D R A F T R E P O R T

REVISED WETLAND SURVEY BASED ON REVISIONS TO THE WATER RULE, JUNE 2020
I-40 MEGA-SITE
CITY OF WEST MEMPHIS, AR

November, 2020

AECOM

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Introduction

AECOM was contracted by the City of West Memphis to conduct a wetlands survey of an 1,800 acre tract of land located north and west of the City of West Memphis, Arkansas in an area proposed for an Industrial Park, referred to as the I-40 Mega-site in April 2018. In October 2020 the site was revisited in order to assess the drainages delineated based on the revised Water Rule of June 22, 2020. The tract is located north of the City of West Memphis (Figure 1) and occupies approximately 1,800 acres. The property is bordered in the east side by Kuhn Road, on the west by State Highway 147, to the south by Interstate 40 and on the north by agricultural land on the western 2/3 and the Hino manufacturing plant on the northeastern 1/3. Drainage on the property flows to the south primarily via two named ditches, Ditch 10 and 11. Ditch 11 is also called Garant Bayou. The site drainage flows to Ditch 12, which flows south and becomes Cut-off Bayou. The property is designated as Zone X – "area of minimal flood hazard" (Figure 2). The Zone A, 100-year flood elevation is approximately 210 feet above mean sea level (ft msl) as indicated for land south of I-40. Land elevation in the project ranges from 210 to 219 ft msl within the graded agricultural fields with ditch channels at a lower elevation.

Topographic mapping, aerial survey, soils, geology, and other information were reviewed to determine the potential for the area to be associated with jurisdictional waters of the United States (i.e., "jurisdictional wetlands or streams"). Following review of the available literature, a wetlands delineation and stream characterization was performed in accordance with the procedures outlined in the US Army Corps of Engineers (USACE) Wetlands Delineation Manual, 1987 and the 2008 Gulf and Atlantic Coast Regional Supplement. The delineation included visual observation of the site and characterization of the vegetation, soils and hydrology to determine if various wetland criteria (hydric characteristics) were met.

The potential for wetlands on the property was reviewed by viewing the United States Fish and Wildlife Service (USFWS) Wetland Inventory Map (NWI) as shown on Figure 3. Four areas of potential wetlands, one pond and a number of drainages were indicated on the property by the NWI. The National Resource Conservation Service (NRCS) website was utilized to determine the soil types present on the site as a potential indicator of hydric soils and wetlands, Figure 4.

Following review of these data a delineation was conducted on April 17 and 18, 2018 by Mr. James R. Orr, biologist and certified wetland delineator with AECOM. A preliminary JD request was sent to the Memphis District on May 2, 2018. The Memphis District reviewed the site May 15 and provided comment by phone on the 16th. AECOM agreed with the revision of jurisdictional status of Ditch 5, which was the only major comment. The report was edited for that revision and provided to the Memphis District. The PJD was provided by the Memphis District to the City on June 7, 2018.

On June 22, 2020 the Environmental Protection Agency and USACE finalize the Navigable Waters Protection Rule: "the final rule specifically clarifies that waters of the United States do not include the following: -ephemeral features that flow only in direct response to precipitation, including ephemeral streams, swales, gullies, rills, and pools;"

Based on the new rule, the City of West Memphis requested that AECOM revisit the I-40 Mega-Site to reassess the drainages on the site. The original delineation was conducted in the wet period of a wet year, i.e. April, 2018.

Literature Review

Wetlands

A National Wetlands Inventory map (NWI) was downloaded from the US Fish and Wildlife Service NWI website (Figure 3). The map indicated three forested wetlands, one shrub scrub wetland, one pond and nine riverine wetlands (ditches) on the property.

Ditch 11 (Garant Bayou) is a primary water course in the project area, located on the western side of the site. Ditch 11 flows from north to south and makes confluence with Ditch 12 south of Interstate 40. Ditch 10 also flows from north to south and is on the eastern side of the property. It also flows to Ditch 12 south of Interstate 40. Ditches 10 and 11 were confirmed as streams by the PJD. In addition, Wetland 1 and Ditches 1, 2, 5 and 6 were designated as jurisdictional waters. Ponds 1 and 2 and other wood lots were not designated as jurisdictional.

Soils

The soils survey for the site was reviewed from the National Resources Conservation Service (NRCS) Web Soil survey. The majority of the soils in the Project area are of three types, Sharkey silty clay, 0 to 1% slopes, Forestdale silty clay loam and Alligator silty clay, 0 to 1 percent slopes (Figure 4). These soils have very slow infiltration rates, are clayey, have a highwater table, or are shallow to an impervious layer. All three are considered hydric soils.

Hydrology

Wetland hydrology at the site was determined by the hydrologic characteristics of the site and site mapping (USGS topographic map). Consideration was given to the human impacts such as farming practices, construction and grading. The major hydrologic features include the Ditches 11 and 10 which run north to south, along with a number of cross ditches running east and west. During the 2018 survey, Ditches 11 and 10 were considered intermittent streams and were not reassessed in 2020.

According to the FEMA flood insurance rate maps, the entire site lies in Zone X (area of minimal flood hazard). The 100-year flood zone (ZONE A) is located south of I-40, Figure 2 at an elevation range of 209 to 210. The elevation range at the property is from 210 to 219 msl. The entire property is flat and is in agricultural use with the exception of two small wooded areas, two irrigation ponds and two residents with small yards. All drainage on site leads south to Ditch 12 located on the south side of I-40.

Methods

The 2018 wetlands determination was performed in accordance with the procedures outlined in the Corps of Engineers Wetlands Delineation Manual, (1987) as well as the regional supplement for the Gulf Coast and Atlantic Region (2008). Data were collected to characterize wetland area in terms of hydrology, soils, dominant plant species, and wetland type on Data Form 1 as provided in the Regional Supplement (Attachment 1). Wetland boundaries were determined and recorded in the field with GIS files generated for each wetland area. Only one wetland was identified in 2018 and confirmed by the USACE.

During the October 2020 revised assessment, the wetland area was not reassessed as there had been no changes to the site conditions. Four ditches were reassessed that were considered ephemeral streams in 2018 and jurisdictional under the previous rule. AECOM utilized the Tennessee Hydrologic Determination (HD) method to assess the ditches (Ditch 1, 2, 5 and 6), in order to score the ditches in terms of geomorphology, hydrologic and biological characteristics. The Tennessee Department of Environment and Conservation (TDEC) hydrologic determination method version 1.4 was used to characterize the ditches. The characterization was done after the end of irrigation of rice and rice harvest which resulted in assessment of the hydrologic condition of the ditches under a more natural condition.

Photographs were taken of ditches. HD data forms were completed for each of the 4 ditches for both the dry and water reaches (Attachment 1). The revised ditch reaches are summarized in Figure 5.

Field Survey

The field survey was conducted October 20, 2020. Rainfall the previous week was 1.76 inches, i.e. normal for the month. Access to all ditches was excellent and most did not have water with the exception of Ditch 5 and 6 near the confluence with the larger Ditches.

Conclusions

Field drains route rain and irrigation water to the ditches on the property and then to either Ditch 10 or 11. Both Ditch 10 and 11 are jurisdictional waters of the United States as these ditches are likely to maintain perennial flow. Six field drainage features were also observed on site. These drains were labeled 1-6 and are described in Table 1. In 2018, four of these drains (1, 2, 5 and 6) exhibited signs of intermittent flow and a defined ordinary high-water mark. Drains 3 and 4 existed along field roads and did not exhibit characteristics of stream flow, i.e. no cut banks, sediment deposition or sorting. Confirmation of the non-jurisdictional status of Ditches 3 and 4 was provided by the Memphis District in June 2018. During October 2020, ditches 1, 2, 5, and 6 were reassessed. Based on the conditions at the time of survey, Ditches 1 and 2 were dry and

