

Categorical Exclusion

Appendix E

Red Flag and Hazardous Materials



INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N642
Indianapolis, Indiana 46204

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Eric Holcomb, Governor
Joe McGuinness,
Commissioner

Date: October 11, 2019

To: Site Assessment & Management
Environmental Policy Office - Environmental Services Division
Indiana Department of Transportation
100 N Senate Avenue, Room N642
Indianapolis, IN 46204

From: Brad Ridgley
Vincennes District
3650 South US Highway 41
Vincennes IN 47591
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Re: RED FLAG INVESTIGATION
DES # 1700155, State Project
Bridge Replacement
SR 450, 6.30 mile north of US 50
Martin County, Indiana

PROJECT DESCRIPTION

Brief Description of Project: The purpose of this project is to replace the existing bridge 450-51-06447B, 6.30 Miles E US 50, RP 6+30, which has deteriorated beyond the point of cost effective rehabilitation efforts. The configuration, type, and condition ratings of the substructure is the primary project concern. The bridge inspection has a report rating of a (fair condition, 5). Specifically, spalling is present at the corners of the abutments with vertical cracking. The Prestressed Box Beam superstructure also exhibits areas of spalling.

Bridge and/or Culvert Project: Yes No Structure # 450-51-06447 B

If this is a bridge project, is the bridge Historical? Yes No , Select Non-Select

(Note: If the project involves a historical bridge, please include the bridge information in the Recommendations Section of the report).

Proposed right of way: Temporary # Acres _____ Permanent # Acres 4.5 Not Applicable

Type of excavation: None Project will raise elevation.

Maintenance of traffic: Road closure, Detour US 50.

Work in waterway: Yes No Below ordinary high water mark: Yes No

State Project: LPA:

Any other factors influencing recommendations: N/A

INFRASTRUCTURE TABLE AND SUMMARY

Infrastructure Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Religious Facilities	N/A	Recreational Facilities	N/A
Airports ¹	N/A	Pipelines	N/A
Cemeteries	1	Railroads	N/A
Hospitals	N/A	Trails	N/A
Schools	N/A	Managed Lands	N/A

¹In order to complete the required airport review, a review of public airports within 3.8 miles (20,000 feet) is required.

Explanation:

Cemeteries: One (1) cemetery is located within the 0.5 mile search radius. The nearest facility, Trinity Springs Church of Christ Cemetery, is 0.31 mile northeast of the project area. No impact is expected.

WATER RESOURCES TABLE AND SUMMARY

Water Resources Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
NWI - Points	N/A	Canal Routes - Historic	N/A
Karst Springs	N/A	NWI - Wetlands	7
Canal Structures – Historic	N/A	Lakes	1
NPS NRI Listed	N/A	Floodplain - DFIRM	2
NWI-Lines	25	Cave Entrance Density	N/A
IDEM 303d Listed Streams and Lakes (Impaired)	N/A	Sinkhole Areas	N/A
Rivers and Streams	11	Sinking-Stream Basins	N/A

Explanation:

NWI-lines: Twenty-five (25) NWI-lines are located within the 0.5 mile search radius. Two (2) NWI-lines are located within the project area. A Waters of the US Report will be prepared and coordination with INDOT ES Ecology and Waterway Permitting will occur.

Rivers and Streams: Eleven (11) rivers and streams are located within the 0.5 mile search radius. Opossum Creek is located within the project area. A Waters of the U.S. Report will be prepared and coordination with INDOT ES Ecology and Waterway Permitting will occur.

NWI-Wetlands: Seven (7) wetlands are located within the 0.5 mile search radius. One (1) wetland is located within the project area. A Waters of the US Report will be prepared and coordination with INDOT ES Ecology and Waterway Permitting will occur.

Floodplain – DFIRM: Two (2) floodplains are located within the 0.5 mile search radius. Two (2) floodplains are located within the project area. Coordination with INDOT ES Ecology and Waterway Permitting will occur.

Lakes: One (1) lake is located within the 0.5 mile search radius approximately 0.42 mile southeast of the project area. No impact is expected.

URBANIZED AREA BOUNDARY SUMMARY

Explanation: N/A

MINING AND MINERAL EXPLORATION TABLE AND SUMMARY

Mining/Mineral Exploration			
Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Petroleum Wells	N/A	Mineral Resources	N/A
Mines – Surface	N/A	Mines – Underground	N/A

Explanation: No mining and mineral resources were identified within the 0.5 mile search radius.

HAZARDOUS MATERIAL CONCERNS TABLE AND SUMMARY

Hazardous Material Concerns			
Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Superfund	N/A	Manufactured Gas Plant Sites	N/A
RCRA Generator/ TSD	N/A	Open Dump Waste Sites	N/A
RCRA Corrective Action Sites	N/A	Restricted Waste Sites	N/A
State Cleanup Sites	N/A	Waste Transfer Stations	N/A
Septage Waste Sites	N/A	Tire Waste Sites	N/A
Underground Storage Tank (UST) Sites	N/A	Confined Feeding Operations (CFO)	N/A
Voluntary Remediation Program	N/A	Brownfields	N/A
Construction Demolition Waste	N/A	Institutional Controls	N/A
Solid Waste Landfill	N/A	NPDES Facilities	N/A
Infectious/Medical Waste Sites	N/A	NPDES Pipe Locations	N/A
Leaking Underground Storage (LUST) Sites	N/A	Notice of Contamination Sites	N/A

Explanation: No hazardous material concerns were identified within the 0.5 mile search radius.

ECOLOGICAL INFORMATION SUMMARY

The Martin County listing of the Indiana Natural Heritage Data Center information on endangered, threatened, or rare (ETR) species and high quality natural communities is attached with ETR species highlighted. A preliminary review of the

Indiana Natural Heritage Database by INDOT Environmental Services did not indicate the presence of ETR species within the 0.5 mile search radius. Coordination with USFWS and IDNR will occur.

An inquiry using the USFWS Information for Planning and Consultation (IPaC) website did not indicate the presence of the federally endangered species, the Rusty Patched Bumble Bee, in or within 0.5 mile of the project area. No impact is expected.

A review of the USFWS database did not indicate the presence of endangered bat species in or within 0.5 mile of the project area. The project area is located on SR 450 in Martin County Indiana, in a rural area surrounded by farm fields and wooded areas. The August 9, 2018, INDOT BIAS Bridge inspection report for Bridge # 450-51-06447 B states that no evidence of bats was seen or heard under the bridge. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects".

RECOMMENDATIONS SECTION

Include recommendations from each section. If there are no recommendations, please indicate N/A:

INFRASTRUCTURE: N/A

WATER RESOURCES:

The presence of the following water resources will require the preparation of a Waters of the US Report and coordination with INDOT ES Ecology and Waterway Permitting:

Two (2) NWI-lines are located within the project area.

One (1) river and stream is located within the project area.

One (1) wetland is located adjacent to the project area.

Two (2) Floodplains are located within the project area. (Coordination only)

URBANIZED AREA BOUNDARY: N/A

MINING/MINERAL EXPLORATION: N/A

HAZMAT CONCERNS: N/A

ECOLOGICAL INFORMATION: Coordination with USFWS and IDNR will occur. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects".

INDOT Environmental Services concurrence:

Aaron Aldred Digitally signed by Aaron Aldred
Date: 2019.10.15 08:43:33 -04'00'

(Signature)

Prepared by:

Brad Ridgley
Environmental Manager II
INDOT- Vincennes District

Graphics:

A map for each report section with a 0.5 mile search radius buffer around all project area(s) showing all items identified as possible items of concern is attached. If there is not a section map included, please change the YES to N/A:

SITE LOCATION: YES

Graphic omitted to avoid duplication. See graphic in Appendix B of this CE document.

INFRASTRUCTURE: YES

WATER RESOURCES: YES

URBANIZED AREA BOUNDARY: N/A

MINING/MINERAL EXPLORATION: N/A

HAZMAT CONCERNS: N/A

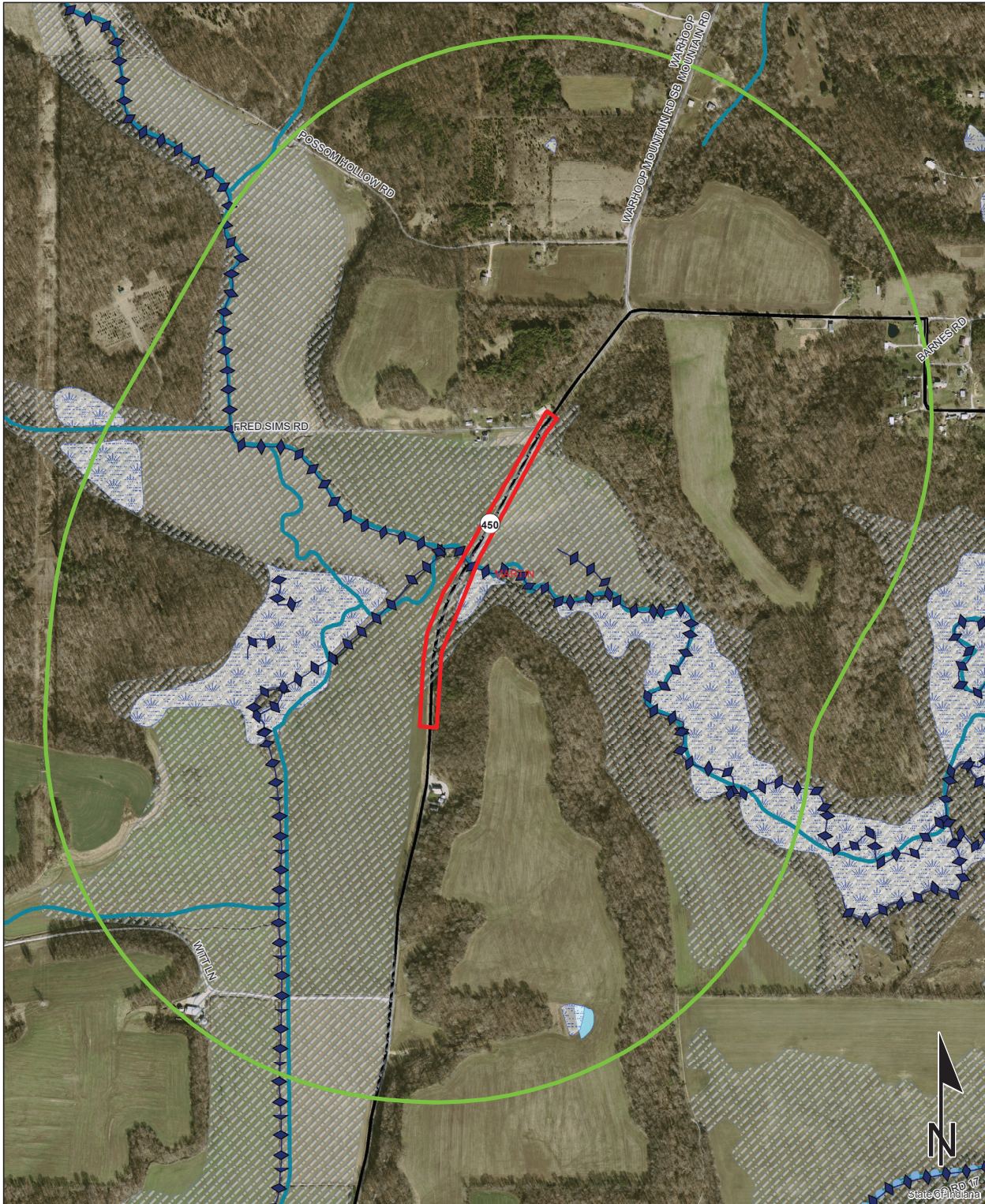
Red Flag Investigation - Infrastructure
 SR 450, 6.30 miles north of US 50
 Des. No. 1700155, Bridge Replacement
 Martin County, Indiana



Sources: 0.15 0.075 0 0.15 Miles
Non Orthophotography
 Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
 Map Projection: UTM Zone 16 N Map Datum: NAD83
 This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

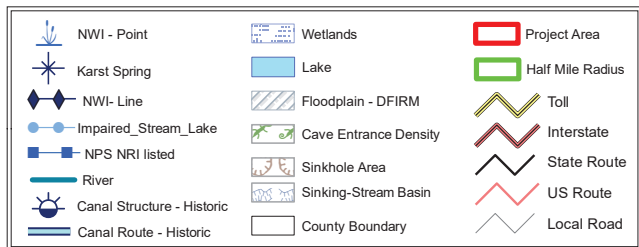
	Religious Facility		Recreation Facility		Project Area
	Airport		Pipeline		Half Mile Radius
	Cemeteries		Railroad		Toll
	Hospital		Trails		Interstate
	School		Managed Lands		State Route
			County Boundary		US Route
					Local Road

Red Flag Investigation - Water Resources
 SR 450, 6.30 miles north of US 50
 Des. No. 1700155, Bridge Replacement
 Martin County, Indiana



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Indiana County Endangered, Threatened and Rare Species List

County: Martin

Species Name	Common Name	FED	STATE	GRANK	SRANK
Platyhelminthes (Flatworms)					
Sphalloplana weingartneri	Weingartner's Cave Flatworm		WL	G4	S3
Diplopoda					
Conotyia bollmani	Bollman's Cave Milliped		WL	G5	S3
Crustacean: Malacostraca					
Orconectes inermis inermis	A Troglobitic Crayfish		WL	G5T4	S3
Mollusk: Bivalvia (Mussels)					
Arcidens confragosus	Rock Pocketbook			G4	S2
Cyrogenia stegaria	Eastern Fanshell Pearlymussel	LE	SE	G1Q	S1
Epioblasma rangiana	Northern Riffleshell	LE	SE	G2	S1
Epioblasma torulosa	Tubercled Blossom	LE	SX	GX	SX
Epioblasma triquetra	Snuffbox	LE	SE	G3	S1
Fusconaia subrotunda	Longsolid	C	SX	G3	SX
Ligumia recta	Black Sandshell			G4G5	S2
Obovaria retusa	Ring Pink	LE	SX	G1	SX
Obovaria subrotunda	Round Hickorynut	C	SE	G4	S1
Plethobasus cyphus	Sheepnose	LE	SE	G3	S1
Pleurobema clava	Clubshell	LE	SE	G1G2	S1
Pleurobema cordatum	Ohio Pigtoe		SSC	G4	S2
Pleurobema plenum	Rough Pigtoe	LE	SE	G1	S1
Pleurobema rubrum	Pyramid Pigtoe		SX	G2G3	SX
Potamilus capax	Fat Pocketbook	LE	SE	G2	S1
Ptychobranhus fasciolaris	Kidneyshell		SSC	G4G5	S2
Quadrula cylindrica cylindrica	Rabbitsfoot	LT	SE	G3G4T3	S1
Simpsonaias ambigua	Salamander Mussel	C	SSC	G3	S2
Toxolasma lividus	Purple Lilliput	C	SSC	G3Q	S2
Villosa lienosa	Little Spectaclecase		SSC	G5	S3
Ellipluran: Collembola					
Onychiurus casus	Fallen Springtail		WL	GNR	S4
Pseudosinella collina	Hilly Springtail		SR	GNR	S2?
Sinella cavernarum	A Springtail		WL	G5	S3
Insect: Coleoptera (Beetles)					
Dryobius sexnotatus	Six-banded Longhorn Beetle		ST	GNR	S2
Insect: Ephemeroptera (Mayflies)					
Ephemerella excrucians	Lowlands Spiny Crawler Mayfly		WL	G5	S3
Raptoheptagenia cruentata	Predaceous Flat-headed Mayfly		WL	G4	S3
Spinadis simplex	Wallace's Deepwater Mayfly		SE	G2G4	S2
Arachnida					
Hesperocheernes mirabilis	Southeastern Cave Pseudoscorpion		WL	G5	S4

Indiana Natural Heritage Data Center
Division of Nature Preserves
Indiana Department of Natural Resources
This data is not the result of comprehensive county surveys.

