preferred Alternative (elevated roadway profile and associated increased grading requirements) compared to the Minimal Degradation Alternative (maintain a similar roadway profile using minimal grading) at the currently proposed locations. In summary, project costs for the Preferred Alternative are estimated at $731,316 (construction plus mitigation), which is about 1.65 times the project cost for the Minimal Degradation Alternative ($442,010).

Minimal Degradation Alternative

The Minimal Degradation Alternative has undergone detailed engineering and drainage review in accordance with current ODOT design and construction standards. Stage 2 design plans for the project have been completed and were approved by ODOT on December 29, 2008 (Attachment 8d), and this alternative is therefore considered to be a technically feasible and available design. The techniques to be used to construct the Minimal Degradation Alternative have been accomplished on numerous occasions with other transportation projects. The bridge replacement techniques utilized for this project have proven to be both reliable and cost-effective. The design service life for the proposed structures installed under the Minimal Degradation Alternative is 50 years.

Operation and maintenance activities along the proposed new Kaylor Road roadway and replacement bridge will result in some amount of oil, grease, and particulates from maintenance vehicle traffic eventually reaching area surface streams. These impacts, overall, are considered to be minor and already occur in the project area along existing Kaylor Road, and the adjacent roadway network. Current traffic trends for the project area indicate an increased volume of traffic using the existing roadway network in future years regardless of construction of the proposed project. Since the proposed project is required due to the continued deterioration of the existing bridge structure, the project may actually reduce the magnitude of stream impacts from operation and maintenance due to improved traffic flow (e.g., two traffic lanes with the new bridge vs. one lane with the existing bridge), fewer accidents and reduced potential for incidents such as hazardous spills.

Presented in Table G (Attachment 4g) are estimated construction and mitigation costs for the Minimal Degradation Alternative (maintain a similar roadway profile using minimal grading) compared to the Preferred Alternative (elevated roadway profile approaches and associated grading) at the currently proposed locations. In summary, project costs for the Minimal Degradation Alternative are estimated at $442,010 (construction plus mitigation) which is about 60 percent the project cost of the Preferred Alternative ($731,316).

Non-Degradation Alternative

The Non-Degradation Alternative has no cost except those associated with current maintenance activities conducted along the existing bridge, Kaylor Road, and the local roadway network. This alternative, however, does not meet the public safety transportation need in the project area.

Block 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.

Block 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)):

Agency coordination (USACE, OEPA, USFWS, ODNR, ODOT; see Attachments 1c-1h) completed during the required environmental coordination did not reveal any governmental or private protection programs targeting surface waters affected by the project.

Review of OEPA, ODNR, and a number of private conservation websites did not reveal any other governmental or private protection programs targeting surface waters affected by the project. Websites reviewed during this research included those administered by the OEPA Division of Surface Water; OEPA Division of Drinking and Ground Waters; ODNR Water Inventory Program; ODNR Water Planning Program; Huff Run Watershed Restoration Partnership; Enviro Outreach Organization; Mud Run Watershed; Friends of the Crooked River; Rivers Unlimited; and the Watershed Land Trust, Inc.

Additionally, contact was initiated with Mr. Mark Swiger, Conservation Administrator with Muskingum Watershed Conservancy District (MWCD), to determine if the proposed bridge replacement project would impact any current or proposed conservation efforts in the area. Mr. Swiger indicated that the proposed replacement of the existing bridge spanning South Fork Sugar Creek would not impact any conservation effort and further stated that the MWCD supports the project (Attachment 1i). Therefore, and to the extent that information is available, no government and/or privately sponsored conservation projects are known to exist, or have been formed to specifically target improvement of water quality or enhancement of recreational opportunities on the affected water resources.

Review of the OEPA 2010 Integrated Water Quality Monitoring and Assessment Report indicated that South Fork Sugar Creek has TMDL priority status, and is listed on the 2010 Section 303(d) List of Prioritized Impaired Waters (Attachment 10b).

Block 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)):

Estimated costs of water pollution controls by alternative are summarized below:

Estimated Cost of Water Pollution Controls (Stream and Wetland Impact Minimization).

Alternative	Best Management Practices[1]
Preferred Alternative	$8,000
Minimal Degradation Alternative	$4.000
Non-Degradation (No-Build) Alternative[2]	$0

[1] Best management practices for erosion control as incorporated into the current design plans (Minimal Degradation Alternative) for the entire project length.

[2] There would be no water pollution control costs associated with the Non-Degradation Alternative.

Block 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

The Preferred Alternative is expected to have some minor impact on human health related to safety, income and employment, air quality, and noise as reported in the Final CE document (approved by ODOT on November 15, 2011, see Attachment 12). Information concerning these impacts is summarized below. The project Final CE document (Attachment 12) states that there will be no relocations as a result of the proposed project, and therefore, no impacts to human health from population or housing issues will result from the proposed project. The Preferred Alternative meets the project purpose and need in full, and will improve safety on Kaylor Road.

Safety

The project Final CE document (approved by ODOT on November 15, 2011, Attachment 12) states that the current bridge's appraisal rating (poor condition), sufficiency rating of 24.9 (structurally deficient), and the single lane constraint of this bridge fall below the requirements of current design and safety standards. The bridge's condition will only deteriorate further in the future, and this is unacceptable according to current transportation health and safety planning goals. Therefore, the need to replace the bridge to improve safety on the local roadways is imperative.

Income and Employment

The project Final CE document (Attachment 12) did not report any substantial impacts to income as a result of the proposed project, and income levels would be expected to remain at current levels in the short-term. Because the replacement bridge will have two lanes of traffic as compared to the existing single lane, increased use of Kaylor Road due to the bridge replacement may potentially improve income and employment as local accessibility is improved. Additionally, there would be short-term increases in construction employment as the proposed project is being built, but this would not likely continue once the project was completed. However, the Preferred Alternative for this project, overall, is expected to have a long-term beneficial impact on the employment and income within the Wayne Township area, due to the improved accessibility for existing and new future local businesses.

Air Quality

As reported in the Final CE document (Attachment 12), the proposed project is not located within a PM2.5 nonattainment or maintenance area. The project is also part of the approved and conforming State Transportation Improvement Program (STIP), and therefore, ozone issues have already been addressed. Additionally, the Final CE document (Attachment 12) states that the proposed project is exempt from project level conformity analysis for carbon monoxide (per the ODOT/OEPA Air Quality Agreement), and that because no sensitive land uses (e.g., residences, hospitals, churches, etc.) exist within 500 ft of the project area, no Mobile Source Air Toxics analysis is required.

Roadway construction for the Preferred Alternative would be expected to result in localized short-term generation of fugitive dust and emissions from construction equipment. PM2.5 particulates could increase within the immediate vicinity of roadway construction. However, standard mitigation measures will be used