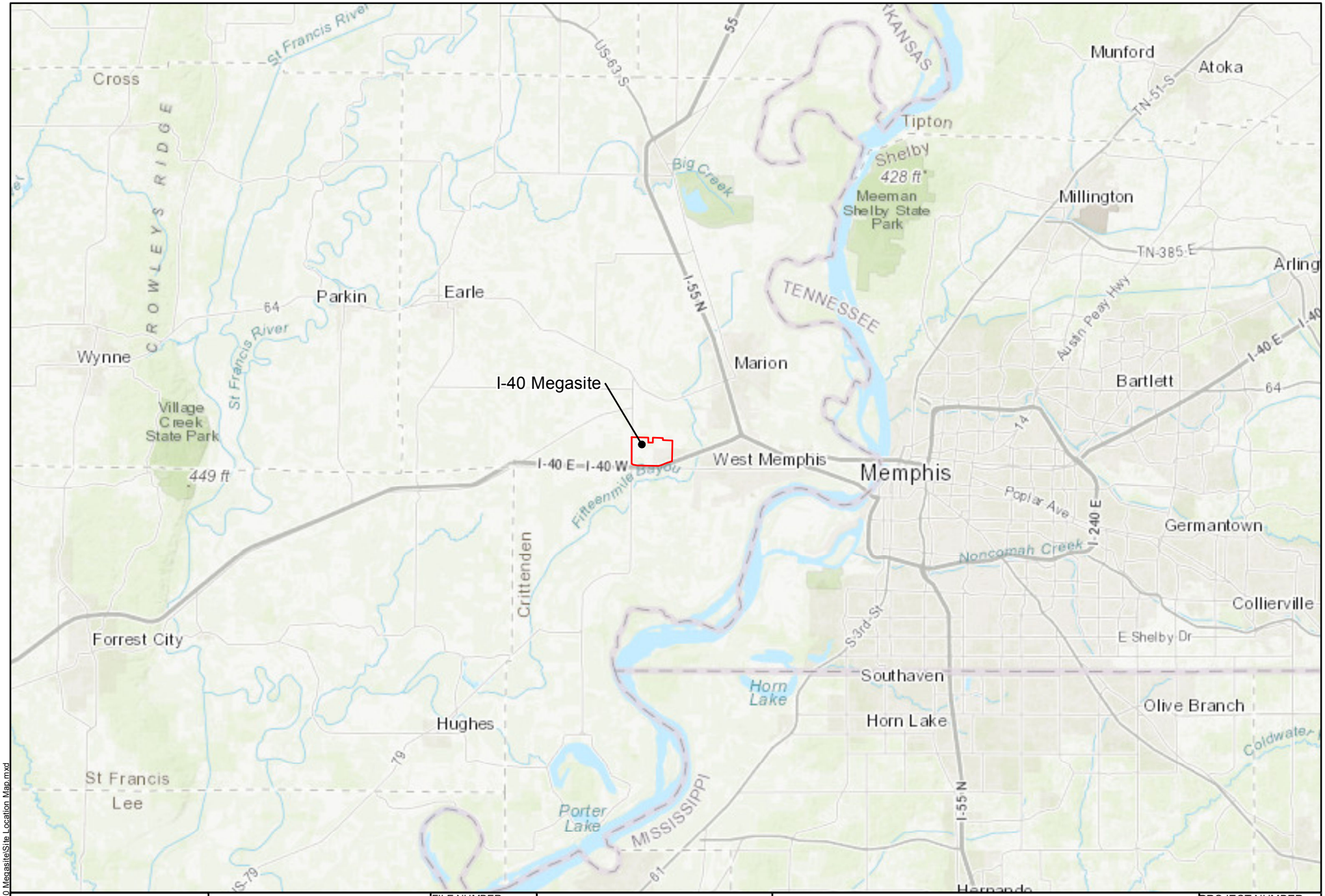
there was no connection to groundwater or water flow to Ditch 11. Ditches 5 and 6 were partially dry and the only water in these ditches was back-water from Ditch 10. Plants were emerging in the dry ditch beds and there was no hydrologic connection between Wetland 1 and Ditch 6. A Revised Waters Table is provided in Table 1.

Table 1. Revised Waters Table, I-40 Mega-site West Memphis AR. October 2020

Feature Name	Lat/Long	NWI Classification	Estimated Amount of Water Feature	Feature Type	Jurisdictional
Wetland 1	35.1549/ -90.2596	PFO1A	7.0 ac	PFO1A	**No-Revised from Yes**
Ditch 10	35.1492/ -90.2642	RU2BH	1.38mi	Intermittent Stream	Yes
Ditch 11	35.1484/ -90.2823	RU2BH	1.46mi	Intermittent Stream	Yes
Drain 1	35.1621/ -90.2826	R5UBFX	3,470 ft	Field Drain	**No-Revised from Yes**
Drain 2	35.1537/ -90.2823	R5UBFX	3,140 ft	Field Drain	**No-Revised from Yes**
Drain 3	35.1657/ -90.2811	R5UBFX	2,546 ft	Field Drain	**No, confirmed by previous PJD**
Drain 4	35.1621/ -902814	R5UBFX	2,546 ft	Field Drain	**No, confirmed by previous PJD**
Drain 5 upgradient	35.1616/ -90.2645	R5UBFX	2,546 ft	Field Drain	No -Revised from yes
Drain 5 downgradient		R5UBFX		Field Drain	Yes
Drain 6 Upgradient	35.1544/ -90.2636	R5UBFX	2,522 ft	Field Drain	No -Revised from yes
Drain 6 downgradient		R5UBFX		Field Drain	Yes

PFO1A: Palustrine Forested, broadleaf deciduous, temporarily flooded.
R2UBH: Riverine unknown perennial, unconsolidated bottom, excavated.
R5UBFX: Riverine, lower perennial, permanently flooded, excavated.

Figures



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0 0.15 0.3 0.6

Miles

FILE NUMBER	
DESIGNED BY	MBE
DRAWN BY	MBE
CHECKED BY	

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I-40 Mega Site
Site Location

Marion, Arkansas, 72364

PROJECT NUMBER	60572497
DATE	April, 2018
FIGURE NUMBER	1

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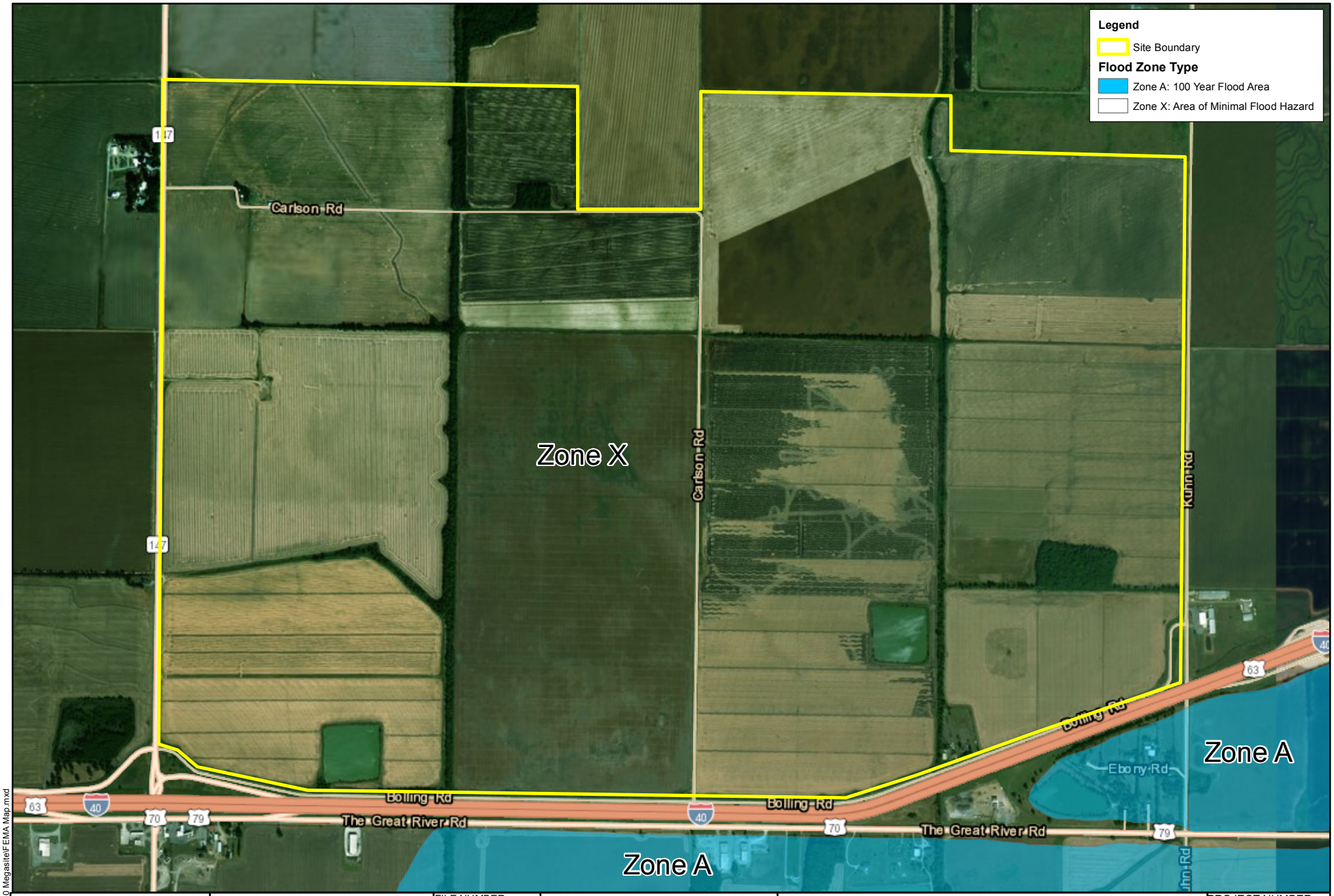

Service Layer Credits: Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Miles

FILE NUMBER	
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I-40 Mega Site
FEMA Flood Zone Map