Fed: LE = Endangered; LT = Threatened; C = candidate; PDL = proposed for delisting
State: SE = state endangered; ST = state threatened; SR = state rare; SSC = state species of special concern; SX = state extirpated; SG = state significant; WL = watch list
GRANK: Global Heritage Rank: G1 = critically imperiled globally; G2 = imperiled globally; G3 = rare or uncommon globally; G4 = widespread and abundant globally but with long term concerns; G5 = widespread and abundant globally; G? = unranked; GX = extinct; Q = uncertain rank; T = taxonomic subunit rank
SRANK: State Heritage Rank: S1 = critically imperiled in state; S2 = imperiled in state; S3 = rare or uncommon in state; G4 = widespread and abundant in state but with long term concern; SG = state significant; SH = historical in state; SX = state extirpated; B = breeding status; S? = unranked; SNR = unranked; SNA = nonbreeding status unranked

Indiana County Endangered, Threatened and Rare Species List

County: **Martin**

Species Name	Common Name	FED	STATE	GRANK	SRANK
Fish					
Acipenser fulvescens	Lake Sturgeon		SE	G3G4	S1
Ammocrypta clara	Western Sand Darter		SSC	G3	S2
Etheostoma maculatum	Spotted Darter		SSC	G2G3	S2S3
Amphibian					
Hemidactylium scutatum	Four-toed Salamander		SSC	G5	S2
Necturus maculosus	Common mudpuppy		SSC	G5	S2
Reptile					
Crotalus horridus	Timber Rattlesnake		SE	G4	S2
Opheodrys aestivus	Rough Green Snake		SSC	G5	S3
Pseudemys concinna concinna	Eastern River Cooter		SE	G5T5	S1
Terrapene carolina carolina	Eastern Box Turtle		SSC	G5T5	S3
Bird					
Accipiter striatus	Sharp-shinned Hawk		SSC	G5	S2B
Ammodramus henslowii	Henslow's Sparrow		SE	G4	S3B
Antrostomus vociferus	Whip-poor-will		SSC	G5	S4B
Buteo platypterus	Broad-winged Hawk		SSC	G5	S3B
Chordeiles minor	Common Nighthawk		SSC	G5	S4B
Haliaeetus leucocephalus	Bald Eagle		SSC	G5	S2
Helmitheros vermivorus	Worm-eating Warbler		SSC	G5	S3B
Lanius ludovicianus	Loggerhead Shrike		SE	G4	S3B
Mniotilta varia	Black-and-white Warbler		SSC	G5	S1S2B
Nyctanassa violacea	Yellow-crowned Night-heron		SE	G5	S2B
Pandion haliaetus	Osprey		SSC	G5	S1B
Setophaga cerulea	Cerulean Warbler		SE	G4	S3B
Setophaga citrina	Hooded Warbler		SSC	G5	S3B
Tyto alba	Barn Owl		SE	G5	S2
Mammal					
Myotis lucifugus	Little Brown Bat	C	SE	G3	S2
Myotis septentrionalis	Northern Long Eared Bat	LT	SE	G1G2	S2S3
Myotis sodalis	Indiana Bat	LE	SE	G2	S1
Neotoma magister	Allegheny Woodrat		SE	G3G4	S2
Perimyotis subflavus	Tricolored Bat		SE	G2G3	S2S3
Sorex fumeus	Smoky Shrew		SSC	G5	S2
Spilogale putorius	Eastern Spotted Skunk		SX	G4	SX
Vascular Plant					
Calamagrostis porteri ssp. porteri	Porter's reedgrass		SE	G4T4	S1
Carex timida	Timid Sedge		SE	G2G4	S1
Caulophyllum giganteum	Giant blue cohosh		WL	G4G5	SU

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Indiana County Endangered, Threatened and Rare Species List

County: Martin

Species Name	Common Name	FED	STATE	GRANK	SRANK
Cheilanthes lanosa	Hairy Lipfern		SR	G5	S3
Chelone obliqua var. speciosa	Rose Turtlehead		WL	G4T3	S3
Crataegus chrysoarpa	Fineberry Hawthorn		SE	G5	S1
Dichanthelium yadkinense	A Panic-grass		SE	G4Q	S1
Hydrastis canadensis	Golden Seal		WL	G3G4	S3
Juglans cinerea	Butternut		ST	G4	S2
Nothoscordum bivalve	Crow-poison		SR	G4	S3
Panax quinquefolius	American Ginseng		WL	G3G4	S3
Trichomanes boschianum	Filmy Fern		SE	G4	S1
Trichostema dichotomum	Forked Bluecurl		WL	G5	S3
Trifolium reflexum var. glabrum	Buffalo Clover		SE	G5T2T4Q	S1
Vittaria appalachiana	Appalachian Vittaria		ST	G4	S2
Woodwardia areolata	Netted Chainfern		SR	G5	S3
High Quality Natural Community					
Barrens - bedrock sandstone	Sandstone Glade		SG	G2	S1
Forest - floodplain mesic	Mesic Floodplain Forest		SG	G3?	S1
Forest - upland dry Shawnee Hills	Shawnee Hills Dry Upland Forest		SG	GNR	S2
Forest - upland dry-mesic Shawnee Hills	Shawnee Hills Dry-mesic Upland Forest		SG	GNR	S3
Forest - upland mesic Shawnee Hills	Shawnee Hills Mesic Upland Forest		SG	GNR	S3
Primary - cliff sandstone	Sandstone Cliff		SG	GU	S3
Wetland - seep acid	Acid Seep		SG	GU	S1
Other Significant Feature					
Geomorphic - Nonglacial Erosional Feature - Water Fall and Cascade	Water Fall and Cascade			GNR	SNR

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Categorical Exclusion
Appendix F
Water Resources

Waters of the U.S. Report

SR 450 in Martin County, Indiana
Bridge 450-51-06447 B Replacement
Designation Number 1700155
September 12, 2019

Prepared By:

Ryan Falls
Senior Environmental Manager Supervisor
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Date of Waters Field Investigation: August 28, 2019 & September 3, 2019

Location

Sections 29 & 30, Township 4N, Range 3W
Shoals and Indian Springs Quadrangles
Dover Hill, Mitcheltree Township, Martin County, Indiana
Lower East Fork White Watershed, 12-Digit HUC 051202080906

Project Description

This project is located on SR 450, 6.30 miles east of US 50. More specifically, the bridge (450-51-06447 B) is located on SR 450, 0.2 mile south of Fred Sims Road (C.R. 108), the investigated areas nearest intersecting road (38.753240, -86.776489). The preferred alternative of this project is to replace the existing bridge, which has deteriorated beyond the point of cost effective rehabilitation efforts. Guardrail is substandard and will require replacement. The clear roadway width is 28-foot for the existing structure and will require a wider structure to meet minimum standards. Roadway shoulders and embankments will require some minimal widening to transition into the new, wider bridge. This bridge and the connecting roadway is prone to flooding from backwater from Indian Creek and the East Fork White River substantially affecting the traveling public that uses and lives north of the bridge. Preliminary hydraulics have been completed, which provide some information regarding the issue. Further evaluation will need to be completed to determine the best course of action. Design options that require evaluation include raising the bridge and roadway above the 100 year storm event, raising the bridge and roadway above the 10 year storm event, replace the bridge at a minimal or no increase in elevation or roadway elevation.

It should be noted that on the Topographic Map, the stream that flows through the investigated area is called out as Opossum Creek; however, all INDOT documentation call the stream out as Flat Creek. Henceforward, this report will call out the stream as Flat Creek to avoid confusion in later documents.

Project Site Background

Existing Maps

Several sources of information were accessed to identify potential wetlands and wetland soil units on the site. These include the U.S. Fish and Wildlife Service's (USFWS) National Wetland Inventory (NWI) Wetland Mapper, the IndianaMAP website, the U.S. Geological Survey's (USGS) National Hydrography Dataset (NHD) layer on the Indiana Geological Survey's (IGS) IndianaMAP website, the Flood Insurance Rate Map (FIRM) on the Federal Emergency Management Agency (FEMA) website, and the Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS) for this county. These maps identify potential wetlands and wetland soil units on the site. The NHD maps are used to portray surface water.

National Wetland Inventory Information

Two NWI wetlands exist within the investigated area. A 17.60-acre Riverine habitat flows northwest to southeast through the investigated area. More specifically, it is classified as a Riverine Lower Perennial Unconsolidated Bottom Permanently Flooded Excavated (R2UBHx). This has been identified as Flat Creek in this report. A 1.33-acre Freshwater Forested/Shrub Wetland is located within the south quadrant of the investigated area. More specifically, it is classified as a Palustrine Forested Broad-Leaved Deciduous Temporary Flooded (PFO1A). This has been identified as Wetland 1 (W1) and W2 in this report.

Soils

According to INDOT ArcMap and the Soil Survey Geographic (SSURGO) Database for Martin County, Indiana, the investigated area contains eight soil types: Wellston-Tipsaw-Adyeville complex (WpfG), a not hydric soil; Wakeland silt loam (WaaAH), a predominantly not hydric soil; Wellston silt loam (WhfD2), a not hydric soil; Bartle silt loam (BbhA), a predominantly not hydric soil; Cuba silt loam (CwaAH), a not hydric soil; Wakeland silt loam (WaaAW), a predominantly not hydric soil; Wilbur silt loam (WokAW), a not hydric soil; and Stendal silt loam (StdAW), a predominantly not hydric soil.

Table 1. Soils Summary Table

Map Unit Symbol	Map Unit Name	Hydric Soil Rating
WpfG	Wellston-Tipsaw-Adyeville complex	Not Hydric (0%)
WaaAH	Wakeland silt loam	Predominantly Not Hydric (1-32%)
WhfD2	Wellston silt loam	Not Hydric (0%)
BbhA	Bartle silt loam	Predominantly Not Hydric (1-32%)
CwaAH	Cuba silt loam	Not Hydric (0%)
WaaAW	Wakeland silt loam	Predominantly Not Hydric (1-32%)
WokAW	Wilbur silt loam	Not Hydric (0%)
StdAW	Stendal silt loam	Predominantly Not Hydric (1-32%)

National Hydrography Dataset

According to the NHD layer on the IGS IndianaMAP website, one ‘Water Bodies Streams’ and one ‘Water Bodies Flowlines Classified LocalRes’ flow through the investigated area from northwest to southeast. These have been identified in this report as Flat Creek.

Site Reconnaissance**Investigation Methodology**

The delineation of wetlands and other Waters of the U.S. on the site were based on the methodology described in the *U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (1987)* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0, 2012)* as required by current USACE policy. Prior to the field work, background information was reviewed to establish the site’s probability for potential wetlands and their location to the site. Next, a general reconnaissance of the investigated area was conducted to determine site conditions. All wetland and stream boundaries can be seen in Figure 9. The investigated area was inspected for any possible wetland areas by documenting vegetation, soil characteristics, and evidence of hydrology. Soils were examined to a depth of at least 18 inches, when no restrictive layer was encountered, to assess soil characteristics and site hydrology. Complete descriptions of typical soil series can be found in the soil survey for this county.

Site Photographs

Photographs of the site are in Appendix A, and photo locations are shown on Figures 9-11. These photographs are the visual documentation of site conditions at the time of inspection. The photographs are intended to provide representative visual samples of any streams, wetlands, or other special features found on the site.

Site Description

The site is located SR 450, 6.30 miles east of US 50 (38.753240, -86.776489). The investigated area boundaries are as follows: 100 feet northwest/southeast of the centerline of SR 450; 1,250 feet northeast of the center point of 450-51-06447 B; and 1,200 feet southwest of the center point of 450-51-06447 B. Surrounding land use includes agricultural, forested, and residential properties. One stream, one wetland, and three roadside ditches (RSDs) were identified during the field visit on August 28, 2019 and September 3, 2019. Overhead utility lines were noted running through the investigated area along SR 450. A heavy rain event had occurred within seven days of the field investigations. No evidence of birds or bats were seen within the bridge. The investigated area does lie within the floodplain of Flat Creek (Figure 8).

Streams, Rivers, Watercourse, and Jurisdictional Ditches

With non-tidal waters, in the absence of adjacent wetlands, the extent of the USACE’s jurisdiction is defined by the ordinary high water mark (OHWM). USACE regulations define the term ordinary high water mark for purposes of the Clean Water Act (CWA) lateral jurisdiction at 33 CFR 328.3(e), which states:

The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Rivers, streams, watercourses, and ditches within the investigated area were evaluated using the above definition and documented. Waterways that did exhibit an OHWM were recorded and described in Table 2. A heavy rain event had occurred within seven days prior to the field investigation.

Stream Analysis

Flat Creek

Length within investigated area: Approximately 200 feet

Flat Creek is a perennial stream that flows through the investigated area. It originates on the northwest side of the investigated area. It flows southeast through the investigated area. Flat Creek is primarily fed by drainage from surrounding agricultural fields and forested areas. The stream does appear as a blue-line on the USGS Topographic Map, on the NHD map, and the NWI map. Flat Creek has an OHWM width of 6.8 feet and an OHWM depth of 0.8 feet. Its substrate is composed of approximately 10% cobble, 40% gravel, 40% sand, 5% silt, and 5% clay. Clear water with a depth of 0.7 feet and a velocity of 0.75 feet per second was present at the time of the field investigation. Bank vegetation is composed of mixed mast trees and shrubs and annual and perennial forbs and grasses. Point bars, mid-channel bars, and side bars were present. The stream has low sinuosity and is comprised of approximately 30% riffle, 30% run, and 40% pool. It has an upstream drainage of approximately 4,880 acres. Flat Creek is likely jurisdictional since it has an OHWM and a defined bed and bank. The field investigator noted this stream's quality as fair. The reasoning behind this was an excellent mixture of substrate. The stream frequently and naturally gets out of its banks, flooding its floodplain. Bank vegetation is dense, but lacks trees and has very few saplings for stability. The herbaceous vegetation is an invasive species, Reed Canary Grass, and can be seen growing into the stream. This is causing the stream to aggrade.

Table 2. Stream Summary Table

Stream Name	Photos	Latitude Longitude	OHWM Width (ft)	OHWM Depth (ft)	Substrate	USGS Blue- Line? Type?	Riffles? Pools?	Quality	Likely water of the U.S.?
Flat Creek	4, 8, 29-32	38.753203 -86.776379	6.8	0.8	10% cobble 40% gravel 40% sand 5% silt 5% clay	Yes (Perennial)	Yes Yes	Fair	Yes

Roadside Ditches

Three RSDs were observed in the investigated area.