Marion, Arkansas, 72364

PROJECT NUMBER	60572497
DATE	April, 2018
FIGURE NUMBER	2

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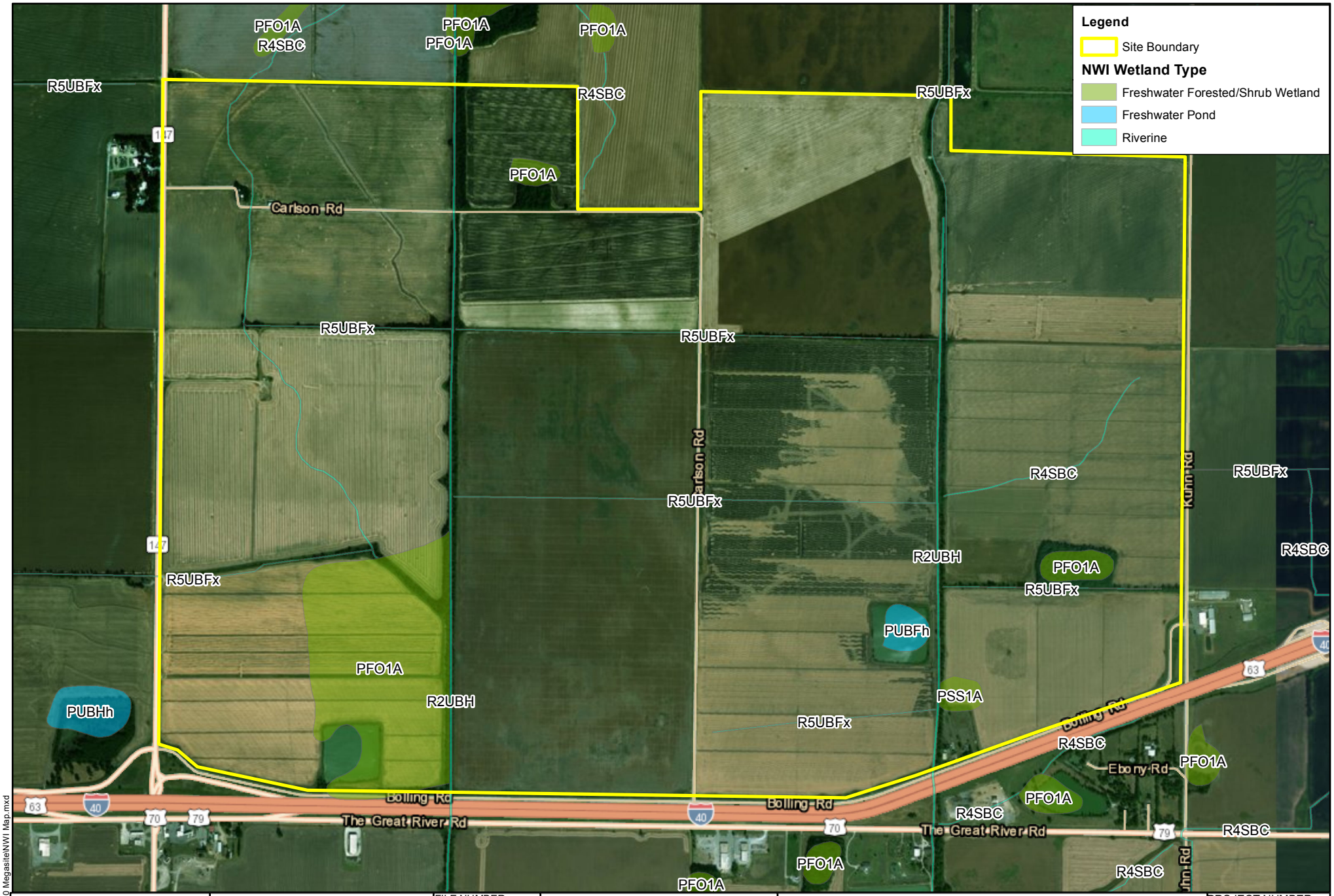

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I-40 Mega Site
NWI Map

Marion, Arkansas, 72364

PROJECT NUMBER	60572497
DATE	April, 2018
FIGURE NUMBER	3

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Service Layer Credits: Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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I-40 Mega Site
NRCS Soil Map

Marion, Arkansas, 72364

PROJECT NUMBER	60572497
DATE	April, 2018
FIGURE NUMBER	4

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Figure 5

SITE FEATURES

REVISION NUMBER:	DRAWN BY:	REVIEWED BY:
REV. 0	BENJAMIN.SADLER	JIM.ORR

DEPT: IMPACT ASSESSMENT & PERMITTING

CITY OF WEST MEMPHIS

DATE: 11/5/2020 APPROVED BY:

Legend

- Ditch
- Stream
- Pond
- Site Boundary
- Wetland
- Wooded Lot

N

0 480 960 1,920 2,880 Feet

AECOM

Attachment 1
Field Data Forms

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Crittendon	Named Waterbody: Trib to Ditch 11	Date/Time: 10/20/2020
Assessors/Affiliation: JRO 1018-TN11		Project ID :
Site Name/Description: I-40 Site		
Site Location: Ditch 1a, Carlson Road to Tree Line (north - south reach)		
USGS quad:	HUC (12 digit):	Lat/Long: 35.163913, -90.289482
Previous Rainfall (7-days) : 0.05 in, 1.76 Oct 1-20		
Precipitation this Season vs. Normal : very wet ☐ wet ☐ average ☑ dry ☐ drought ☐ unknown Source of recent & seasonal precip data :		
Watershed Size : 123 ac	Photos: Y or N (circle) Number : Yes - 3	
Soil Type(s) / Geology : Dabbs silt Loam - USGS	Source:	
Surrounding Land Use : Agriculture		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	☑	WWC ☐
2. Defined bed and bank absent, dominated by upland vegetation / grass	☑	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	☐	WWC ☑
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	☐	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	☑	Stream ☐
6. Presence of fish (except *Gambusia*)	☑	Stream ☐
7. Presence of naturally occurring ground water table connection	☑	Stream ☐
8. Flowing water in channel and 7 days since last precipitation in local watershed	☑	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	☑	Stream ☐

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination = Upland Ditch

Secondary Indicator Score (if applicable) = 9.0

Justification / Notes :

upland vegetation in north south portion of ditch (Johnson Grass), stagnant pool at turn to the east, dry to ditch 11

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 3)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	☐ 0	☐ 1	☑ 2	☐ 3
2. Sinuous channel	☑ 0	☐ 1	☐ 2	☐ 3
3. In-channel structure: riffle-pool sequences	☑ 0	☐ 1	☐ 2	☐ 3
4. Sorting of soil textures or other substrate	☑ 0	☐ 1	☐ 2	☐ 3
5. Active/relic floodplain	☑ 0	☐ 1	☐ 2	☐ 3
6. Depositional bars or benches	☑ 0	☐ 1	☐ 2	☐ 3
7. Braided channel	☑ 0	☐ 1	☐ 2	☐ 3
8. Recent alluvial deposits	☑ 0	☐ 0.5	☐ 1	☐ 1.5
9. Natural levees	☑ 0	☐ 1	☐ 2	☐ 3
10. Headcuts	☑ 0	☐ 1	☐ 2	☐ 3
11. Grade controls	☐ 0	☑ 0.5	☐ 1	☐ 1.5
12. Natural valley or drainageway	☐ 0	☑ 0.5	☐ 1	☐ 1.5
13. At least second order channel on existing USGS or NRCS map	☑ No = 0		☐ Yes = 3	

B. Hydrology (Subtotal = 3)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	☑ 0	☐ 1	☐ 2	☐ 3
15. Water in channel and >48 hours since sig. rain	☑ 0	☐ 1	☐ 2	☐ 3
16. Leaf litter in channel (January – September)	☐ 1.5	☐ 1	☑ 0.5	☐ 0
17. Sediment on plants or on debris	☐ 0	☐ 0.5	☑ 1	☐ 1.5
18. Organic debris lines or piles (wrack lines)	☑ 0	☐ 0.5	☐ 1	☐ 1.5
19. Hydric soils in stream bed or sides of channel	☐ No = 0		☑ Yes = 1.5	

C. Biology (Subtotal = 3)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel [1]	☐ 3	☐ 2	☑ 1	☐ 0
21. Rooted plants in channel [1]	☐ 3	☐ 2	☐ 1	☑ 0
22. Crayfish in stream (exclude in floodplain)	☑ 0	☐ 0.5	☐ 1	☐ 1.5
23. Bivalves/mussels	☑ 0	☐ 1	☐ 2	☐ 3
24. Amphibians	☐ 0	☑ 0.5	☐ 1	☐ 1.5
25. Macrobenthos (record type & abundance)	☑ 0	☐ 1	☐ 2	☐ 3
26. Filamentous algae; periphyton	☐ 0	☑ 1	☐ 2	☐ 3
27. Iron oxidizing bacteria/fungus	☑ 0	☐ 0.5	☐ 1	☐ 1.5
28. Wetland plants in channel [2]	☐ 0	☑ 0.5	☐ 1	☐ 2

[1] Focus is on the presence of upland plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 9

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes : stream impacted by logging activity

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Crittendon	Named Waterbody: Trib to Ditch 11	Date/Time: 10/20/2020
Assessors/Affiliation: JRO 1018-TN11		Project ID :
Site Name/Description: I-40 Site		
Site Location: Ditch 1, Tree Line to Ditch 11 (east - west reach)		
USGS quad:	HUC (12 digit):	Lat/Long: 35.162007, -90.286528
Previous Rainfall (7-days) : 0.05 in, 1.76 Oct 1-20		

Precipitation this Season vs. Normal : very wet ☐ wet ☐ average ☑ dry ☐ drought ☐ unknown

Source of recent & seasonal precip data :