RSD1 originates in the north quadrant (near the bridge) of the investigated area, northwest of SR 450. It flows southwest into Flat Creek. This flowline is approximately 150 feet long. Within its flowline, vegetation is growing, and drift in the form of corn stalks have been deposited within the flowline; thus, RSD1 is not moving its bedload. Adjacent vegetation is composed of annual and perennial forbs and grasses.

RSD2 originates in the southern portion of the investigated area, east of SR 450. It flows north into W1. This flowline is approximately 330 feet long. RSD2 is an eroding gully with sparse riprap. Adjacent vegetation is composed of annual and perennial forbs and grasses and soft mast trees and shrubs.

RSD3 originates in the southern portion of the investigated area, east of SR 450. It flows south and out of the investigated area. This flowline is approximately 275 feet long. RSD3 is a vegetated valley without a clear flowline. Adjacent vegetation is composed of annual and perennial forbs and grasses.

All three run alongside SR 450 collecting drainage from the road. RSD1, RSD2, and RSD3 are not likely jurisdictional since they do not have an OHWM and/or a defined bed and bank.

Table 2. Roadside Ditch Summary Table

Stream Name	Photos	Latitude Longitude	OHWM Width (ft)	OHWM Depth (ft)	Substrate	USGS Blue-Line? Type?	Riffles? Pools?	Quality	Likely Water of the U.S.?
RSD1	1, 19, 27, 28	38.753514 -86.776413	N/A	N/A	Silt/Sand	No	No	Poor	No
RSD2	45, 47, 49	38.751047 -86.777307	N/A	N/A	Silt/Sand; Sparse Riprap	No	No	Poor	No
RSD3	50, 52, 53	38.750523 -86.777339	N/A	N/A	Silt/Sand	No	No	Poor	No

Data Points

Vegetation, soils, and hydrology were assessed at three data point (DPs) within the investigated area.

DP1 is located in the east quadrant of the investigated area and was investigated for a potential wetland. After evaluation, this vegetation did pass the USACE Dominance Test for hydrophytic vegetation. Soils showed no positive hydric indicators. One primary wetland hydrology indicator, drift deposits, was present, qualifying this point for wetland hydrology. Since all three indicators are needed to qualify an area as wetland, the area around DP1 is not a wetland. These observations were noted in Appendix B.

DP2 is located in the north quadrant of the investigated area and was investigated for a potential wetland. After evaluation, this vegetation did pass the USACE Dominance Test for hydrophytic vegetation. Soils showed no positive hydric indicators. One primary wetland hydrology indicator, drift deposits, was present, qualifying this point for wetland hydrology. Since all three indicators are needed to qualify an area as wetland, the area around DP2 is not a wetland. These observations were noted in Appendix B.

DP3 is located in the west quadrant of the investigated area and was investigated for a potential wetland. After evaluation, this vegetation did pass the USACE Dominance Test for hydrophytic vegetation. Soils showed no positive hydric indicators. One primary wetland hydrology indicator, drift deposits, was present, qualifying this point for wetland hydrology. Since all three indicators are needed to qualify an area as wetland, the area around DP3 is not a wetland. These observations were noted in Appendix B.

Table 3. Data Point Summary Table

Data Point Name	Photos	Latitude Longitude	Vegetation	Soils	Hydrology	Wetland
DP1	3, 16, 25	38.753274 -86.776305	Yes	No	Yes	No
DP2	20	38.753410 -86.776618	Yes	No	Yes	No
DP3	7, 24	38.753222 -86.776680	Yes	No	Yes	No

Wetland Analysis

Vegetation, soils, and hydrology were assessed within the investigated area. One area was delineated that had all three requirements to qualify as wetland.

W1 is located in the south quadrant of the investigated area. W1 is approximately 0.12 acre in size within the investigated area, and its boundaries are entirely within the investigated area. After evaluation, the vegetation passed the USACE Dominance Test for hydrophytic vegetation. Soils showed characteristics of a depleted matrix. One primary wetland hydrology indicator, drift deposits, was present. One secondary wetland hydrology indicator, crayfish burrows, was present. All three wetland indicators were present within the sampling site, qualifying this area as a wetland. This wetland's quality was noted as poor. This is a roadside wetland dominated by an invasive species, Reed Canary Grass. W1 is adjacent to Flat Creek. The wetland's classification as a Palustrine Emergent (PEM) was noted during the field investigation. This wetland's western boundary is SR 450's side slope. The eastern boundary is the tree line. The northern boundary is Flat Creek's riparian zone. The southern boundary is where the landform changes from depression to hillslope, relief changes from concave to convex, and the slope changes from 0.5% to 2-3%. More detailed observations, along with W1's abutting upland (W1-W2U), are noted on the USACE Eastern Mountains and Piedmont Region Wetland Determination Data Forms in Appendix B.

W2 is located in the south quadrant of the investigated area. W2 is approximately 0.78 acre in size within the investigated area; however, its boundaries extend beyond the investigated area. After evaluation, the vegetation passed the USACE Dominance Test for hydrophytic vegetation. Soils showed characteristics of a depleted matrix. One primary wetland hydrology indicator, drift deposits, was present. One secondary wetland hydrology indicator, crayfish burrows, was present. All three wetland indicators were present within the sampling site, qualifying this area as a wetland. This wetland's quality was noted as good. This woodland had a good mixture of mature soft mast trees, with a healthy population of soft and hard mast saplings. No invasive species were noted past the tree line. W2 is adjacent to Flat Creek. The wetland's classification as a PFO1A was confirmed during the field investigation. This wetland's western boundary is the tree line. The eastern boundary is the investigated area limits. The northern boundary is Flat Creek's riparian zone. The southern boundary is where the landform changes from depression to hillslope, relief changes from concave to convex, and the slope changes from 0.5% to 2-3%. More detailed observations, along with W1's abutting upland (W1-W2U), are noted on the USACE Eastern Mountains and Piedmont Region Wetland Determination Data Forms in Appendix B.

The dividing boundary of W1 and W2 is the tree line. Though they are abutting, the difference in classification, PEM versus PFO1A, is the reason for separating these two wetlands.

Table 3. Wetland Summary Table

Wetland Name	Photos	Latitude Longitude	Type	Total Area (acres)	Quality	Likely Water of the U.S.?
W1	5, 9-11, 33, 39	38.752968 -86.776506	PEM	0.12	Poor	Yes
W2	33	38.752946 -86.776395	PFO1A	0.78	Good	Yes

Conclusions

Three likely waters of the U.S. were observed within the investigated area: Flat Creek, W1, and W2. These waterways are likely waters of the U.S. Every effort should be taken to avoid and minimize impacts to the waterways and wetlands. If impacts are necessary, then mitigation may be required. The INDOT Environmental Services Division should be contacted immediately if impacts will occur. The final determination of jurisdictional waters is ultimately made by the USACE. This report is our best judgment based on the guidelines set forth by the Corps. Three likely non-jurisdictional RSDs were observed within the investigated area: RSD1, RSD2, and RSD3. No evidence of birds or bats were seen within the bridge.

Acknowledgement:

This waters determination has been prepared based on the best available information, interpreted in the light of the investigator's training, experience and professional judgement in conformance with the 1987 *Corps of Engineers Wetlands Delineation Manual*, the appropriate regional supplement, the USACE *Jurisdictional Determination Form Instructional Guidebook*, and other appropriate agency guidelines.

Ryan Falls

A handwritten signature in blue ink, appearing to read 'Ryan Falls', written in a cursive style.

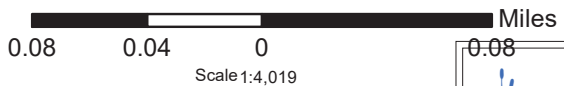
Senior Environmental Manager Supervisor
INDOT Vincennes District

Soil Type Map

SR 450, Martin County, Indiana

Des No. 1700155; Bridge Replacement

Figure 7



Sources: **Non Orthophotography**
 Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
 Map Projection: UTM Zone 16 N Map Datum: NAD83

This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

9/4/2019

Des. Number 1700155

NWI - Points	Soil Types	Investigated Area
NWI- Lines	Not Hydric	Interstate
NWI Wetlands	Predominantly Not Hydric	State Route
Section Town and Range	Somewhat Hydric	US Route
County Boundary	Predominantly Hydric	Local Road
	All Hydric	

FEMA FIRM Map
 SR 450, Martin County, Indiana
 Des No. 1700155; Bridge Replacement





Figure 8

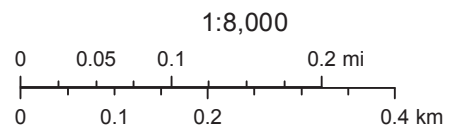


September 4, 2019

 Investigated Area

Floodplains - FIRM (Jan 2019)

-  Floodway
-  1% Annual Chance Flood Hazard
-  0.2% Annual Chance, Protected by Levee
-  0.2% Annual Chance Flood Hazard



Indiana Spatial Data Portal, UITS, ESRI
 Federal Emergency Management Agency (FEMA), Indiana Department of
 Natural Resources (IDNR)

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DES 1700155 City/County: Dover Hill/Martin Sampling Date: 8/28/2019
 Applicant/Owner: INDOT State: IN Sampling Point: W1
 Investigator(s): Ryan Falls Section, Township, Range: Sections 29 & 30, Township 4N, Range 3W
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0.5%
 Subregion (LRR or MLRA): LRR Lat: 38.752968 Long: -86.776506 Datum: WGS84
 Soil Map Unit Name: WokAW, WaaAH, WpfG NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W1

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>2828 sq. ft.</u>)				
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
50% of total cover: _____		20% of total cover: _____		
Sapling Stratum (Plot size: <u>707 sq. ft.</u>)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover: _____		20% of total cover: _____		
Shrub Stratum (Plot size: <u>707 sq. ft.</u>)				
1. _____	_____	_____	_____	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
50% of total cover: _____		20% of total cover: _____		
Herb Stratum (Plot size: <u>79 sq. ft.</u>)				
1. Phalaris arundinacea	90	Yes	FACW	_____ = Total Cover 50% of total cover: <u>49.5</u> 20% of total cover: <u>19.8</u>
2. Ambrosia trifida	3	No	FAC	
3. Ambrosia artemisiifolia	3	No	FACU	
4. Solidago canadensis	3	No	FACU	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
99 = Total Cover				_____ = Total Cover 50% of total cover: _____ 20% of total cover: _____
50% of total cover: _____		20% of total cover: _____		
Woody Vine Stratum (Plot size: <u>2828 sq. ft.</u>)				
1. _____	_____	_____	_____	_____ = Total Cover 50% of total cover: _____ 20% of total cover: _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 5/2	100						Silty Clay Loam
3-18	10YR 5/2	85	10YR 5/8	15	C	M		Silty Clay Loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soil Indicators:</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5)</p> <p><input type="checkbox"/> 2 cm Muck (A10) (LRR N)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p>	<p><input type="checkbox"/> Dark Surface (S7)</p> <p><input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)</p> <p><input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input checked="" type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)</p> <p><input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)</p> <p><input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)</p> <p><input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)</p> <p><input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148)</p> <p><input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>Remarks:</p>	

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DES 1700155 City/County: Dover Hill/Martin Sampling Date: 8/28/2019
 Applicant/Owner: INDOT State: IN Sampling Point: W2
 Investigator(s): Ryan Falls Section, Township, Range: Sections 29 & 30, Township 4N, Range 3W
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0.5%
 Subregion (LRR or MLRA): LRR Lat: 38.752946 Long: -86.776395 Datum: WGS84
 Soil Map Unit Name: WokAW, WaaAH, WpfG NWI classification: PFO1A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:			

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <p><input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)</p>	<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)</p>
<p>Field Observations:</p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>	
Remarks:	

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W2

<p><u>Tree Stratum</u> (Plot size: <u>2828 sq. ft.</u>)</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:35%;"></th> <th style="width:15%;">Absolute % Cover</th> <th style="width:15%;">Dominant Species?</th> <th style="width:15%;">Indicator Status</th> </tr> </thead> <tbody> <tr> <td>1. <u>Fraxinus pennsylvanica</u></td> <td style="text-align: center;"><u>30</u></td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">FACW</td> </tr> <tr> <td>2. <u>Platanus occidentalis</u></td> <td style="text-align: center;"><u>15</u></td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">FACW</td> </tr> <tr> <td>3. <u>Acer rubrum</u></td> <td style="text-align: center;"><u>15</u></td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">FAC</td> </tr> <tr> <td>4. <u>Quercus rubra</u></td> <td style="text-align: center;"><u>5</u></td> <td style="text-align: center;">No</td> <td style="text-align: center;">FACU</td> </tr> <tr> <td>5. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>6. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4" style="text-align: right;"><u>65</u> = Total Cover</td> </tr> <tr> <td colspan="4" style="text-align: center;">50% of total cover: <u>32.5</u> 20% of total cover: <u>13</u></td> </tr> </tbody> </table> <p><u>Sapling Stratum</u> (Plot size: <u>707 sq. ft.</u>)</p> <table style="width:100%; 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Indicator Status	1. _____				2. _____				3. _____				4. _____				5. _____				_____ = Total Cover				50% of total cover: _____ 20% of total cover: _____				<p>Dominance Test worksheet:</p> <p>Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>5</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80%</u> (A/B)</p> <p>Prevalence Index worksheet:</p> <p>Total % Cover of: _____ Multiply by:</p> <p>OBL species _____ x 1 = _____</p> <p>FACW species _____ x 2 = _____</p> <p>FAC species _____ x 3 = _____</p> <p>FACU species _____ x 4 = _____</p> <p>UPL species _____ x 5 = _____</p> <p>Column Totals: _____ (A) _____ (B)</p> <p>Prevalence Index = B/A = _____</p> <p>Hydrophytic Vegetation Indicators:</p> <p><input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation</p> <p><input checked="" type="checkbox"/> 2 - Dominance Test is >50%</p> <p><input type="checkbox"/> 3 - Prevalence Index is ≤3.0¹</p> <p><input type="checkbox"/> 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)</p> <p><input type="checkbox"/> Problematic Hydrophytic Vegetation¹ (Explain)</p> <p>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p> <p>Definitions of Five Vegetation Strata:</p> <p>Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).</p> <p>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</p> <p>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</p> <p>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.</p> <p>Woody vine – All woody vines, regardless of height.</p> <p>Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____</p>
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SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 5/2	100						Silty Clay Loam
3-18	10YR 5/2	85	10YR 5/8	15	C	M		Silty Clay Loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)		

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DES 1700155 City/County: Dover Hill/Martin Sampling Date: 8/28/2019
 Applicant/Owner: INDOT State: IN Sampling Point: W1-W2U
 Investigator(s): Ryan Falls Section, Township, Range: Sections 29 & 30, Township 4N, Range 3W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 2%
 Subregion (LRR or MLRA): LRR Lat: 38.753106 Long: -86.776464 Datum: WGS84
 Soil Map Unit Name: WaaAW, WaaAH NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W1-W2U

<p>Tree Stratum (Plot size: <u>2828 sq. ft.</u>)</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:5%;"></th> <th style="width:35%;"></th> <th style="width:15%;">Absolute % Cover</th> <th style="width:15%;">Dominant Species?</th> <th style="width:10%;">Indicator Status</th> </tr> </thead> <tbody> <tr><td>1.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>3.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>5.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>6.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td colspan="5" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="5" style="text-align: center;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table> <p>Sapling Stratum (Plot size: <u>707 sq. ft.</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1.</td><td><u>Ulmus americana</u></td><td><u>5</u></td><td><u>Yes</u></td><td><u>FACW</u></td></tr> <tr><td>2.</td><td><u>Rhus copallinum</u></td><td><u>5</u></td><td><u>Yes</u></td><td><u>FACU</u></td></tr> <tr><td>3.</td><td><u>Acer negundo</u></td><td><u>3</u></td><td><u>Yes</u></td><td><u>FAC</u></td></tr> <tr><td>4.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>5.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>6.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td colspan="5" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="5" style="text-align: center;">50% of total cover: <u>6.5</u> 20% of total cover: <u>2.6</u></td></tr> </tbody> </table> <p>Shrub Stratum (Plot size: <u>707 sq. ft.</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1.</td><td><u>Rosa multiflora</u></td><td><u>3</u></td><td><u>Yes</u></td><td><u>FACU</u></td></tr> <tr><td>2.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>3.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>5.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>6.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td colspan="5" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="5" style="text-align: center;">50% of total cover: <u>1.5</u> 20% of total cover: <u>0.6</u></td></tr> </tbody> </table> <p>Herb Stratum (Plot size: <u>79 sq. ft.</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1.</td><td><u>Phalaris arundinacea</u></td><td><u>75</u></td><td><u>Yes</u></td><td><u>FACW</u></td></tr> <tr><td>2.</td><td><u>Ambrosia trifida</u></td><td><u>5</u></td><td><u>No</u></td><td><u>FAC</u></td></tr> <tr><td>3.</td><td><u>Ambrosia artemisiifolia</u></td><td><u>5</u></td><td><u>No</u></td><td><u>FACU</u></td></tr> <tr><td>4.</td><td><u>Solidago canadensis</u></td><td><u>5</u></td><td><u>No</u></td><td><u>FACU</u></td></tr> <tr><td>5.</td><td><u>Dichanthelium clandestinum</u></td><td><u>2</u></td><td><u>No</u></td><td><u>FAC</u></td></tr> <tr><td>6.</td><td><u>Asclepias syriaca</u></td><td><u>2</u></td><td><u>No</u></td><td><u>FACU</u></td></tr> <tr><td>7.</td><td><u>Phytolacca americana</u></td><td><u>2</u></td><td><u>No</u></td><td><u>FACU</u></td></tr> <tr><td>8.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>9.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>10.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>11.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td colspan="5" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="5" style="text-align: center;">50% of total cover: <u>48</u> 20% of total cover: <u>19.2</u></td></tr> </tbody> </table> <p>Woody Vine Stratum (Plot size: <u>2828 sq. ft.</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>3.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>5.</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td colspan="5" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="5" style="text-align: center;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table>			Absolute % Cover	Dominant Species?	Indicator Status	1.	_____	_____	_____	_____	2.	_____	_____	_____	_____	3.	_____	_____	_____	_____	4.	_____	_____	_____	_____	5.	_____	_____	_____	_____	6.	_____	_____	_____	_____	_____ = Total Cover					50% of total cover: _____ 20% of total cover: _____					1.	<u>Ulmus americana</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>	2.	<u>Rhus copallinum</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	3.	<u>Acer negundo</u>	<u>3</u>	<u>Yes</u>	<u>FAC</u>	4.	_____	_____	_____	_____	5.	_____	_____	_____	_____	6.	_____	_____	_____	_____	_____ = Total Cover					50% of total cover: <u>6.5</u> 20% of total cover: <u>2.6</u>					1.	<u>Rosa multiflora</u>	<u>3</u>	<u>Yes</u>	<u>FACU</u>	2.	_____	_____	_____	_____	3.	_____	_____	_____	_____	4.	_____	_____	_____	_____	5.	_____	_____	_____	_____	6.	_____	_____	_____	_____	_____ = Total Cover					50% of total cover: <u>1.5</u> 20% of total cover: <u>0.6</u>					1.	<u>Phalaris arundinacea</u>	<u>75</u>	<u>Yes</u>	<u>FACW</u>	2.	<u>Ambrosia trifida</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	3.	<u>Ambrosia artemisiifolia</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	4.	<u>Solidago canadensis</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	5.	<u>Dichanthelium clandestinum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	6.	<u>Asclepias syriaca</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	7.	<u>Phytolacca americana</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	8.	_____	_____	_____	_____	9.	_____	_____	_____	_____	10.	_____	_____	_____	_____	11.	_____	_____	_____	_____	_____ = Total Cover					50% of total cover: <u>48</u> 20% of total cover: <u>19.2</u>					1.	_____	_____	_____	_____	2.	_____	_____	_____	_____	3.	_____	_____	_____	_____	4.	_____	_____	_____	_____	5.	_____	_____	_____	_____	_____ = Total Cover					50% of total cover: _____ 20% of total cover: _____					<p>Dominance Test worksheet:</p> <p>Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>5</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60%</u> (A/B)</p> <hr/> <p>Prevalence Index worksheet:</p> <p>Total % Cover of: _____ Multiply by:</p> <p>OBL species _____ x 1 = _____</p> <p>FACW species _____ x 2 = _____</p> <p>FAC species _____ x 3 = _____</p> <p>FACU species _____ x 4 = _____</p> <p>UPL species _____ x 5 = _____</p> <p>Column Totals: _____ (A) _____ (B)</p> <p>Prevalence Index = B/A = _____</p> <hr/> <p>Hydrophytic Vegetation Indicators:</p> <p><input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation</p> <p><input checked="" type="checkbox"/> 2 - Dominance Test is >50%</p> <p><input type="checkbox"/> 3 - Prevalence Index is ≤3.0¹</p> <p><input type="checkbox"/> 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)</p> <p><input type="checkbox"/> Problematic Hydrophytic Vegetation¹ (Explain)</p> <p>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p> <hr/> <p>Definitions of Five Vegetation Strata:</p> <p>Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).</p> <p>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</p> <p>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</p> <p>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.</p> <p>Woody vine – All woody vines, regardless of height.</p> <hr/> <p>Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
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SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 4/3	100						Sandy Silt Loam
3-18	10YR 4/4	100						Sandy Silt Loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> 2 cm Muck (A10) (LRR N) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) <input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148) <input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136) <input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147) <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
---------------------------------------------------------------------------------	--------------------------------------------

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DES 1700155 City/County: Dover Hill/Martin Sampling Date: 8/28/2019
 Applicant/Owner: INDOT State: IN Sampling Point: DP1
 Investigator(s): Ryan Falls Section, Township, Range: Sections 29 & 30, Township 4N, Range 3W
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 0.5%
 Subregion (LRR or MLRA): LRR Lat: 38.753271 Long: -86.776350 Datum: WGS84
 Soil Map Unit Name: WaaAH NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: DP1

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>2828 sq. ft.</u>)				
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
Sapling Stratum (Plot size: <u>707 sq. ft.</u>)				
1. <u>Acer negundo</u>	<u>2</u>	Yes	FAC	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
<u>2</u> = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover: <u>1</u> 20% of total cover: <u>0.4</u>				
Shrub Stratum (Plot size: <u>707 sq. ft.</u>)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: <u>79 sq. ft.</u>)				
1. <u>Phalaris arundinacea</u>	<u>80</u>	Yes	FACW	
2. <u>Setaria pumila</u>	<u>5</u>	No	FAC	
3. <u>Ambrosia artemisiifolia</u>	<u>5</u>	No	FACU	
4. <u>Ambrosia trifida</u>	<u>3</u>	No	FAC	
5. <u>Asclepias syriaca</u>	<u>3</u>	No	FACU	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>96</u> = Total Cover				
50% of total cover: <u>48</u> 20% of total cover: <u>19.2</u>				
Woody Vine Stratum (Plot size: <u>2828 sq. ft.</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 4/2	100						Silt Loam
3-18	10YR 4/3	100						Silt Loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> 2 cm Muck (A10) (LRR N) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) <input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148) <input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136) <input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147) <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

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

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DES 1700155 City/County: Dover Hill/Martin Sampling Date: 8/28/2019
 Applicant/Owner: INDOT State: IN Sampling Point: DP2
 Investigator(s): Ryan Falls Section, Township, Range: Sections 29 & 30, Township 4N, Range 3W
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 0.5%
 Subregion (LRR or MLRA): LRR Lat: 38.753385 Long: -86.776594 Datum: WGS84
 Soil Map Unit Name: CwaAH, WaaAW NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: DP2

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>2828 sq. ft.</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Sapling Stratum (Plot size: <u>707 sq. ft.</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Shrub Stratum (Plot size: <u>707 sq. ft.</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: <u>79 sq. ft.</u>)				
1. Phalaris arundinacea	80	Yes	FACW	
2. Xanthium strumarium	5	No	FAC	
3. Ambrosia artemisiifolia	2	No	FACU	
4. Ambrosia trifida	2	No	FAC	
5. Asclepias syriaca	2	No	FACU	
6. Phytolacca americana	2	No	FACU	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
93 = Total Cover				
50% of total cover: <u>46.5</u> 20% of total cover: <u>18.6</u>				
Woody Vine Stratum (Plot size: <u>2828 sq. ft.</u>)				
1. Ipomoea lacunosa	3	Yes	FACW	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
3 = Total Cover				
50% of total cover: <u>1.5</u> 20% of total cover: <u>0.6</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				

Prevalence Index worksheet:	
Total % Cover of: _____	Multiply by: _____
OBL species _____ x 1 = _____	
FACW species _____ x 2 = _____	
FAC species _____ x 3 = _____	
FACU species _____ x 4 = _____	
UPL species _____ x 5 = _____	
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = _____	
Hydrophytic Vegetation Indicators:	
___ 1 - Rapid Test for Hydrophytic Vegetation	
<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
___ 3 - Prevalence Index is ≤3.0 ¹	
___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
___ Problematic Hydrophytic Vegetation ¹ (Explain)	
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Definitions of Five Vegetation Strata:	
Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).	
Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.	
Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.	
Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.	
Woody vine – All woody vines, regardless of height.	
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 5/2	100					Silt Loam	
3-18	10YR 5/4	100					Silt Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> (MLRA 147, 148)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> (MLRA 136, 147)
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)	

Indicators for Problematic Hydric Soils³:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DES 1700155 City/County: Dover Hill/Martin Sampling Date: 8/28/2019
 Applicant/Owner: INDOT State: IN Sampling Point: DP3
 Investigator(s): Ryan Falls Section, Township, Range: Sections 29 & 30, Township 4N, Range 3W
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 0.5%
 Subregion (LRR or MLRA): LRR Lat: 38.753221 Long: -86.776680 Datum: WGS84
 Soil Map Unit Name: WokAW, WaaAW NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: DP3

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>2828 sq. ft.</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Sapling Stratum (Plot size: <u>707 sq. ft.</u>)				
1. <u>Fraxinus pennsylvanica</u>	<u>2</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Acer rubrum</u>	<u>2</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Rhus copallinum</u>	<u>2</u>	<u>Yes</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
<u>6</u> = Total Cover				
50% of total cover: <u>3</u> 20% of total cover: <u>1.2</u>				
Shrub Stratum (Plot size: <u>707 sq. ft.</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: <u>79 sq. ft.</u>)				
1. <u>Phalaris arundinacea</u>	<u>80</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Ambrosia trifida</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
3. <u>Ambrosia artemisiifolia</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
4. <u>Elymus virginicus</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	
5. <u>Setaria pumila</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>96</u> = Total Cover				
50% of total cover: <u>48</u> 20% of total cover: <u>19.2</u>				
Woody Vine Stratum (Plot size: <u>2828 sq. ft.</u>)				
1. <u>Ipomoea lacunosa</u>	<u>3</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Lonicera japonica</u>	<u>3</u>	<u>Yes</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>6</u> = Total Cover				
50% of total cover: <u>3</u> 20% of total cover: <u>1.2</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				

	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 5/2	100						Silt Loam
3-18	10YR 5/4	100						Silt Loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)	

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

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

Appendix C - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD: September 12, 2019

B. NAME AND ADDRESS OF PERSON REQUESTING PJD: Ryan Falls 3650 South U.S. Highway 41 Vincennes, IN 47591

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:

This project is located on SR 450, 6.30 miles east of US 50. More specifically, the bridge (450-51-06447 B) is located on SR 450, 0.2 mile south of Fred Sims Road (C.R. 108), the investigated areas nearest intersecting road. The preferred alternative of this project is to replace the existing bridge. Guardrail will require replacement. A wider structure will be required to meet minimum standards. Roadway shoulders and embankments will require some minimal widening to transition into the new, wider bridge.

(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: **IN** County/parish/borough: **Martin** City: **Dover Hill**

Center coordinates of site (lat/long in degree decimal format):

Lat.: **38.753240** Long.: **-86.776489**

Universal Transverse Mercator: **16N**

Name of nearest waterbody: **Flat Creek**

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date:

Field Determination. Date(s):

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
Flat Creek	38.753203	-86.776379	200 linear feet; 0.03 acre	Non-Wetland Water	Section 404
Wetland 1	38.752968	-86.776506	0.12 acre	Wetland	Section 404
Wetland 2	38.752946	-86.776395	0.78 acre	Wetland	Section 404

- 1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.
- 2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring “pre-construction notification” (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant’s acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there “*may be*” waters of the U.S. and/or that there “*may be*” navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:


SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

- Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
Map: Figures 1-11
- Data sheets prepared/submitted by or on behalf of the PJD requestor.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report. Rationale: _____
- Data sheets prepared by the Corps: _____
- Corps navigable waters' study: _____
- U.S. Geological Survey Hydrologic Atlas: IndianaMAP & INDOT ArcGIS
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: 7.5' Shoals and Indian Springs Quadrangles
- Natural Resources Conservation Service Soil Survey. Citation: INDOT ArcGIS
- National wetlands inventory map(s). Cite name: USFWS NWI Mapper
- State/local wetland inventory map(s): _____
- FEMA/FIRM maps: 18101C0125D & 18101C0185D
- 100-year Floodplain Elevation is: _____ (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): Figure 4. 9/4/2019
or Other (Name & Date): Appendix A. 8/28/2019 & 9/3/2019
- Previous determination(s). File no. and date of response letter: _____
- Other information (please specify): _____

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of
Regulatory staff member
completing PJD

 9/12/2019

Signature and date of
person requesting PJD
(REQUIRED, unless obtaining
the signature is impracticable)¹

¹ Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

From: [Cooper, Nicholas](#)
To: [Falls, Ryan G](#)
Cc: [Todd, Kristi \(INDOT\)](#); [Moon, Kyanna](#); [Aaron Lawson](#); [Joseph Dabkowski](#)
Subject: RE: 2nd Submission DES 1700155 Waters of the U.S. Report; Bridge Replacement; SR 450 in Martin Co.
Date: Thursday, September 19, 2019 3:08:00 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)
[image006.png](#)

Hi Ryan,

Sorry for the delay on this one, been busy here this week!

Thank you for submitting the waters report for **SR 450 over Flat Creek, Des. No. 1700155**. Your most recent submission has been reviewed and approved. I have updated the name of the file in Projectwise and it can be found here: [Des. No. 1700155 Waters Report - Final](#). It is the responsibility of the Project Manager to forward a copy of this report to the Project Designer.