Watershed Size : 123 ac	Photos: Y or N (circle) Number : Yes - 3
Soil Type(s) / Geology : Dabbs silt Loam - USGS	Source:
Surrounding Land Use : Agriculture	

Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) :
Severe ☑ Moderate ☐ Slight ☐ Absent ☐

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	☑	WWC ☐
2. Defined bed and bank absent, dominated by upland vegetation / grass	☑	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	☐	WWC ☑
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	☐	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	☑	Stream ☐
6. Presence of fish (except *Gambusia*)	☑	Stream ☐
7. Presence of naturally occurring ground water table connection	☑	Stream ☐
8. Flowing water in channel and 7 days since last precipitation in local watershed	☑	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	☑	Stream ☐

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination = Upland Ditch

Secondary Indicator Score (if applicable) = 9.0

Justification / Notes :

stagnant pool at turn to the east, dry to ditch 11

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	☐ 0	☐ 1	☐ 2	☑ 3
2. Sinuous channel	☑ 0	☐ 1	☐ 2	☐ 3
3. In-channel structure: riffle-pool sequences	☑ 0	☐ 1	☐ 2	☐ 3
4. Sorting of soil textures or other substrate	☐ 0	☑ 1	☐ 2	☐ 3
5. Active/relic floodplain	☑ 0	☐ 1	☐ 2	☐ 3
6. Depositional bars or benches	☑ 0	☐ 1	☐ 2	☐ 3
7. Braided channel	☑ 0	☐ 1	☐ 2	☐ 3
8. Recent alluvial deposits	☑ 0	☐ 0.5	☐ 1	☐ 1.5
9. Natural levees	☑ 0	☐ 1	☐ 2	☐ 3
10. Headcuts	☑ 0	☐ 1	☐ 2	☐ 3
11. Grade controls	☐ 0	☑ 0.5	☐ 1	☐ 1.5
12. Natural valley or drainageway	☐ 0	☑ 0.5	☐ 1	☐ 1.5
13. At least second order channel on existing USGS or NRCS map	☑ No = 0		☐ Yes = 3	

B. Hydrology (Subtotal = 3)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	☑ 0	☐ 1	☐ 2	☐ 3
15. Water in channel and >48 hours since sig. rain	☑ 0	☐ 1	☐ 2	☐ 3
16. Leaf litter in channel (January – September)	☐ 1.5	☐ 1	☑ 0.5	☐ 0
17. Sediment on plants or on debris	☐ 0	☐ 0.5	☑ 1	☐ 1.5
18. Organic debris lines or piles (wrack lines)	☑ 0	☐ 0.5	☐ 1	☐ 1.5
19. Hydric soils in stream bed or sides of channel	☐ No = 0		☑ Yes = 1.5	

C. Biology (Subtotal = 5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel [1]	☐ 3	☑ 2	☐ 1	☐ 0
21. Rooted plants in channel [1]	☑ 3	☐ 2	☐ 1	☐ 0
22. Crayfish in stream (exclude in floodplain)	☑ 0	☐ 0.5	☐ 1	☐ 1.5
23. Bivalves/mussels	☑ 0	☐ 1	☐ 2	☐ 3
24. Amphibians	☑ 0	☐ 0.5	☐ 1	☐ 1.5
25. Macrobenthos (record type & abundance)	☑ 0	☐ 1	☐ 2	☐ 3
26. Filamentous algae; periphyton	☑ 0	☐ 1	☐ 2	☐ 3
27. Iron oxidizing bacteria/fungus	☑ 0	☐ 0.5	☐ 1	☐ 1.5
28. Wetland plants in channel [2]	☑ 0	☐ 0.5	☐ 1	☐ 2

[1] Focus is on the presence of upland plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 13

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes : stream dry

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Crittendon	Named Waterbody: Trib to Ditch 11	Date/Time: 10/20/2020
Assessors/Affiliation: JRO 1018-TN11		Project ID :
Site Name/Description: I-40 Site		
Site Location: Ditch 2 to treeline		
USGS quad:	HUC (12 digit):	Lat/Long: 35.155087, -90.288097
Previous Rainfall (7-days) : 0.05 in, 1.76 Oct 1-20		
Precipitation this Season vs. Normal : very wet ☐ wet ☐ average ☑ dry ☐ drought ☐ unknown Source of recent & seasonal precip data :		
Watershed Size :	Photos: Y or N (circle) Number : Yes -	
Soil Type(s) / Geology : Dabbs silt Loam - USGS	Source:	
Surrounding Land Use : Agriculture		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, dominated by upland vegetation / grass	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	☐	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	☐	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	✓	Stream ☐
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precipitation in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	Stream ☐

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination = Upland Ditch

Secondary Indicator Score (if applicable) = 10.5

Justification / Notes :

No groundwater connection

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	☐ 0	☐ 1	☐ 2	☑ 3
2. Sinuous channel	☑ 0	☐ 1	☐ 2	☐ 3
3. In-channel structure: riffle-pool sequences	☑ 0	☐ 1	☐ 2	☐ 3
4. Sorting of soil textures or other substrate	☑ 0	☐ 1	☐ 2	☐ 3
5. Active/relic floodplain	☑ 0	☐ 1	☐ 2	☐ 3
6. Depositional bars or benches	☑ 0	☐ 1	☐ 2	☐ 3
7. Braided channel	☑ 0	☐ 1	☐ 2	☐ 3
8. Recent alluvial deposits	☑ 0	☐ 0.5	☐ 1	☐ 1.5
9. Natural levees	☑ 0	☐ 1	☐ 2	☐ 3
10. Headcuts	☑ 0	☐ 1	☐ 2	☐ 3
11. Grade controls	☐ 0	☐ 0.5	☐ 1	☐ 1.5
12. Natural valley or drainageway	☐ 0	☑ 0.5	☐ 1	☐ 1.5
13. At least second order channel on existing USGS or NRCS map	☑ No = 0		☐ Yes = 3	

B. Hydrology (Subtotal = 3)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	☑ 0	☐ 1	☐ 2	☐ 3
15. Water in channel and >48 hours since sig. rain	☑ 0	☐ 1	☐ 2	☐ 3
16. Leaf litter in channel (January – September)	☐ 1.5	☐ 1	☑ 0.5	☐ 0
17. Sediment on plants or on debris	☐ 0	☐ 0.5	☑ 1	☐ 1.5
18. Organic debris lines or piles (wrack lines)	☑ 0	☐ 0.5	☐ 1	☐ 1.5
19. Hydric soils in stream bed or sides of channel	☐ No = 0		☑ Yes = 1.5	

C. Biology (Subtotal = 3)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel [1]	☐ 3	☐ 2	☐ 1	☑ 0
21. Rooted plants in channel [1]	☐ 3	☐ 2	☐ 1	☑ 0
22. Crayfish in stream (exclude in floodplain)	☐ 0	☐ 0.5	☑ 1	☐ 1.5
23. Bivalves/mussels	☑ 0	☐ 1	☐ 2	☐ 3
24. Amphibians	☐ 0	☑ 0.5	☐ 1	☐ 1.5
25. Macrobenthos (record type & abundance)	☑ 0	☐ 1	☐ 2	☐ 3
26. Filamentous algae; periphyton	☐ 0	☑ 1	☐ 2	☐ 3
27. Iron oxidizing bacteria/fungus	☑ 0	☐ 0.5	☐ 1	☐ 1.5
28. Wetland plants in channel [2]	☐ 0	☑ 0.5	☐ 1	☐ 2

[1] Focus is on the presence of upland plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 10.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Crittendon	Named Waterbody: Trib to Ditch 10	Date/Time: 10/20/2020
Assessors/Affiliation: JRO 1018-TN11		Project ID :
Site Name/Description: I-40 Site		
Site Location: Ditch 2b treeline to Ditch 11		
USGS quad:	HUC (12 digit):	Lat/Long: 35.154338, -90.283374
Previous Rainfall (7-days) : 0.05 in, 1.76 Oct 1-20		
Precipitation this Season vs. Normal : very wet ☐ wet ☐ average ☑ dry ☐ drought ☐ unknown Source of recent & seasonal precip data :		
Watershed Size :	Photos: Y or N (circle) Number : Yes -	
Soil Type(s) / Geology : Sharkey Silt Clay - USGS		Source:
Surrounding Land Use : Agriculture		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	☑	WWC ☐
2. Defined bed and bank absent, dominated by upland vegetation / grass	☑	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	☐	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	☐	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	☑	Stream ☐
6. Presence of fish (except *Gambusia*)	☑	Stream ☐
7. Presence of naturally occurring ground water table connection	☑	Stream ☐
8. Flowing water in channel and 7 days since last precipitation in local watershed	☑	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	☑	Stream ☐

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination = Upland Ditch

Secondary Indicator Score (if applicable) = 12.5

Justification / Notes :

No groundwater connection

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	☐ 0	☐ 1	☑ 2	☐ 3
2. Sinuous channel	☑ 0	☐ 1	☐ 2	☐ 3
3. In-channel structure: riffle-pool sequences	☐ 0	☑ 1	☐ 2	☐ 3
4. Sorting of soil textures or other substrate	☐ 0	☑ 1	☐ 2	☐ 3
5. Active/relic floodplain	☑ 0	☐ 1	☐ 2	☐ 3
6. Depositional bars or benches	☑ 0	☐ 1	☐ 2	☐ 3
7. Braided channel	☑ 0	☐ 1	☐ 2	☐ 3
8. Recent alluvial deposits	☑ 0	☐ 0.5	☐ 1	☐ 1.5
9. Natural levees	☑ 0	☐ 1	☐ 2	☐ 3
10. Headcuts	☑ 0	☐ 1	☐ 2	☐ 3
11. Grade controls	☐ 0	☑ 0.5	☐ 1	☐ 1.5
12. Natural valley or drainageway	☑ 0	☐ 0.5	☐ 1	☐ 1.5
13. At least second order channel on existing USGS or NRCS map	☑ No = 0		☐ Yes = 3	

B. Hydrology (Subtotal = 4)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	☑ 0	☐ 1	☐ 2	☐ 3
15. Water in channel and >48 hours since sig. rain	☑ 0	☐ 1	☐ 2	☐ 3
16. Leaf litter in channel (January – September)	☐ 1.5	☑ 1	☐ 0.5	☐ 0
17. Sediment on plants or on debris	☐ 0	☐ 0.5	☑ 1	☐ 1.5
18. Organic debris lines or piles (wrack lines)	☐ 0	☑ 0.5	☐ 1	☐ 1.5
19. Hydric soils in stream bed or sides of channel	☐ No = 0		☑ Yes = 1.5	

C. Biology (Subtotal = 4)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel [1]	☐ 3	☐ 2	☑ 1	☐ 0
21. Rooted plants in channel [1]	☐ 3	☑ 2	☐ 1	☐ 0
22. Crayfish in stream (exclude in floodplain)	☐ 0	☑ 0.5	☐ 1	☐ 1.5
23. Bivalves/mussels	☑ 0	☐ 1	☐ 2	☐ 3
24. Amphibians	☐ 0	☑ 0.5	☐ 1	☐ 1.5
25. Macrobenthos (record type & abundance)	☑ 0	☐ 1	☐ 2	☐ 3
26. Filamentous algae; periphyton	☑ 0	☐ 1	☐ 2	☐ 3
27. Iron oxidizing bacteria/fungus	☑ 0	☐ 0.5	☐ 1	☐ 1.5
28. Wetland plants in channel [2]	☑ 0	☐ 0.5	☐ 1	☐ 2

[1] Focus is on the presence of upland plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 12.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Crittendon	Named Waterbody: Trib to Ditch 11	Date/Time: 10/20/2020
Assessors/Affiliation: JRO 1018-TN11		Project ID :
Site Name/Description: I-40 Site		
Site Location: Ditch 5a access road to tree water		
USGS quad:	HUC (12 digit):	Lat/Long: 35.161752, -90.270852
Previous Rainfall (7-days) : 0.05 in, 1.76 Oct 1-20		

Precipitation this Season vs. Normal : very wet ☐ wet ☐ average ☑ dry ☐ drought ☐ unknown

Source of recent & seasonal precip data :

Watershed Size :	Photos: Y or N (circle) Number : Yes -
Soil Type(s) / Geology : Sharkey Silt Clay - USGS	Source:
Surrounding Land Use : Agriculture	

Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) :
Severe ☑ Moderate ☐ Slight ☐ Absent ☐

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	☑	WWC ☐
2. Defined bed and bank absent, dominated by upland vegetation / grass	☑	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	☐	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	☐	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	☑	Stream ☐
6. Presence of fish (except *Gambusia*)	☑	Stream ☐
7. Presence of naturally occurring ground water table connection	☑	Stream ☐
8. Flowing water in channel and 7 days since last precipitation in local watershed	☑	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	☑	Stream ☐

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination = Upland Ditch

Secondary Indicator Score (if applicable) = 9.0

Justification / Notes :

No groundwater connection

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 3)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	☐ 0	☐ 1	☐ 2	☑ 3
2. Sinuous channel	☑ 0	☐ 1	☐ 2	☐ 3
3. In-channel structure: riffle-pool sequences	☑ 0	☐ 1	☐ 2	☐ 3
4. Sorting of soil textures or other substrate	☑ 0	☐ 1	☐ 2	☐ 3
5. Active/relic floodplain	☑ 0	☐ 1	☐ 2	☐ 3
6. Depositional bars or benches	☑ 0	☐ 1	☐ 2	☐ 3
7. Braided channel	☑ 0	☐ 1	☐ 2	☐ 3
8. Recent alluvial deposits	☑ 0	☐ 0.5	☐ 1	☐ 1.5
9. Natural levees	☑ 0	☐ 1	☐ 2	☐ 3
10. Headcuts	☑ 0	☐ 1	☐ 2	☐ 3
11. Grade controls	☑ 0	☐ 0.5	☐ 1	☐ 1.5
12. Natural valley or drainageway	☑ 0	☐ 0.5	☐ 1	☐ 1.5
13. At least second order channel on existing USGS or NRCS map	☑ No = 0		☐ Yes = 3	

B. Hydrology (Subtotal = 4)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	☑ 0	☐ 1	☐ 2	☐ 3
15. Water in channel and >48 hours since sig. rain	☑ 0	☐ 1	☐ 2	☐ 3
16. Leaf litter in channel (January – September)	☐ 1.5	☑ 1	☐ 0.5	☐ 0
17. Sediment on plants or on debris	☐ 0	☐ 0.5	☑ 1	☐ 1.5
18. Organic debris lines or piles (wrack lines)	☐ 0	☑ 0.5	☐ 1	☐ 1.5
19. Hydric soils in stream bed or sides of channel	☐ No = 0		☑ Yes = 1.5	

C. Biology (Subtotal = 2)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel [1]	☐ 3	☐ 2	☐ 1	☑ 0
21. Rooted plants in channel [1]	☐ 3	☐ 2	☑ 1	☐ 0
22. Crayfish in stream (exclude in floodplain)	☐ 0	☑ 0.5	☐ 1	☐ 1.5
23. Bivalves/mussels	☑ 0	☐ 1	☐ 2	☐ 3
24. Amphibians	☐ 0	☑ 0.5	☐ 1	☐ 1.5
25. Macrobenthos (record type & abundance)	☑ 0	☐ 1	☐ 2	☐ 3
26. Filamentous algae; periphyton	☑ 0	☐ 1	☐ 2	☐ 3
27. Iron oxidizing bacteria/fungus	☑ 0	☐ 0.5	☐ 1	☐ 1.5
28. Wetland plants in channel [2]	☑ 0	☐ 0.5	☐ 1	☐ 2

[1] Focus is on the presence of upland plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 9

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Crittendon	Named Waterbody: Trib to Ditch 10	Date/Time: 10/20/2020
Assessors/Affiliation: JRO 1018-TN11		Project ID :
Site Name/Description: I-40 Site		
Site Location: Ditch 5b standing water to Ditch 10		
USGS quad:	HUC (12 digit):	Lat/Long: 35.161732, -90.265801
Previous Rainfall (7-days) : 0.05 in, 1.76 Oct 1-20		
Precipitation this Season vs. Normal : very wet ☐ wet ☐ average ☑ dry ☐ drought ☐ unknown Source of recent & seasonal precip data :		
Watershed Size :	Photos: Y or N (circle) Number : Yes -	
Soil Type(s) / Geology : Sharkey Silt Clay - USGS		Source:
Surrounding Land Use : Agriculture		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	☑	WWC ☐
2. Defined bed and bank absent, dominated by upland vegetation / grass	☑	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	☐	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	☐	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	☑	Stream ☐
6. Presence of fish (except *Gambusia*)	☐	Stream ☐
7. Presence of naturally occurring ground water table connection	☐	Stream ☑
8. Flowing water in channel and 7 days since last precipitation in local watershed	☐	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	☑	Stream ☐

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination = ephemeral stream

Secondary Indicator Score (if applicable) =

Justification / Notes :

water standing in ditch and connected to ditch 10

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	☐ 0	☐ 1	☐ 2	☑ 3
2. Sinuous channel	☑ 0	☐ 1	☐ 2	☐ 3
3. In-channel structure: riffle-pool sequences	☐ 0	☑ 1	☐ 2	☐ 3
4. Sorting of soil textures or other substrate	☐ 0	☑ 1	☐ 2	☐ 3
5. Active/relic floodplain	☑ 0	☐ 1	☐ 2	☐ 3
6. Depositional bars or benches	☑ 0	☐ 1	☐ 2	☐ 3
7. Braided channel	☑ 0	☐ 1	☐ 2	☐ 3
8. Recent alluvial deposits	☑ 0	☐ 0.5	☐ 1	☐ 1.5
9. Natural levees	☑ 0	☐ 1	☐ 2	☐ 3
10. Headcuts	☑ 0	☐ 1	☐ 2	☐ 3
11. Grade controls	☐ 0	☑ 0.5	☐ 1	☐ 1.5
12. Natural valley or drainageway	☐ 0	☑ 0.5	☐ 1	☐ 1.5
13. At least second order channel on existing USGS or NRCS map	☐ No = 0		☐ Yes = 3	