The information in this report should be used by the Project Designer to determine if waters of the U.S. will be impacted by the project. Avoidance and minimization of impacts must occur before mitigation will be considered. If mitigation is required, the Project Manager or Project Designer must coordinate with the Ecology and Waterway Permitting Office to discuss how adequate compensatory mitigation will be provided.

The Project Manager should notify the Ecology and Waterway Permitting Office if there is any change to the project footprint presented in this report. Such changes may require additional fieldwork and submittal of an updated waters report covering areas not previously investigated. This report is only valid for a period of five years from the date of earliest fieldwork. If the report expires prior to waterway permit application submittal, additional fieldwork and a revised waters report will be required.

It will not be sent to the United States Army Corps of Engineers (USACE) or the Indiana Department of Environmental Management (IDEM) until the waterways permit applications are submitted to these agencies.

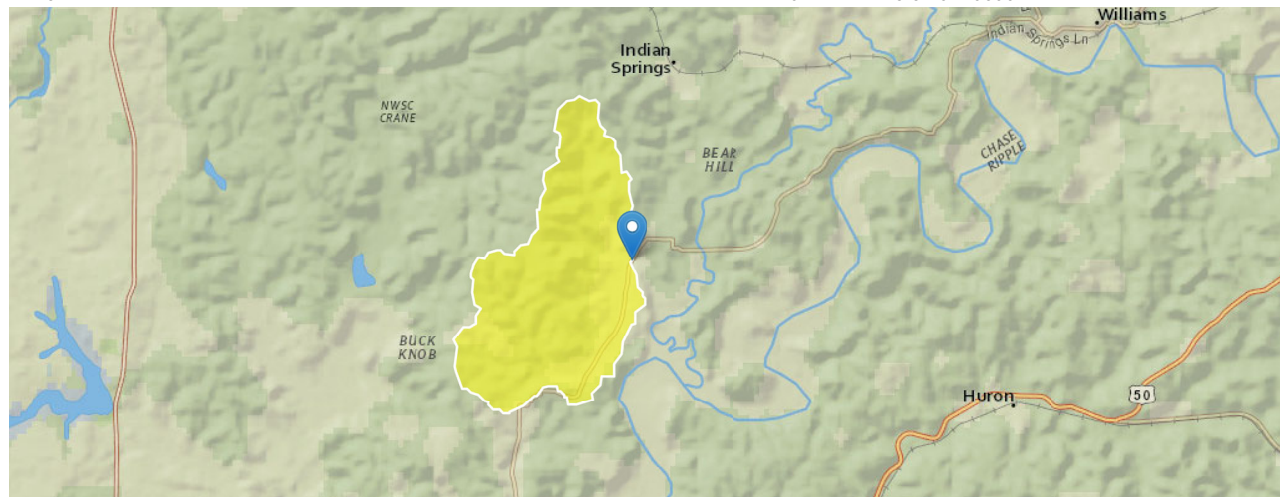
Nick Cooper

Ecology and Waterway Permitting Specialist
Indiana Department of Transportation
Ph. (317) 233-3698

From: Falls, Ryan G
Sent: Thursday, September 12, 2019 10:45 AM
To: Cooper, Nicholas <NCooper5@indot.IN.gov>
Cc: Todd, Kristi (INDOT) <KTodd1@indot.IN.gov>; Moon, Kyanna <KMoon1@indot.IN.gov>; Aaron Lawson <alawson@rqaw.com>; Joseph Dabkowski <jdabkowski@RQAW.com>
Subject: 2nd Submission DES 1700155 Waters of the U.S. Report; Bridge Replacement; SR 450 in

StreamStats Report

Region ID: IN
Workspace ID: IN20191114183901654000
Clicked Point (Latitude, Longitude): 38.75325, -86.77654
Time: 2019-11-14 13:39:01 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	7.696	square miles
T2INDNR	Average transmissivity (ft ² /d) for the full depth of unconsolidated deposits from InDNR well database.	4680	square feet per day
LOWREG	Low Flow Region Number	1730	dimensionless
K2INDNR	Average hydraulic conductivity (ft/d) for the full depth of unconsolidated deposits from InDNR well database.	8	ft per day
QSSPERMTHK	Index of the permeability of surficial Quaternary sediments computed as in SIR 2014-5177	183	dimensionless
LC01FOREST	Percentage of forest from NLCD 2001 classes 41-43	78.8	percent

General Flow Statistics Parameters [Harmonic Mean Southern Region 2016 5102]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	7.696	square miles	6.95	533
LC01FOREST	Percent_Forest_from_NLCD2001	78.8	percent	7.3	91.3
LOWREG	Low Flow Region Number	1730	dimensionless		

General Flow Statistics Flow Report [Harmonic Mean Southern Region 2016 5102]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	Plu	SEp
Harmonic Mean Streamflow	0.121	ft ³ /s	0.045	0.326	66.7

General Flow Statistics Citations

Martin, G.R., Fowler, K.K., and Arihood, L.D., 2016, Estimating selected low-flow frequency statistics and harmonic-mean flows for ungaged, unregulated streams in Indiana (ver 1.1, October 2016): U.S. Geological Survey Scientific Investigations Report 2016-5102, 45 p. (<http://dx.doi.org/10.3133/sir20165102>)

Categorical Exclusion
Appendix G
Public Involvement



INDIANA DEPARTMENT OF TRANSPORTATION

Vincennes District
3650 South U.S. Highway 41
Vincennes, Indiana 47591

PHONE: (812) 895-7326
FAX: (812) 895-7474

Eric Holcomb, Governor
Joe McGuinness, Commissioner

Notice of Survey

August 7, 2019

Example Initial Notice of Entry for Survey or Investigation Letter

RE: DES 1700155; Bridge Project; SR 450, 6.30 miles east of US 50; Martin County, Indiana

Dear Property Owner:

Our information indicates that you own or occupy property near this proposed highway project. Our employees will be doing a survey of the project area in the near future. It may be necessary for them to come onto your property to complete this work. This is allowed by law by Indiana Code IC 8-23-7-26. They will show you their identification, if you are available, before coming onto your property. If you have sold this property, or it is occupied by someone else, please let us know the name and address of the new owner or current occupant so we can contact them about the survey.

At this stage we generally do not know what effect, if any, our project may eventually have on your property. If we determine later that your property is involved, we will contact you with additional information. The survey work will include mapping the location of features such as trees, buildings, fences and drives, and obtaining ground elevations.

The survey work may also include the identification and mapping of wetlands, archaeological investigations (which may include excavation of small shovel test probes), and various other environmental studies. The survey is needed for the proper planning and design of this highway project. Please be assured of our sincere desire to cause you as little inconvenience as possible during this survey. If any problems do occur, please contact our field crew or contact me at the phone number or address shown herein.

Sincerely,

Ryan Falls
Capital Program Management-Senior Environmental Manager Supervisor
Indiana Department of Transportation
3650 South US Highway 41
Vincennes, IN 47591
Office: 812-895-7326
Fax: 812-895-7474
Email: rfalls@indot.IN.gov



Fishers, IN - Corporate
8770 North St., Ste 110
Fishers, IN 46038
317.588.1798

Example of Additional Notice of Entry for Survey or Investigation Letter

November 5, 2019

«First_Name» «Last_Name»
«F3»«Street»
«City», «State» «Zip»

Re: Notice of Entry for Survey or Investigation
DES Number: 1700155
SR 450 Bridge Project over Opossum Creek (aka Flat Creek)
Martin County, Indiana

Dear Property Owner,

Our information indicates that you own property near the above referenced transportation project. RQAW Corporation has been selected by the Indiana Department of Transportation (INDOT) Vincennes District to complete the environmental document for this proposed project. RQAW will be performing a survey of environmental resources within the project area in the near future. It may be necessary for representatives from RQAW or sub-consultants for RQAW to enter your property to complete this work. This is permitted by law per Indiana Code (IC) 8-23-7-26. Anyone performing this type of work has been instructed to identify him or herself, if you are available, before they enter your property. If you no longer own this property, or if it is currently occupied by someone else, please let us know the name of the new owner or occupant so we can contact them about the survey.

Please read the attached notice to inform you what the “Notice of Entry for Survey or Investigation” means. The survey work may include the identification and mapping of wetlands and historic resources, archaeological investigations (which may involve the survey, testing, or excavation of identified archaeological sites) and various other environmental studies. The information we obtain from these studies is necessary for the proper planning and design of the transportation project.

At this stage, we generally do not know what effect, if any, the project may eventually have on your property. If we later determine your property is involved, you will be contacted with additional information.

RQAW and its sub-consultants will be conducting the field surveys for this project. If any problems occur, please contact Kyle Boot at RQAW at 317.588.1762 or at kboot@rqaw.com. You may also contact the INDOT Project Manager, Kyanna Moon, at 812.203.2009 or at kmoon1@indot.in.gov. For archaeological concerns, you may contact Shaun Miller at INDOT at 317.233.6795 or at smiller@indot.ing.gov.

Please be aware that IC 8-23-7-27 and 28 provides that you may seek compensation from INDOT for damages occurring to your property (land or water) that result from entry for the purposes mentioned above in IC 8-23-7-26. In this case, a basic procedure that may be followed is for you and/or an INDOT employee or representative present an account of the damages to the above named INDOT staff. They will check the information and forward it to the appropriate person at INDOT who will contact you to discuss the situation and compensation. In addition, you may contact Kevin Rowland, the INDOT Vincennes Right-of-way Services Manager at 812.895.7384 or at

November 5, 2019
Notice of Entry for Survey or Investigation
Page 2



krowland@indot.in.gov. The Right-of-way Services Manager can provide you with a form to request compensation for damages. After filling out the form, you can return it to the Right-of-way Services Manager for consideration, and the Right-of-way Services Manager may be contacted if you have questions regarding the matter, rights, and procedures.

If you are not satisfied with the compensation that INDOT determines is owed to you, IC 8-23-7-8 provides the following:

The amount of damages shall be assessed by the county agricultural extension educator of the county in which the land or water is located and two (2) disinterested residents of the county, one (1) appointed by the aggrieved party and one (1) appointed by the department. A written report of the assessment of damages will be mailed to the aggrieved party and the department by first class United States mail. If either the department or the aggrieved party is not satisfied with the assessment of damages, either or both may file a petition, not later than fifteen (15) days after receiving the report, in the circuit or superior court of the county in which the land or water is located.

Please note that you have the right to claim ownership of any cultural artifacts found on your property. If artifacts are encountered on your property, they will be collected and analyzed for potential historical significance. Artifacts will be curated at a state approved curation facility unless you choose to have them returned to you. If you choose to have artifacts returned to you, please contact Shaun Miller at the number or e-mail address above.

It is our sincere desire to cause you as little inconvenience as possible during our work and we thank you in advance for your cooperation.

Sincerely,

A handwritten signature in black ink that reads 'Kyle J. Boot'.

Kyle J. Boot
Environmental Department
RQAW Corporation

Attachment: *INDOT's Notice of Entry for Survey or Investigation*



100 North Senate Avenue
Room N642
Indianapolis, Indiana 46204

Eric Holcomb, Governor
Joe McGinness, INDOT Commissioner

Indiana Department of Transportation Notice of Entry for Survey or Investigation Indiana Department of Transportation

If you have received a “Notice of Entry for Survey or Investigation” from INDOT or an INDOT representative, you may be wondering what it means. In the early stages of a project’s development, INDOT must collect as much information as possible to ensure that sound decisions are made in designing the proposed project. Before entering onto private property to collect that data, INDOT is required to notify landowners that personnel will be in the area and may need to enter onto their property. Indiana Code, Title 8, Article 23, Chapter 7, Section 26 deals with the department’s authority to enter onto any property within Indiana.

Receipt of a Notice of Entry for Survey or Investigation does not necessarily mean that INDOT will be buying property from you. It doesn’t even necessarily mean that the project will involve your property at all. Since the Notice of Entry for Survey or Investigation is sent out in the very early stages and since we want to collect data within AND surrounding the project’s limits more landowners are contacted than will actually fall within the eventual project limits. It may also be that your property falls within the project limits but we will not need to purchase property from you to make improvements to the roadway. Another thing to keep in mind is that when you receive a Notice of Entry for Survey or Investigation, very few specifics have been worked out and actual construction of the project may be several years in the future.

Before INDOT begins a project that requires them to purchase property from landowners, they must first offer the opportunity for a public hearing. If you were on the list of people who received a Notice of Entry for Survey or Investigation, you should also receive a notice informing you of your opportunity to request a public hearing. These notices will also be published in your local newspaper so interested individuals who are not adjacent to the project will also have the opportunity to request a public hearing. If a public hearing is to be held, INDOT will publicize the date, location, and time. INDOT will present detailed project information at the public hearing, comments will be taken from the public in spoken and written form, and question and answer sessions will be offered. Based on the feedback INDOT receives from the public, a project can be modified and improved to better serve the public.

So, if you have received a “Notice of Entry for Survey or Investigation”, remember:

1. You do not need to take any action at this time. It is merely letting you know that people in orange/lime vests are going to be in your neighborhood.
2. The project is still in its very early planning stages.
3. You will be notified of your opportunity to comment on the project at a later date.

Categorical Exclusion
Appendix H
Air Quality

Indiana Department of Transportation (INDOT)
State Preservation and Local Initiated Projects FY 2018 - 2021

SPONSOR	CONTRACT # / LEAD DES	STIP NAME	ROUTE	WORK TYPE	LOCATION	DISTRICT	MILES	FEDERAL CATEGORY	Estimated Cost left to Complete Project*	PROGRAM	PHASE	FEDERAL	MATCH	2018	2019	2020	2021
Indiana Department of Transportation	40561 / 1701042	A 04	US 150	Small Structure Replacement	2.73 mile East SR-550 East Jct.	Vincennes	0	STP	\$650,000.00	Bridge Consulting	PE	\$87,200.00	\$21,800.00		\$109,000.00		
Comments:Amend FY 2018-2021 to reflect FY 2019 PE phase \$109,000. No MPO.																	
Indiana Department of Transportation	40561 / 1701053	A 04	US 150	Small Structure Replacement	0.49 mile East, East Jct SR-550	Vincennes	0	STP	\$471,000.00	Bridge Consulting	PE	\$87,200.00	\$21,800.00	\$109,000.00			
Comments:Amend FY 2018-2021 to reflect FY 2018 PE phase \$109,000. No MPO.																	
Indiana Department of Transportation	40589 / 1700155	A 04	SR 450	Bridge Replacement, Concrete	Over Flat Creek, 06.30 miles East US-50	Vincennes	0	STP	\$961,000.00	Bridge Consulting	PE	\$133,600.00	\$33,400.00	\$167,000.00			
										Bridge ROW	RW	\$17,600.00	\$4,400.00			\$22,000.00	
Comments:Amend FY 2018-2021 to reflect FY 2018 PE phase \$167,000, FY 2020 RW phase \$22,000. No MPO.																	
Indiana Department of Transportation	40697 / 1702223	A 06	US 50	Slotted Drain Or Inlet Replacement	From 0.14 mile N of S Jct of US -231 to 0.13 mile N of N Jct of US-231	Vincennes	7.67	NHPP	\$955,000.00	District Other Consulting	PE	\$87,200.00	\$21,800.00	\$109,000.00			
Comments:Amend FY 2018-2021 STIP to reflect FY 2018 PE - \$109,000. No MPO.																	
Indiana Department of Transportation	41058 / 1800310	A 27	US 50	Bridge Thin Deck Overlay	Over East Fork White River, 00.30 mi W US-150	Vincennes	0	NHPP	\$616,142.00	Bridge Construction	CN	\$476,913.60	\$119,228.40				\$596,142.00
										Bridge Consulting	PE	\$16,000.00	\$4,000.00		\$20,000.00		
Comments:Amend FY 2018-2021 STIP to reflect FY 2019 PE phase - \$20k; FY 2021 CN phase \$596,142. No MPO.																	
Indiana Department of Transportation	41130 / 1800969	A 18	SR 650	HMA Overlay, Preventive Maintenance	From US-50 to 0.88 mi E of US-50 (US Gypsum)	Vincennes	.878	STP	\$331,000.00	Road Construction	CN	\$248,800.00	\$62,200.00				\$311,000.00
										Road Consulting	PE	\$16,000.00	\$4,000.00	\$20,000.00			
Comments:Amend FY 2018-2021 STIP to reflect FY 2019 PE phase and FY 2021 CN phase \$311,000. No MPO.																	

Martin County Total

Federal: \$10,062,465.20 Match :\$2,515,616.30 2018: \$8,654,860.00 2019: \$1,249,466.60 2020: \$1,053,005.90 2021: \$1,620,749.00

*Estimated Costs left to Complete Project column is for costs that may extend beyond the four years of a STIP. This column is not fiscally constrained and is for information purposes.

Indiana Department of Transportation (INDOT)
 State Preservation and Local Initiated Projects FY 2020 - 2024

SPONSOR	CONTR ACT # / LEAD DES	STIP NAME	ROUTE	WORK TYPE	LOCATION	DISTRICT	MILES	FEDERAL CATEGORY	Estimated Cost left to Complete Project*	PROGRAM	PHASE	FEDERAL	MATCH	2020	2021	2022	2023	2024
Martin County																		
Martin County	1592993	Init.	VA VARI	Bridge Inspections	Countywide Bridge Inspection and Inventory Program for Cycle Years 2017-2020	Vincennes	0	Multiple		Local Funds	PE	\$0.00	\$22,469.60	\$15,951.40	\$6,518.20			
										Local Bridge Program	PE	\$89,878.40	\$0.00	\$63,805.60	\$26,072.80			
Martin County	1902085	A 07	IR 1001	Bridge Inspections	Countywide Bridge Inspection and Inventory Program for Cycle Years 2021-2024	Vincennes	0	STBG	\$270,803.00	Local Funds	PE	\$0.00	\$46,664.40			\$21,096.00	\$7,224.20	\$18,344.20
										Local Bridge Program	PE	\$186,657.61	\$0.00			\$84,384.00	\$28,896.81	\$73,376.80
Comments: No MPO. Add \$84,384 federal and \$21,096 local funds to FY 2022. Add \$28,896.80 federal and \$7,225.20 local funds to FY 2023. Add \$73,376.80 federal and \$18,344.20 local funds to FY 2024.																		
Indiana Department of Transportation	39926 / 1600730	Init.	US 50	Small Structure Maint and Repair	2.46 mi E US-231 E Jct	Vincennes	0	NHPP		Bridge Construction	CN	\$284,958.40	\$71,239.60	\$25,000.00	\$331,198.00			
Indiana Department of Transportation	39926 / 1600730	A 04	US 50	Small Structure Maint and Repair	2.46 mi E US-231 E Jct	Vincennes	0	NHPP	\$396,198.00	Bridge ROW	RW	\$32,000.00	\$8,000.00	\$40,000.00				
Comments: Amend 2020-2024 STIP. FY20 RW \$40,000.00. No MPO.																		
Indiana Department of Transportation	39928 / 1701228	Init.	SR 645	HMA Overlay, Preventive Maintenance	From US-231 to end of SR-645	Vincennes	1.96	STPBG		Road Construction	CN	\$465,412.80	\$116,353.20			\$581,766.00		
Indiana Department of Transportation	39931 / 1601050	Init.	US 50	Radii Improvement	At US 231 & US 50 (N Jct)	Vincennes	.07	NHPP		Mobility Construction	CN	\$320,052.80	\$80,013.20	\$130,000.00	\$270,066.00			
Indiana Department of Transportation	39931 / 1601050	A 04	US 50	Radii Improvement	At US 231 & US 50 (N Jct)	Vincennes	.07	NHPP	\$454,066.00	Mobility ROW	RW	\$43,200.00	\$10,800.00	\$54,000.00				
Comments: Amend 2020-2024 STIP. Adding FY20 \$54,000.00. No MPO.																		
Indiana Department of Transportation	40078 / 1700019	Init.	SR 450	HMA Overlay, Preventive Maintenance	From S Jct US-50 to N Jct US-50/SR-37	Vincennes	24.982	STPBG		Road Construction	CN	\$6,208,416.00	\$1,552,104.00	\$7,760,520.00				
Indiana Department of Transportation	40561 / 1701039	Init.	US 150	Small Structure Replacement	0.70 mile E SR-550 E Jct.	Vincennes	0	STPBG		Bridge Construction	CN	\$1,650,619.20	\$412,654.80			\$2,063,274.00		
Indiana Department of Transportation	40561 / 1701039	A 13	US 150	Small Structure Replacement	0.70 mile E SR-550 E Jct.	Vincennes	0	NHPP	\$2,183,274.00	Bridge ROW	RW	\$96,000.00	\$24,000.00		\$120,000.00			
Comments: Adding FY21 DM \$120,000.00. No MPO.																		
Indiana Department of Transportation	40589 / 1700155	Init.	SR 450	Bridge Replacement, Concrete	Over Flat Creek, 06.30 miles East US-50	Vincennes	0	STPBG		Bridge Construction	CN	\$1,387,896.80	\$346,974.20			\$1,734,871.00		
										Bridge ROW	RW	\$17,600.00	\$4,400.00	\$22,000.00				
Indiana Department of Transportation	40697 / 1702223	A 03	US 50	HMA Overlay, Preventive Maintenance	From 0.07 mi S of W Jct of US-231 to 0.06 mi W SR-550.	Vincennes	.83	NHPP	\$1,035,796.00	Road Construction	CN	\$828,636.80	\$207,159.20					\$1,035,796.00
Comments: Amend 2020-2024 STIP. Adding FY24 CN \$1,035,796.00. No MPO.																		
Indiana Department of Transportation	41058 / 1800310	Init.	US 50	Bridge Thin Deck Overlay	Over East Fork White River, 00.30 mi W US-150	Vincennes	0	NHPP		Bridge Construction	CN	\$476,913.60	\$119,228.40		\$596,142.00			

*Estimated Costs left to Complete Project column is for costs that may extend beyond the four years of a STIP. This column is not fiscally constrained and is for information purposes.

Categorical Exclusion
Appendix I
Other Information

Land and Water Conservation Fund (LWCF) County Property List for Indiana (Last Updated December 2019)

ProjectNumber	SubProjectCode	County	Property
1800042	1800042	Martin	West Boggs ParkLakeview Golf Course
1800215	1800215	Martin	West Boggs ParkLakeview Golf Course
1800293	1800293	Martin	Loogootee City Park
1800363	1800363Q	Martin	Martin State Forest
1800637	1800637	Martin	West Boggs Park

Please note, some of the property names are cut off on the ends due to character limits

Also, park names may have changed and is not reflected on the list.

*This may include multiple sites in multiple counties and should always be included in your searches by county.

Bridge Inspection Report

450-51-06447 B
SR 450
over
FLAT CREEK



Inspection Date: 08/05/2020

Inspected By: Tony Hoover

Inspection Type(s): Routine

Inspector: Tony Hoover
 Inspection Date: 08/05/2020

Asset Name: 450-51-06447 B
 Facility Carried: SR 450

Bridge Inspection Report

IDENTIFICATION

(1) STATE CODE:	185 - Indiana	(12) BASE HIGHWAY NETWORK:	0
(8) STRUCTURE:	032690	(13A) INVENTORY ROUTE:	
(5 A-B-C-D-E) INV. ROUTE:	1 - 3 - 1 - 00450 - 0	(13B) SUBROUTE NUMBER:	
(2) HIGHWAY AGENCY DISTRICT:	06 - Vincennes	(16) LATITUDE:	38.75324
(3) COUNTY CODE:	051 - MARTIN	(17) LONGITUDE:	-86.77648
(4) PLACE CODE:	00000 - N/A	(98) BORDER	
(6) FEATURES INTERSECTED:	FLAT CREEK	A) STATE NAME:	
(7) FACILITY CARRIED:	SR 450	B) PERCENT	%
(9) LOCATION:	06.30 E US 50	(99) BORDER BRIDGE STRUCT. NO:	
(11) MILEPOINT:	0006.300		

STRUCTURE TYPE AND MATERIAL

(43) STRUCTURE TYPE, MAIN:		(45) NUMBER OF SPANS IN MAIN UNIT:	001
A) KIND OF MATERIAL/DESIGN:	5 - Prestressed concrete	(46) NUMBER OF APPROACH SPANS:	0000
B) TYPE OF DESIGN/CONSTR:	05 - Box Beam or Girders - Multiple	(107) DECK STRUCTURE TYPE:	1 - Concrete Cast-in-Place
(44) STRUCTURE TYPE, APPROACH SPANS:		(108) WEARING SURFACE/PROT SYS:	
A) KIND OF MATERIAL/DESIGN:	0 - Other	A) WEARING SURFACE:	1 - Monolithic Concrete (concurrently placed with structural deck)
B) TYPE OF DESIGN/CONSTR:	00 - Other	B) DECK MEMBRANE:	0 - None
		C) DECK PROTECTION:	1 - Epoxy Coated Reinforcing

AGE OF SERVICE

(27) YEAR BUILT:	1942	(28) LANES:	
(106) YEAR RECONSTRUCTED:	1980	A) ON BRIDGE:	02
(42) TYPE OF SERVICE:		B) UNDER BRIDGE:	00
A) ON BRIDGE:	1 - Highway	(29) AVERAGE DAILY TRAFFIC:	000698
B) UNDER BRIDGE:	5 - Waterway	(30) YEAR OF AVERAGE DAILY TRAFFIC:	2004
		(109) AVERAGE DAILY TRUCK TRAFFIC:	10 %
		(19) BYPASS DETOUR LENGTH:	005 MI

Inspector: Tony Hoover
 Inspection Date: 08/05/2020

Asset Name: 450-51-06447 B
 Facility Carried: SR 450

Bridge Inspection Report

GEOMETRIC DATA

(48) LENGTH OF MAX SPAN: 0028.0 FT	(35) STRUCTURE FLARED: 0 - No flare
(49) STRUCTURE LENGTH: 00030.0 FT	(10) INV RTE, MIN VERT CLEARANCE: 99.99 FT
(50) CURB/SIDEWALK WIDTHS:	(47) TOT HORIZ CLEARANCE: 028.3 FT
A) LEFT 01.0 FT	(53) VERT CLEAR OVER BR RDWY: 99.99 FT
B) RIGHT: 01.0 FT	(54) MIN VERTICAL UNDERCLEARANCE:
(51) BRDG RDWY WIDTH CURB-TO-CURB: 028.3 FT	A) REFERENCE FEATURE: N
(52) DECK WIDTH, OUT-TO-OUT: 030.3 FT	B) MIN VERT UNDERCLEAR: 0 FT
(32) APPROACH ROADWAY 022.0 FT	(55) LATERAL UNDERCLEARANCE RIGHT:
(33) BRIDGE MEDIAN: 0 - No median	A) REFERENCE FEATURE: N
(34) SKEW: 00 DEG	B) MIN LATERAL UNDERCLEAR: 000.0 FT
	(56) MIN LATERAL UNDERCLEAR ON LEFT: 00.0 FT

INSPECTIONS

(90) INSPECTION DATE: 08/05/2020	(91) DESIGNATED INSPECTION FREQUENCY: 24 MONTHS
(92) CRITICAL FEATURE INSPECTION:	(93) CRITICAL FEATURE INSPECTION DATE:
A) FRACTURE CRITICAL REQUIRED/FREQUENCY: N	A) FRACTURE CRITICAL DATE:
B) UNDERWATER INSPECTION REQUIRED/FREQUENCY: N	B) UNDERWATER INSP DATE:
C) OTHER SPECIAL INSPECTION REQUIRED/FREQUENCY: N	C) OTHER SPECIAL INSP DATE:

CONDITION

(58) DECK: 6 - Satisfactory Condition (minor deterioration)	(60) SUBSTRUCTURE: 5 - Fair Condition (minor section loss)
(58.01) WEARING SURFACE: 6 - Satisfactory Condition	(61) CHANNEL/CHANNEL PROTECTION: 6 - Bank slump. widespread minor damage
(59) SUPERSTRUCTURE: 6 - Satisfactory Condition (minor deterioration)	(62) CULVERTS: N - Not Applicable

CONDITION COMMENTS

(58) DECK: 6 - Satisfactory Condition (minor deterioration)

Comments:

Rehabilitation done in 1980 placed new, variable depth concrete deck with single layer of epoxy-coated reinforcing. Isolated minor spall with exposed reinforcing on South curb. Deck underside is not visible due to adjacent beam configuration; however, no moisture staining visible along joints between adjoining beams.

(58.01) WEARING SURFACE: 6 - Satisfactory Condition

Comments:

Rehabilitation done in 1980 placed new, variable depth concrete deck with single layer of epoxy-coated reinforcing with a sacrificial concrete cast monolithic with deck; no separate wearing surface. No delamination found by chaining in 2018 inspection. Topside exhibited one longitudinal crack moderate width in each travel lane.

Inspector: Tony Hoover
Inspection Date: 08/05/2020

Asset Name: 450-51-06447 B
Facility Carried: SR 450

Bridge Inspection Report

(59) SUPERSTRUCTURE: 6 - Satisfactory Condition (minor deterioration)

Comments:

Approximately 1 LFT spall with exposed reinforcing on Beam 3 over West abutment. Small diameter spalls with exposed reinforcing on Beams 7 and 8 near East abutment. Minor spalls on outside of fascia beams due to old guardrail attachments.

(60) SUBSTRUCTURE: 5 - Fair Condition (minor section loss)

Comments:

Heavy scaling at corners of abutments causing minor loss of bearing area. Both abutments have longitudinal and vertical cracking with minor to moderate efflorescence.

(61) CHANNEL/CHANNEL PROTECTION: 6 - Bank slump, widespread minor damage

Comments:

Small beaver dam across North side of bridge restricting flow. Channel has minor lateral drifting towards East abutment, but the abutment appears to be protected at the current time.

(62) CULVERTS: N - Not Applicable

Comments:

LOAD RATING AND POSTING

(31) DESIGN LOAD:	5 - HS 20	(66) INVENTORY RATING:	63
(70) BRIDGE POSTING	5 - Equal to or above legal loads	(65) INVENTORY RATING METHOD:	3 - Load and Resistance Factor (LRFR)
(41) STRUCTURE OPEN/POSTED/CLOSED:	A - Open	(66B) INVENTORY RATING (H):	39
(64) OPERATING RATING:	76	(66C) TONS POSTED :	
(63) OPERATING RATING METHOD:	3 - Load and Resistance Factor (LRFR)	(66D) DATE POSTED/CLOSED:	

APPRAISAL

SUFFICIENCY RATING:	85.7	(36) TRAFFIC SAFETY FEATURE:	
STATUS:	0	36A) BRIDGE RAILINGS:	1
(67) STRUCTURAL EVALUATION:	5	36B) TRANSITIONS:	1
(68) DECK GEOMETRY:	5	36C) APPROACH GUARDRAIL:	1
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL:	N	36D) APPROACH GUARDRAIL ENDS:	1

(71) WATERWAY ADEQUACY: 4 - Occasional Overtopping of Deck and Approaches - Significant Delays

Comments:

Item was lowered to reflect hydraulic assessment report received from central office indicating this structure is hydraulically inadequate; however, this was deemed acceptable for the current time until this structure is replaced.