B. Hydrology (Subtotal = 7.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	☐ 0	☑ 1	☐ 2	☐ 3
15. Water in channel and >48 hours since sig. rain	☐ 0	☐ 1	☑ 2	☐ 3
16. Leaf litter in channel (January – September)	☑ 1.5	☐ 1	☐ 0.5	☐ 0
17. Sediment on plants or on debris	☐ 0	☐ 0.5	☑ 1	☐ 1.5
18. Organic debris lines or piles (wrack lines)	☐ 0	☑ 0.5	☐ 1	☐ 1.5
19. Hydric soils in stream bed or sides of channel	☐ No = 0		☑ Yes = 1.5	

C. Biology (Subtotal = 10.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel [1]	☑ 3	☐ 2	☐ 1	☐ 0
21. Rooted plants in channel [1]	☑ 3	☐ 2	☐ 1	☐ 0
22. Crayfish in stream (exclude in floodplain)	☐ 0	☑ 0.5	☐ 1	☐ 1.5
23. Bivalves/mussels	☑ 0	☐ 1	☐ 2	☐ 3
24. Amphibians	☐ 0	☐ 0.5	☑ 1	☐ 1.5
25. Macrobenthos (record type & abundance)	☐ 0	☑ 1	☐ 2	☐ 3
26. Filamentous algae; periphyton	☐ 0	☐ 1	☑ 2	☐ 3
27. Iron oxidizing bacteria/fungus	☑ 0	☐ 0.5	☐ 1	☐ 1.5
28. Wetland plants in channel [2]	☑ 0	☐ 0.5	☐ 1	☐ 2

[1] Focus is on the presence of upland plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 24.0

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Crittendon	Named Waterbody: Trib to Ditch 10	Date/Time: 10/20/2020
Assessors/Affiliation: JRO 1018-TN11		Project ID :
Site Name/Description: I-40 Site		
Site Location: Ditch 6a Kuhn Road to standing water		
USGS quad:	HUC (12 digit):	Lat/Long: 35.154225, -90.259154
Previous Rainfall (7-days) : 0.05 in, 1.76 Oct 1-20		

Precipitation this Season vs. Normal : very wet ☐ wet ☐ average ☑ dry ☐ drought ☐ unknown

Source of recent & seasonal precip data :

Watershed Size :	Photos: Y or N (circle) Number : Yes -
Soil Type(s) / Geology : Sharkey Silt Clay - USGS	Source:
Surrounding Land Use : Agriculture	

Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	☑	WWC ☐
2. Defined bed and bank absent, dominated by upland vegetation / grass	☑	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	☑	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	☐	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	☑	Stream ☐
6. Presence of fish (except *Gambusia*)	☑	Stream ☐
7. Presence of naturally occurring ground water table connection	☑	Stream ☐
8. Flowing water in channel and 7 days since last precipitation in local watershed	☑	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	☑	Stream ☐

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination = Upland Ditch

Secondary Indicator Score (if applicable) = 11

Justification / Notes :

ditch dry down to standing water with plants emerging

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	☐ 0	☐ 1	☐ 2	☑ 3
2. Sinuous channel	☑ 0	☐ 1	☐ 2	☐ 3
3. In-channel structure: riffle-pool sequences	☑ 0	☐ 1	☐ 2	☐ 3
4. Sorting of soil textures or other substrate	☐ 0	☑ 1	☐ 2	☐ 3
5. Active/relic floodplain	☑ 0	☐ 1	☐ 2	☐ 3
6. Depositional bars or benches	☑ 0	☐ 1	☐ 2	☐ 3
7. Braided channel	☑ 0	☐ 1	☐ 2	☐ 3
8. Recent alluvial deposits	☑ 0	☐ 0.5	☐ 1	☐ 1.5
9. Natural levees	☑ 0	☐ 1	☐ 2	☐ 3
10. Headcuts	☑ 0	☐ 1	☐ 2	☐ 3
11. Grade controls	☐ 0	☑ 0.5	☐ 1	☐ 1.5
12. Natural valley or drainageway	☑ 0	☐ 0.5	☐ 1	☐ 1.5
13. At least second order channel on existing USGS or NRCS map	☐ No = 0		☐ Yes = 3	

B. **Hydrology** (Subtotal = 3)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	☑ 0	☐ 1	☐ 2	☐ 3
15. Water in channel and >48 hours since sig. rain	☑ 0	☐ 1	☐ 2	☐ 3
16. Leaf litter in channel (January – September)	☐ 1.5	☐ 1	☑ 0.5	☐ 0
17. Sediment on plants or on debris	☐ 0	☐ 0.5	☑ 1	☐ 1.5
18. Organic debris lines or piles (wrack lines)	☑ 0	☐ 0.5	☐ 1	☐ 1.5
19. Hydric soils in stream bed or sides of channel	☐ No = 0		☑ Yes = 1.5	

C. **Biology** (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel [1]	☐ 3	☐ 2	☑ 1	☐ 0
21. Rooted plants in channel [1]	☐ 3	☐ 2	☑ 1	☐ 0
22. Crayfish in stream (exclude in floodplain)	☐ 0	☑ 0.5	☐ 1	☐ 1.5
23. Bivalves/mussels	☑ 0	☐ 1	☐ 2	☐ 3
24. Amphibians	☑ 0	☐ 0.5	☐ 1	☐ 1.5
25. Macrobenthos (record type & abundance)	☑ 0	☐ 1	☐ 2	☐ 3
26. Filamentous algae; periphyton	☑ 0	☐ 1	☐ 2	☐ 3
27. Iron oxidizing bacteria/fungus	☑ 0	☐ 0.5	☐ 1	☐ 1.5
28. Wetland plants in channel [2]	☐ 0	☐ 0.5	☑ 1	☐ 2

[1] Focus is on the presence of upland plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 11.0

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Crittendon	Named Waterbody: Trib to Ditch 10	Date/Time: 10/20/2020
Assessors/Affiliation: JRO 1018-TN11		Project ID :
Site Name/Description: I-40 Site		
Site Location: Ditch 6b standing water to Ditch 10		
USGS quad:	HUC (12 digit):	Lat/Long: 35.154353, -90.263279
Previous Rainfall (7-days) : 0.05 in, 1.76 Oct 1-20		
Precipitation this Season vs. Normal : very wet ☐ wet ☐ average ☑ dry ☐ drought ☐ unknown Source of recent & seasonal precip data :		
Watershed Size :	Photos: Y or N (circle) Number : Yes -	
Soil Type(s) / Geology : Sharkey Silt Clay - USGS		Source:
Surrounding Land Use : Agriculture		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	☑	WWC ☐
2. Defined bed and bank absent, dominated by upland vegetation / grass	☑	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	☐	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	☐	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	☑	Stream ☐
6. Presence of fish (except *Gambusia*)	☐	Stream ☐
7. Presence of naturally occurring ground water table connection	☐	Stream ☑
8. Flowing water in channel and 7 days since last precipitation in local watershed	☐	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	☑	Stream ☐

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination = ephemeral stream

Secondary Indicator Score (if applicable) =

Justification / Notes :

water standing in ditch and connected to ditch 10

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	☐ 0	☐ 1	☐ 2	☑ 3
2. Sinuous channel	☑ 0	☐ 1	☐ 2	☐ 3
3. In-channel structure: riffle-pool sequences	☐ 0	☑ 1	☐ 2	☐ 3
4. Sorting of soil textures or other substrate	☐ 0	☑ 1	☐ 2	☐ 3
5. Active/relic floodplain	☑ 0	☐ 1	☐ 2	☐ 3
6. Depositional bars or benches	☑ 0	☐ 1	☐ 2	☐ 3
7. Braided channel	☑ 0	☐ 1	☐ 2	☐ 3
8. Recent alluvial deposits	☑ 0	☐ 0.5	☐ 1	☐ 1.5
9. Natural levees	☑ 0	☐ 1	☐ 2	☐ 3
10. Headcuts	☑ 0	☐ 1	☐ 2	☐ 3
11. Grade controls	☐ 0	☑ 0.5	☐ 1	☐ 1.5
12. Natural valley or drainageway	☐ 0	☑ 0.5	☐ 1	☐ 1.5
13. At least second order channel on existing USGS or NRCS map	☐ No = 0		☐ Yes = 3	

B. Hydrology (Subtotal = 7)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	☐ 0	☑ 1	☐ 2	☐ 3
15. Water in channel and >48 hours since sig. rain	☐ 0	☐ 1	☑ 2	☐ 3
16. Leaf litter in channel (January – September)	☐ 1.5	☑ 1	☐ 0.5	☐ 0
17. Sediment on plants or on debris	☐ 0	☐ 0.5	☑ 1	☐ 1.5
18. Organic debris lines or piles (wrack lines)	☐ 0	☑ 0.5	☐ 1	☐ 1.5
19. Hydric soils in stream bed or sides of channel	☐ No = 0		☑ Yes = 1.5	

C. Biology (Subtotal = 9)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel [1]	☑ 3	☐ 2	☐ 1	☐ 0
21. Rooted plants in channel [1]	☑ 3	☐ 2	☐ 1	☐ 0
22. Crayfish in stream (exclude in floodplain)	☐ 0	☑ 0.5	☐ 1	☐ 1.5
23. Bivalves/mussels	☑ 0	☐ 1	☐ 2	☐ 3
24. Amphibians	☐ 0	☑ 0.5	☐ 1	☐ 1.5
25. Macrobenthos (record type & abundance)	☐ 0	☑ 1	☐ 2	☐ 3
26. Filamentous algae; periphyton	☐ 0	☑ 1	☐ 2	☐ 3
27. Iron oxidizing bacteria/fungus	☑ 0	☐ 0.5	☐ 1	☐ 1.5
28. Wetland plants in channel [2]	☑ 0	☐ 0.5	☐ 1	☐ 2