(72) APPROACH ROADWAY ALIGNMENT: 8 - Equal to present desirable criteria

Comments:

(113) SCOUR CRITICAL BRIDGES: 5 - Scour within limits of footing or piles

Comments:

Scour Channel Profile data in BIAS bridge file. Scour analysis done July 2001 (letter in BIAS bridge file) recommended scour countermeasures be installed.

Inspector: Tony Hoover
 Inspection Date: 08/05/2020

Asset Name: 450-51-06447 B
 Facility Carried: SR 450

Bridge Inspection Report

CLASSIFICATION

(20) TOLL:	3 - On Free Road	(21) MAINT. RESPONSIBILITY:	01 - State Highway Agency
(22) OWNER:	01 - State Highway Agency	(26) FUNCTIONAL CLASS OF INVENTORY RTE:	07 - Rural - Major Collector
(37) HISTORICAL SIGNIFICANCE:	5 - Not eligible	(100) STRAHNET HIGHWAY:	Not a STRAHNET route
(101) PARALLEL STRUCTURE:	N - No parallel structure	(102) DIRECTION OF TRAFFIC:	2-way traffic
(103) TEMPORARY STRUCTURE:		(104) HIGHWAY SYSTEM OF INVENTORY ROUTE:	0 - Structure/Route is NOT on NHS
(105) FEDERAL LANDS HIGHWAYS:	0-Not Applicable	(110) DESIGNATED NATIONAL NETWORK:	Inventory route not on network
(112) NBIS BRIDGE LENGTH:	Yes		

NAVIGATION DATA

(38) NAVIGATION CONTROL:	0 - No navigation control on waterway (bridge permit not required)	(39) NAVIGATION VERTICAL CLEAR:	000.0 FT
(111) PIER OR ABUTMENT PROTECTION:		(116) MINIMUM NAVIGATION VERT. CLEARANCE, VERT. LIFT BRIDGE:	FT
		(40) NAV HORIZONTAL CLEARANCE:	0000.0 FT

PROPOSED IMPROVEMENTS

(75A) TYPE OF WORK:		(95) ROADWAY IMPROVEMENT COST:	\$ 000000
(75B) WORK DONE BY:		(96) TOTAL PROJECT COST:	\$ 000000
(76) LENGTH OF IMPROVEMENT:	00000.0 FT	(97) YR OF IMPROVEMENT COST EST:	
(94) BRIDGE IMPROVEMENT COST:	\$ 000000	(114) FUTURE AVG DAILY TRAFFIC:	001159
		(115) YR OF FUTURE ADT:	2032

Miscellaneous Asset Data
Asset Management

032690

Load Rating 2:

Has the dead load or the structural condition of the primary load carrying members changed since the last inspection? No

Extended Frequency:

Submittal Date:

Inspector:

INDOT Reviewer:

This bridge has been accepted into the Extended Frequency Program.

Approval Date:

Joints: ** Indicate location, type, and rating of lowest rated joint.*

No Joints Present

N - ONLY to
remove other value
that is no longer
present.

N - ONLY to remove other
value that is no longer
present.

Comments:

Terminal Joints: **Rating of lowest rated terminal joint.* N

Comments:

Concrete Slopewall: **Rating of lowest rated slopewall.* N

Comments:

Bearings: ** Indicate type, and rating of lowest rated bearing.*

N - No Bearing(s)

Comments:

Approach Slabs: ** Indicate if present & condition rating.*

N - No Approach Slabs

Comments:

Paint: * Indicate if paint present , year painted & condition rating.

N - No Paint

Not Rated

Comments:

Scour Analysis: 5

Scour Critical:

Scour POA?

No

NBI 113 Scour Comment:

Scour Channel Profile data in BIAS bridge file. Scour analysis done July 2001 (letter in BIAS bridge file) recommended scour countermeasures be installed.

Endangered Species: * If yes, add one photo to the dropdown field

Bats: seen or heard under structure? *

N

Birds/swallows/nests seen? Empty nests present? *

Y

BRIDGE Culvert Geometry:

Barrel Length:

Height:

Width:

Abbreviated Engineering Assessment

Existing Structure Number: 450-51-06447 B

New Structure Number: 450-51-10337

Des No.: 1700155

Contract No.: B-40589

SR 450 over Opossum Creek

(6.30 miles East of US 50)

RP: 6 + 30



Prepared By: Anthony Schuler, E.I.
INDOT Bridge Design, Central Office

Date: April 18, 2019

Project Location:

This project is located on SR 450 over Opossum Creek, Structure No. 450-51-06447 B, 6.30 miles East of US 50 (RP 6 + 30) in Martin County and is part of the Seymour District. (Latitude: 38° 45' 24" N, Longitude: 86° 44' 31" W). Project location maps are located in Appendix A.

Primary Need and Purpose:

The primary need for improvement is based on the poor condition of the existing structure. The areas of the bridge that are most concerning are the substructure.

This bridge has been programmed by the district to be a bridge replacement to address the issues with the superstructure and substructure.

The primary purpose of this project is to address the serviceability of the roadway and structural deterioration of the superstructure and foundation with a secondary purpose to adjust the waterway area and install scour protection measures all in accordance with current INDOT standards.

Road Classification and Existing Condition:

The section of SR 450 within the limits of this scope is classified as Rural Major Collector. The posted speed limit is 50 mph.

The bridge is on the tangent of a horizontal curve. South of the bridge the roadway transitions to an 812.44 foot long horizontal curve with a radius of 1650 feet. Two vertical curves descend to the bridge on either side. At the bridge there is a small bump that flattens to a 0 % grade on the bridge. The existing lanes were measured on the site to be 10'-0" and with no paved shoulder.

The existing guardrail lengths were measured to be approximately 215'-0", 240'-0", 240'-0", and 215'-0" of guardrail for the NE, NW, SE, and SW quadrants respectively.

There is a farm field entrance approximately 915'-0" north of the centerline of the bridge. There is a 12" pipe located 1000' south from the centerline of the bridge.

Structure:

The existing structure was built in 1942 and reconstructed in 1980 as an adjacent box beam bridge with a 0° skew.

The corners of the abutments have had significant section loss resulting in a reduction in bearing area for the exterior beams. Both of the abutments have horizontal and vertical cracking.

Beam 3 over west abutment has a 1 foot area that is spalling. Beams 7 and 8 near the east abutment have small diameter spalls with exposed reinforcing. The guardrail connections on the exterior beams also show spalling.

Large debris that may have been a beaver dam according to the Inspector's Report is restricting flow on the north side of bridge. The channel seems to be drifting towards east abutment, but has not damaged the structure. During extreme events the water level has been known to overtop the bridge.

Appendix B contains the existing plans.

Appendix C contains photographs of the existing structure.

Appendix D contains the 2018 bridge inspection report.

Crash Data:

There has not been a crash near the project limits in the past five years.

Traffic Data:

A Traffic Forecast was received for this site on December 17, 2018. The forecast traffic data follows (see Appendix E):

Year	AADT
2016	624 vpd
2022	665 vpd
2032	734 vpd
2042	803 vpd
2052	872 vpd

Commercial Vehicles

20.03 % AADT

30.77 % DHV

Hydraulic Analysis/Recommendation:

A preliminary hydraulic analysis was performed in 2017 for this project. The analysis investigated 10 year and 25 year storm for serviceability. From that analysis, the bridge will need to be raised 4.86 ft. A Roadway Assessment was drafted to compare the cost of the two roadway scenarios. From this comparison, the district decided to replace the bridge and raise the roadway to the Q₂₅ elevation of 480.8 ft. The hydraulics report report can be found in Appendix F and the Roadway Assessment can be found in Appendix G.

Utility Information:

There are utility lines running on the north and south side of the bridge with the line crossing the roadway south of the bridge. The poles near the bridge were measured to be approximately 30'-0" from the centerline of the roadway. These poles will likely have to be relocated. There is an underground cable marker close to the County Road 108 intersection. There is a water line on the west side of the roadway north of the bridge and crosses the roadway north of the County Road 108 intersection.

Project Alternatives Considered:

The proposed roadway features for this project are as follows:

Roadway:

Travel Lane Width: 11 ft.

Shoulder Width: 2 ft. paved 2 ft. unpaved

Shoulder Width in Front of the Guardrail: 4 ft. paved

Bridge:

Travel Lane Width: 2 @ 11 ft.

Shoulder Width: 2 @ 3.67 ft.

Clear Roadway Width: 29.33 ft.

Bridge Out-to-Out Coping: 32.33 ft.

Alternative A: Replacement

The first alternative is to replace the structure and raise the roadway to the Q₂₅ elevation. Road work would include changing the existing vertical curves to the north and south of the bridge and a grade change at the bridge. The intersection at County Rd. 108, located north of the bridge, would also be adjusted.

The structure would be a single span bridge approximately 124.5 feet in length, with no skew, and built with a 29.33 foot clear roadway width. The 29.33 foot clear roadway width would include two 11 foot lanes and two 3.67 foot shoulders. These dimensions are in accordance with IDM Figure 55-3B and are slightly larger than the the clear roadway widths of bridges along US 421 to the south and north of this location.

The project length is estimated to be 2350 feet including incidental construction.

The table below lists potential replacement alternatives with their corresponding preliminary estimates. Appendix H provides details on each estimate.

Alternative	Estimate
Single Span Prestressed Bulb Tee Girder	\$2,020,000.00
Three Span Prestressed AASHTO Type 2	\$2,230,000.00
Single Span Steel Plate Girder	\$2,175,000.00

Alternative B: Rehabilitation

The second alternative is to rehabilitate the structure. This, however, is not feasible. The most significant damage is on the substructure and is beyond the point where patching will improve the structural condition. If the superstructure was replaced, the subpar substructure would not have enough service life to justify the rehab. If the roadway was also raised, the cost of the rehab would be significantly closer to the cost of a full replacement.

Alternative C: No Build

The third alternative is to not rehabilitate or replace the structure. This is not an option. The bridge condition will eventually pose a threat to the public safety if left in its current condition and allowed to continue to deteriorate. The section loss on the substructure will eventually cause the exterior beams to no longer be supported. With continued negligence, the superstructure will not be able to support the expected loads required for a road of this classification. The roadway is below the Q₁₀ elevation and ignoring this would be detrimental to the public.

Environmental Considerations:

The project is likely to require an Army Corp of Engineers 404, IDEM 401 Water Quality Certification, and possibly a Rule 5 Permit. A DNR Construction in a Floodway permit should not be necessary because the drainage area is 7.69 square miles. A wetland was located just east of the bridge using the National Wetlands Inventory Mapper. The District or its consultant will prepare an environmental document for this project in accordance with NEPA guidelines.

Survey Requirements:

The survey has been completed.

Public Involvement:

Public Involvement will be a continuing process during the life of this project. Environmental Documents and coordination with agencies will be on-going as INDOT advances this replacement project. It is expected that right-of-way acquisition needed for this project will require INDOT to offer the opportunity for a public hearing.

Right-of-Way Summary:

Original structure plans do not confirm that R/W was acquired. This will be confirmed during design of the replacement project. It is expected that the R/W limits for SR 450 will increase by approximately 65 feet from the centerline of the roadway to account for the build-up of the slopes and change in the vertical curve of the roadway to meet the hydraulic requirements.

Traffic Maintenance:

The preferred method of traffic maintenance is an official state detour. The suggested detour would utilize US 50, which is close to the original route of SR 450. Local traffic could utilize County Rd 81 to 84 to 86 to Hwy 161 to Wilt Rd to get around the project site.

Other Projects in the Area:

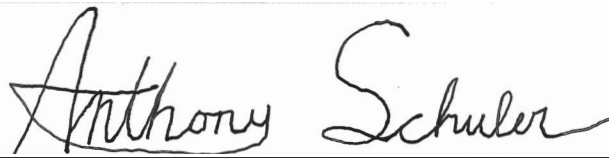
The table below lists projects with letting dates close to 01/12/2022, the letting date of this project.

Route	Des #	Work	Location	Letting Date
US 50	0400077	Bridge Replacement, Concrete	Over Beaver Creek, 1.74 miles West SR-60	8/11/2021
US 50	1801377	Bridge Replacement, Concrete	Over Beaver Creek, 1.32 miles West SR-60	8/11/2021
SR 37	1500060	Auxiliary Lane Construction	At US 50/SR 450 (16th) and SR-37 intersection	7/13/2022
SR 37	1500061	Alt, Turn Lanes	At John Williams Road	7/13/2022

Project Cost Estimate:

The project is estimated to cost \$2,020,000.00 based on a 20 % contingency and 3% inflation for 3 years.

This Document Prepared By:



5/17/19

Anthony Schuler, E.I.

Central Office Bridge Design Engineer

Phone: (317)-232-5386

Concur:



5/21/2019

Jason Heile

Vincennes District System Asset Manager

Phone: (812)-895-7378

Concur:



06-11-2019

Khalil Dughaish

Vincennes System Asset Manager

Phone: (812) 895-7377

Concur:



5/21/2019

Duane Decker

Vincennes District Scoping Manager

Phone: (812) 895-7381



INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N642-BR
Indianapolis, Indiana 46204

Eric Holcomb, Governor
Joe McGuinness, Commissioner

May 16, 2019

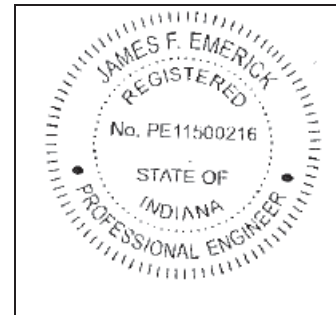
TO: Duane Decker
INDOT Scoping Engineer, Vincennes District

FROM: James Emerick, PE
Hydraulics Engineer

SUBJECT: HYDRAULIC LETTER FOR BRIDGES
Existing Structure: 450-51-06447
New Structure:
Location: 6.24 miles N of US 50
Des. #: 1700155
Crossing: Opossum Creek
Consultant: Consultant Firm Name
SPMS Type of Work: Bridge Replacement

ANALYSIS: James Emerick, P.E.
INDOT Hydraulics Engineer

REVIEWER: Bill P Schmidt, P.E.
INDOT Hydraulics Engineer



This Hydraulic memo supersedes all previous memos for this structure.

Drainage Area	= 7.69	sq. mi.
Q ₁₀₀	= 3,641	cfs
Q ₅₀₀	= 5,563	cfs
Elevation @ Q ₁₀₀	= 483.65	ft.
IDNR CIF Permit Needed (Y/N):	N	
Legal Drain (Y/N):	N	

Existing Conditions:

28' Single Span Slabtop with 6.7' rise

Q ₁₀₀ Headwater Elevation	= 475.63	ft. (Opposum Creek)
Backwater	= 2.61	ft.
Waterway Opening Below Q ₁₀₀ Elevation (Str.)	= 142	sq. ft.
Road Overflow Waterway Area	= 1,390	sq. ft.
Low Structure Elevation	= 469.94	ft.
Skew	= 0	deg.



INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N642-BR
Indianapolis, Indiana 46204

Eric Holcomb, Governor
Joe McGuinness, Commissioner

Proposed Conditions:

Modeled Span 110 ft single span structure with spill slope abutments. This requires a grade raise for the road to a minimum elevation of 480.80 feet through the entire valley to provide a 25-year (4% AAEP) serviceability design.

Q ₁₀₀ Headwater Elevation (Natural Tributary)	= 475.52	ft.
Q ₁₀₀ Headwater Elevation (Indian Creek/ East Fork White River)	= 481.31	ft
Q ₂₅ Headwater Elevation (Indian Creek/ East Fork White River)	= 480.64	ft
Backwater	= 2.50	ft.
Waterway Opening Below Q ₁₀₀ Elev. (Str.)	= 603	sq. ft.
Road Overflow Waterway Area	= 0	sq. ft.
Low Structure Elevation	= 474.8	ft.
Skew	= 0	deg.

Q ₁₀₀ Contraction Scour	= 12.03	ft.
Q ₁₀₀ Total Scour	= 12.03	ft.
Q ₁₀₀ Low Scour Elevation	= 450.60	ft.
Q ₁₀₀ Max. Velocity	= 13.91	ft /s.
Q ₁₀₀ Ave. Velocity	= 8.03	ft /s.

Q ₅₀₀ Contraction Scour	= 17.10	ft.
Q ₅₀₀ Total Scour	= 17.10	ft.
Q ₅₀₀ Low Scour Elevation	= 445.53	ft.
Q ₅₀₀ Max. Velocity	= 16.57	ft./s.
Q ₅₀₀ Ave. Velocity	= 9.47	ft /s.

Based on a flowline elevation of 462.63 feet.

The existing structure is a 28' single span slabtop structure with a 6.7' rise that crosses Opossum Creek. There are concerns of frequent flooding at this location. The district has asked for a structure that meets serviceability the 25 year storm. The tailwater for the structure is influenced by the flood elevation of the Indian Creek which is directly influenced by the flood elevation of the East Fork of the White River. The structure was modeled as a 110' single span spill through structure. If the proposed structure is intended to be multi span, the hydraulic model will need to be adjusted by office hydraulics before approval. The increase in span from the existing bridge is required to maintain the 100-year headwater elevation below the headwater of the existing structure once the road is raised. The proposed road grade for the serviceability was based on the joint probability analysis with the tailwater conditions from the East Fork of the White River. The tailwater elevations used in the study are based on information reviewed for the stream gage for the East Fork of the White River. Low channel clearing is typically limited to an elevation 1ft above the ordinary high water elevation. Since the ordinary high water elevation is unknown, an elevation 1 ft above the 2 year storm water surface was used. Backwater, scour and velocities are based on slope conveyance for the watershed without influence of high tailwater conditions from East Fork of the White River, for worst case conditions.



INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N642-BR
Indianapolis, Indiana 46204

Eric Holcomb, Governor
Joe McGuinness, Commissioner

The application of *Class 1 Riprap* on the spill slopes should be used as per IDM Fig. 203-3B.

As pertains to this memo, the minimal required waterway opening and structure span are based on hydraulics geometry that is perpendicular to the flow.

If you have any questions or comments, please contact me at (317) 232-2770.

JFE
cc: file



Environmental Justice

Legend:

Your Selections

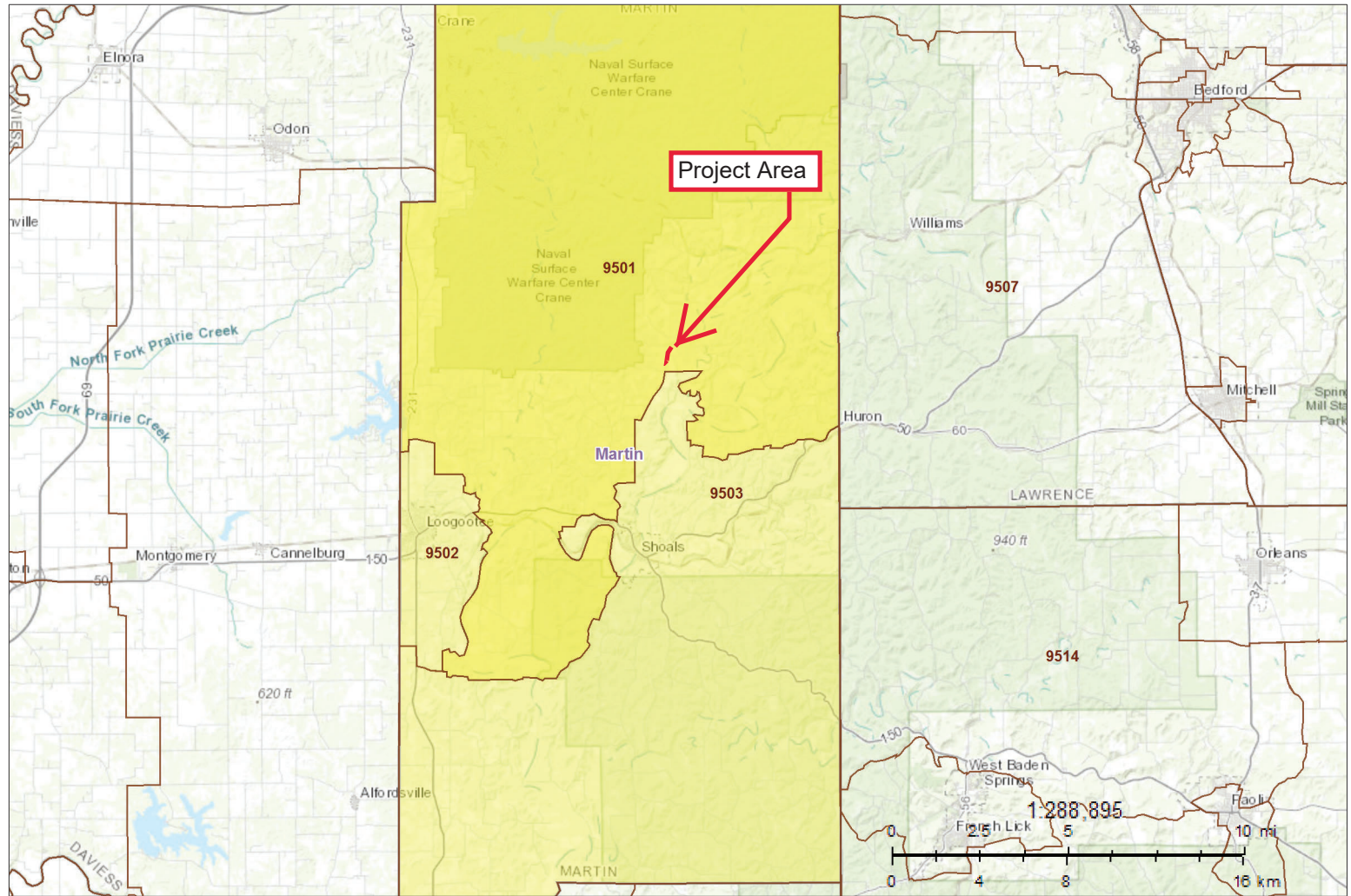
- 2017 boundaries were used to map 'Your Selections'

Selection Results

No Legend

2017 Boundaries

- County
- Census Tract





B03002

HISPANIC OR LATINO ORIGIN BY RACE

Universe: Total population

2013-2017 American Community Survey 5-Year Estimates

Note: This is a modified view of the original table.

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Technical Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities, and towns and estimates of housing units for states and counties.

	Martin County, Indiana		Census Tract 9501, Martin County, Indiana	
	Estimate	Margin of Error	Estimate	Margin of Error
Total:	10,219	*****	2,576	+/-230
Not Hispanic or Latino:	10,182	+/-56	2,549	+/-222
White alone	9,932	+/-13	2,435	+/-229
Black or African American alone	56	+/-66	28	+/-56
American Indian and Alaska Native alone	74	+/-81	1	+/-3
Asian alone	20	+/-27	9	+/-19
Native Hawaiian and Other Pacific Islander alone	25	+/-58	25	+/-58
Some other race alone	7	+/-13	0	+/-11
Two or more races:	68	+/-59	51	+/-55
Hispanic or Latino:	37	+/-56	27	+/-49
White alone	34	+/-54	24	+/-47
Black or African American alone	0	+/-18	0	+/-11
American Indian and Alaska Native alone	0	+/-18	0	+/-11
Asian alone	0	+/-18	0	+/-11
Native Hawaiian and Other Pacific Islander alone	0	+/-18	0	+/-11
Some other race alone	3	+/-7	3	+/-7
Two or more races:	0	+/-18	0	+/-11



B17001

POVERTY STATUS IN THE PAST 12 MONTHS BY SEX BY AGE

Universe: Population for whom poverty status is determined
2013-2017 American Community Survey 5-Year Estimates

Note: This is a modified view of the original table.

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Technical Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities, and towns and estimates of housing units for states and counties.

	Martin County, Indiana		Census Tract 9501, Martin County, Indiana	
	Estimate	Margin of Error	Estimate	Margin of Error
Total:	9,971	+/-116	2,446	+/-229
Income in the past 12 months below poverty level:	1,330	+/-277	323	+/-153
Income in the past 12 months at or above poverty level:	8,641	+/-295	2,123	+/-282

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

While the 2013-2017 American Community Survey (ACS) data generally reflect the February 2013 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.

Estimates of urban and rural populations, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates

Environmental Justice

Analysis of One Census Tract in Martin County, Indiana

	COC	AC 1	
	Martin County, Indiana	Census Tract 9501, Martin County, Indiana	
LOW-INCOME			
B17001001	Population for whom poverty status is determined: Total	9,971	2,446
B17001002	Population for whom poverty status is determined: Income in past 12 months below poverty level	1,330	323
	Percent Low-income	13.3%	13.2%
	125 Percent of COC	16.7%	AC < 125% COC
	Potential Low-income EJ Impact?		No
MINORITY			
B03002001	Total population: Total	10219	2576
B03002002	Total population: Not Hispanic or Latino	10182	2549
B03002003	Total population: Not Hispanic or Latino; White alone	9932	2435
B03002004	Total population: Not Hispanic or Latino; Black or African American alone	56	28
B03002005	Total population: Not Hispanic or Latino; American Indian and Alaska Native alone	74	1
B03002006	Total population: Not Hispanic or Latino; Asian alone	20	9
B03002007	Total population: Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander alone	25	25
B03002008	Total population: Not Hispanic or Latino; Some other race alone	7	0
B03002009	Total population: Not Hispanic or Latino; Two or more races	68	51
B03002010	Total population: Hispanic or Latino	37	27
B03002011	Total population: Hispanic or Latino; White alone	34	24
B03002012	Total population: Hispanic or Latino; Black or African American alone	0	0
B03002013	Total population: Hispanic or Latino; American Indian and Alaska Native alone	0	0
B03002014	Total population: Hispanic or Latino; Asian alone	0	0
B03002015	Total population: Hispanic or Latino; Native Hawaiian and Other Pacific Islander alone	0	0
B03002016	Total population: Hispanic or Latino; Some other race alone	3	3
B03002017	Total population: Hispanic or Latino; Two or more races	0	0
	Number Non-white/minority (B03002001-B03002003)	287	141
	Percent Non-white/Minority	2.8%	5.5%
	125 Percent of COC	3.5%	AC > 125% COC
	Potential Minority EJ Impact?		Yes

Jaime Byerly

From: Bales, Ronald <rbales@indot.IN.gov>
Sent: Thursday, December 5, 2019 9:09 AM
To: Jaime Byerly
Cc: Aaron Lawson; Miller, Brandon; Malone, Barbara
Subject: RE: Environmental Justice Coordination: SR 450 over Flat Creek Bridge Replacement Project, Martin County, Indiana, Des. Number 1700155
Attachments: EJ Analysis_SR 450_to INDOT.PDF; Photo Location_SR 450 over Opossum Creek.pdf

INDOT-Environmental Services Division (ESD) has reviewed the project information along with the Environmental Justice (EJ) Analysis for the above referenced project. The project would require right-of-way, require no relocations, would not disrupt community cohesion or create a physical barrier. The maintenance of traffic for the project would provide minor inconvenience during construction for both EJ and non EJ populations. With the information provided, INDOT-ESD would not consider the impacts associated with this project as causing a disproportionately high and adverse effect on minority and/or low incomes populations of EJ concern relative to non EJ populations in accordance with the provisions of Executive Order 12898 and FHWA Order 6640.23a. No further EJ Analysis is required.

Ron Bales

INDOT-Environmental Services Division

Office: (317) 234-4916

Email: rbales@indot.in.gov

From: Jaime Byerly [mailto:jbyerly@RQAW.com]
Sent: Wednesday, November 13, 2019 12:40 PM
To: Bales, Ronald <rbales@indot.IN.gov>
Cc: Aaron Lawson <alawson@rqaw.com>
Subject: Environmental Justice Coordination: SR 450 over Flat Creek Bridge Replacement Project, Martin County, Indiana, Des. Number 1700155

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Ron,

We are working on the CE for a bridge replacement project in Martin County: SR 450 over Flat Creek (aka Opossum Creek), Des. Number 1700155. The project is sponsored by INDOT and FHWA. Per a review of the U.S. Census Bureau website, data for minority populations indicates the AC (5.5%) is greater than 125% of the COC (3.5%). Please see attached for the EJ analysis.

- Within the project area, SR 450 consists of two 10-foot wide travel lanes and no paved shoulders. The existing bridge is on the tangent of a horizontal curve. South of the bridge, the roadway transitions to another horizontal curve, and two vertical curves are along both ends of the bridge. The bridge and roadway are prone to flooding from backwater from Indian Creek and the East Fork White River.
- The project would replace the existing structure and the new structure and roadway profile would be raised to an elevation above the 25 year storm event. Road work would include improving the existing vertical curves immediately north and south of the bridge. The proposed roadway would include two 11-foot wide travel lanes with two 3.67-foot wide shoulders. The project would also replace the existing guardrail and install riprap.

- The MOT would involve a full closure of SR 450 to through traffic and use US 50 for an official state detour. Local traffic could utilize CR 81, CR 84, CR 86, US 161, and Wilt Road.
- The project is in a rural area and adjacent to agricultural, wooded, and residential land. The project will need up to approximately 5.6 acres of permanent right-of-way (see attached aerial map). Land use within the proposed permanent right-of-way limits largely consists of agricultural land. The apparent existing right-of-way width is edge of pavement and the proposed right-of-way width would be approximately 75 to 80 feet from the roadway centerline.
- The project would not need any relocations.

We do not think the project will disrupt community cohesion or create a physical barrier. The main impacts to adjacent properties would likely be the temporary inconvenience of construction activities, acquisition of strip right-of-way consisting of agricultural land and trees. Would INDOT please review the attached EJ information and provide input if this project will require further EJ analysis? Thank you and please let me know if you have any questions.

Jaime



Jaime Byerly
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Best Places to Work in Indiana, 2018 & 2019
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