[1] Focus is on the presence of upland plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 22.0

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Attachment 2
Photo-Log

PHOTOGRAPH LOG

Client Name:	Site Location:	Project No.
City of West Memphis	I-40 Site	60490207

Photo No.	Date:
1	10/20/20

Direction Photo Taken:

Description:

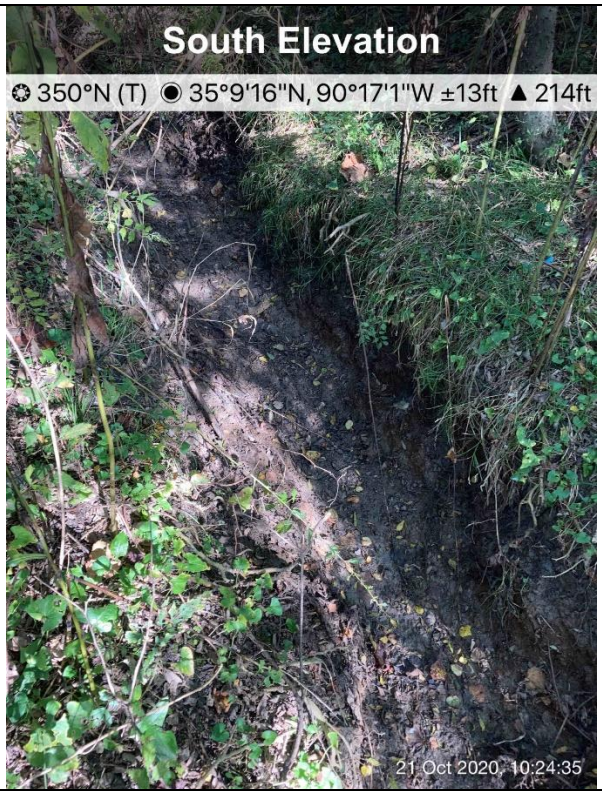
Ditch 2b - Dry

Photo No.	Date:
2	10/20/20

Direction Photo Taken:

Description:

Ditch 2b near confluence with Ditch 11 - dry



PHOTOGRAPH LOG

Client Name:	Site Location:	Project No.
City of West Memphis	I-40 Site	60490207

Photo No.	Date:
3	10/20/20

Direction Photo Taken:

West

Description:

Ditch 1b - Dry

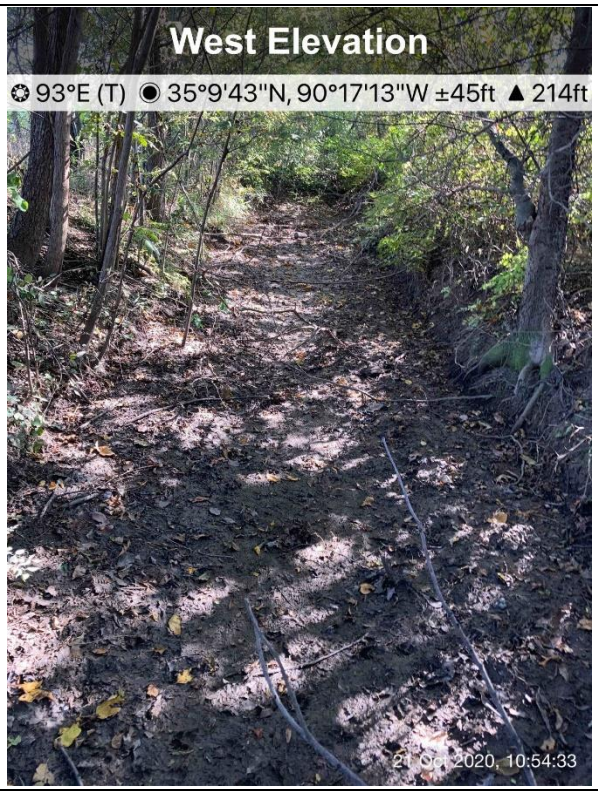


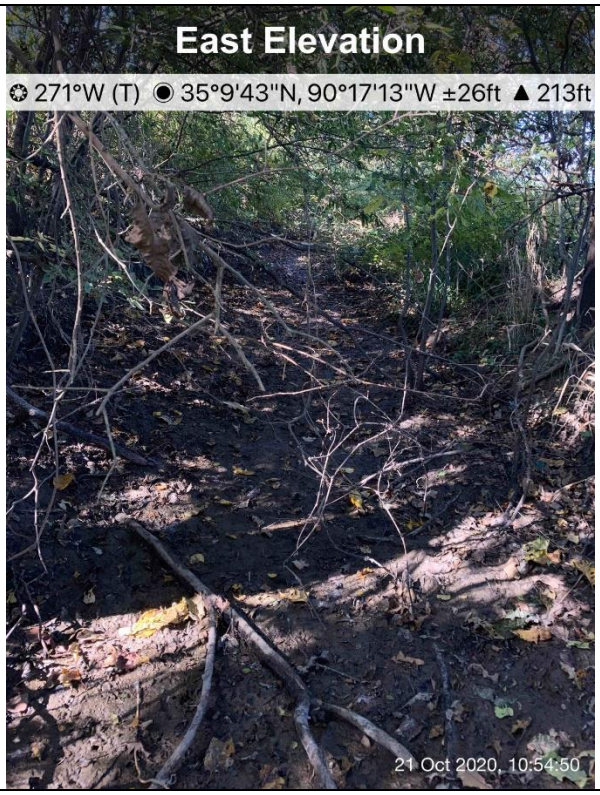
Photo No.	Date:
4	10/20/20

Direction Photo Taken:

East

Description:

Ditch 1b - dry



AECOM

PHOTOGRAPH LOG

Client Name:	Site Location:	Project No.
City of West Memphis	I-40 Site	60490207

Photo No.	Date:
5	10/20/20

Direction Photo Taken:

east

Description:

Ditch 1b near confluence with Ditch 11 - dry

Photo No.	Date:
6	10/20/20

Direction Photo Taken:

West

Description:

Ditch 1b near confluence with Ditch 11

AECOM

PHOTOGRAPH LOG

Client Name:	Site Location:	Project No.
City of West Memphis	I-40 Site	60490207

Photo No.	Date:
7	10/20/20

Direction Photo Taken:

North

Description:

Ditch 11 upstream of Ditch 3 and 1

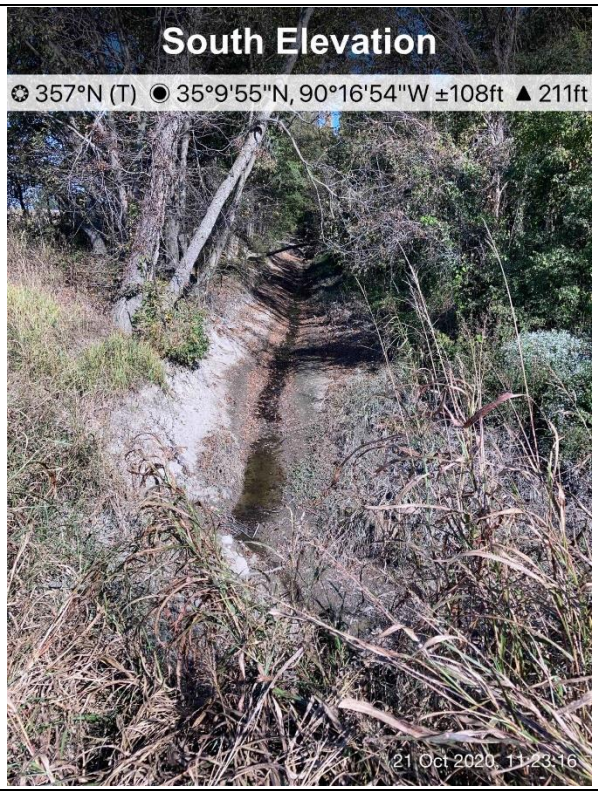


Photo No.	Date:
8	10/20/20

Direction Photo Taken:

South

Description:

Ditch 11 upstream of Ditch 3 and 1

PHOTOGRAPH LOG

Client Name:	Site Location:	Project No.
City of West Memphis	I-40 Site	60490207

Photo No.	Date:
9	10/20/20

Direction Photo Taken:

West

Description:

Ditch 5a, start of back water from ditch 10

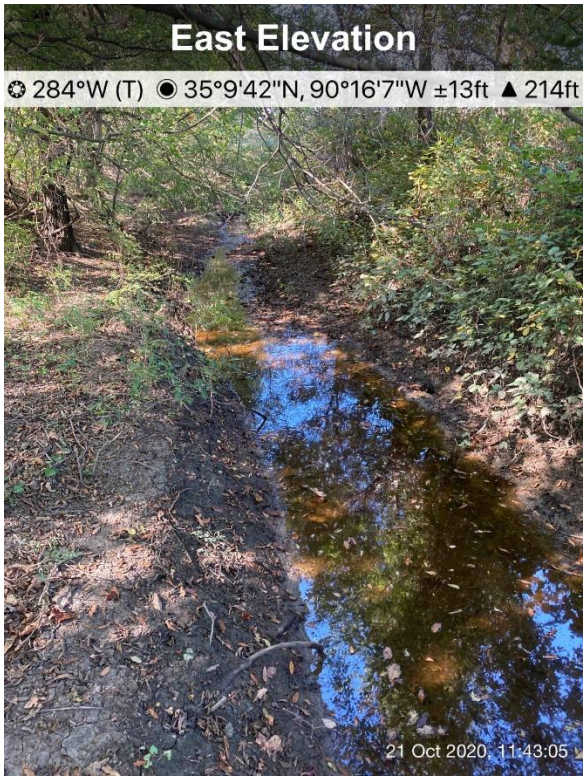


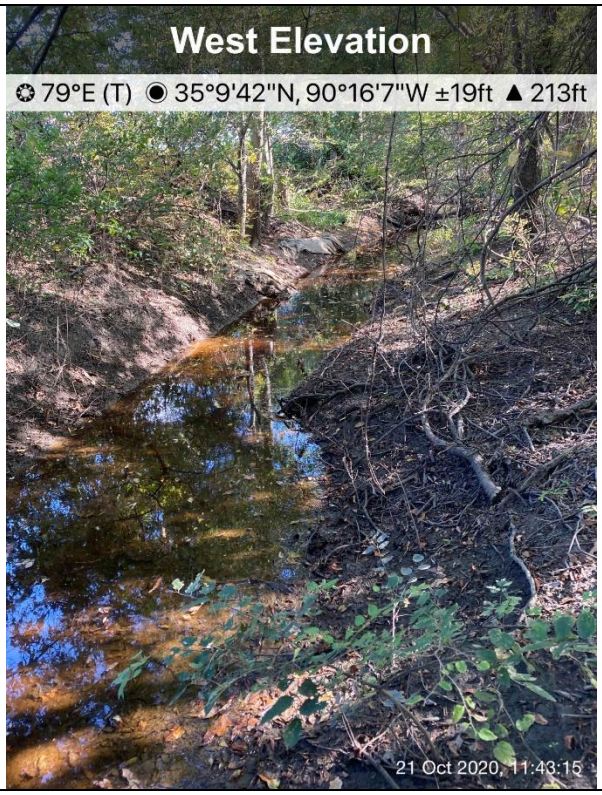
Photo No.	Date:
10	10/20/20

Direction Photo Taken:

East

Description:

Ditch start of backwater in Ditch 5a facing east to Ditch 10



AECOM

PHOTOGRAPH LOG

Client Name:	Site Location:	Project No.
City of West Memphis	I-40 Site	60490207

Photo No.	Date:
11	10/20/20

Direction Photo Taken:

west

Description:

Ditch 5b near confluence with Ditch 10 facing west

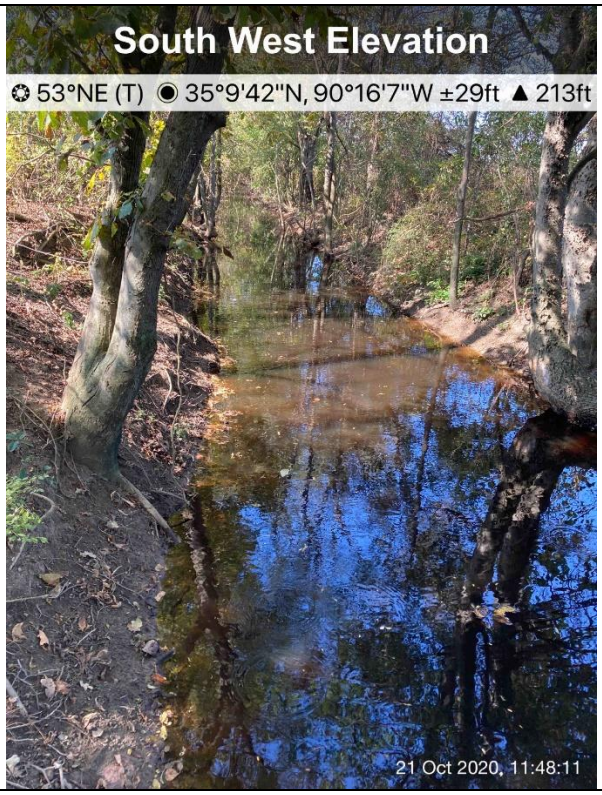


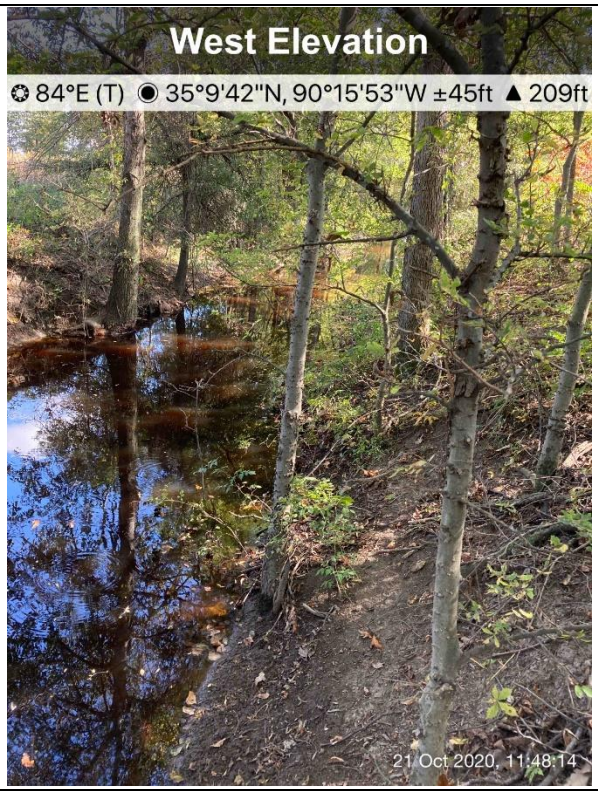
Photo No.	Date:
12	10/20/20

Direction Photo Taken:

East

Description:

Ditch 5b near confluence with Ditch 10 facing east



AECOM

PHOTOGRAPH LOG

Client Name:	Site Location:	Project No.
City of West Memphis	I-40 Site	60490207

Photo No.	Date:
13	10/20/20

Direction Photo Taken:

west

Description:

Ditch 6a facing west to Ditch 10 downstream of culvert from wetland 1

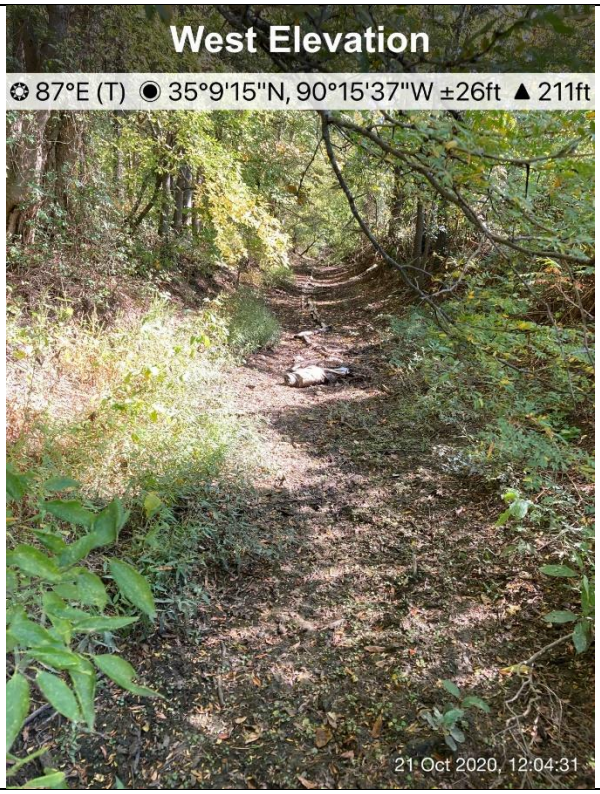
Photo No.	Date:
14	10/20/20

Direction Photo Taken:

east

Description:

Ditch 6a upstream of culvert to wetland 1



PHOTOGRAPH LOG

Client Name:	Site Location:	Project No.
City of West Memphis	I-40 Site	60490207

Photo No.	Date:
15	10/20/20

Direction Photo Taken:

north

Description:

Culvert drain for Wetland 1, downgradient of wetland 1.

Photo No.	Date:
16	10/20/20

Direction Photo Taken:

north

Description:

Drainage of Wetland 1 upgradient from photo 15

PHOTOGRAPH LOG

Client Name:	Site Location:	Project No.
City of West Memphis	I-40 Site	60490207

Photo No.	Date:
17	10/20/20

Direction Photo Taken:

Northeast

Description:

Wetland 1 current condition.

Photo No.	Date:
18	10/20/20

Direction Photo Taken:

East

Description:

Wetland 1, current condition

AECOM		PHOTOGRAPH LOG
Client Name: City of West Memphis	**Site Location:** I-40 Site	**Project No.** 60490207