

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): June 25, 2013

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: St. Louis District; Winter Brothers Material Co. Eureka Site; MVS-2012-680
This AJD pertains to Tributary 1, adjacent Wetland 1, and includes the downstream Meramec River, which borders the project site: 2012-680-001-SNR_Tributary1, Wetland 1; 2012-680_Meramec River

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Missouri County/parish/borough: St. Louis County City: Eureka
Center coordinates of site (lat/long in degree decimal format): Lat. 38.4958° N, Long. -90.6045° W.
Universal Transverse Mercator: 15

Name of nearest waterbody: Tributary 1 / Meramec River

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Meramec River

Name of watershed or Hydrologic Unit Code (HUC): 7140102

- Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
 Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

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

- Office (Desk) Determination. Date: June 25, 2013
 Field Determination. Date(s): February 1, 2013; April 5, 2013

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

- Waters subject to the ebb and flow of the tide.
 Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: The St. Louis District has determined that the Meramec River is a TNW from Mile 0 to Mile 49 at Pacific, MO; located 1.5 miles downstream of the Highway F bridge.

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **are and are not** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- TNWs, including territorial seas Adjacent, off-site Meramec River
 Wetlands adjacent to TNWs
 Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
 Non-RPWs that flow directly or indirectly into TNWs
 Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
 Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
 Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
 Impoundments of jurisdictional waters
 Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: 2,816 linear feet: 10 width (ft) and/or 0.64 acres. Tributary 1
Wetlands: 1.05 acres.

c. Limits (boundaries) of jurisdiction based on: Established by OHWM, And 1987 Manual w/ Midwest Regional Supplement
Elevation of established OHWM (if known): .

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

2. **Non-regulated waters/wetlands (check if applicable):**³ The upstream portion of the drainage pattern that forms Tributary 1 was determined to be non-regulated.

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: Tributary 1 is illustrated on the USGS topographic map as an intermittent blue line. Tributary 1 was identified as an ephemeral tributary in the February 2012 Hanson delineation. A field investigation was performed on February 1, 2013. Field observations revealed that the upstream portion of the waterbody exists as an apparent excavated field drainage ditch. This NJD segment is located upstream from the point at which the drainage pattern (as illustrated on the USGS) is joined by a smaller intermittent blue line flowing northeast out of the bluff rising on the west, and begins flowing generally east (location coordinates 38.4957° N, -90.6047° W). The NJD segment extends approximately 8,200 feet south-southeast. In this area, bed and bank definition could not be defined, and the waterbody was vegetated throughout its bottom. Aerial photographs dating back to 1990 were reviewed. None of the photos indicated that the channel formerly existed as an unchanneled natural feature. No channel scars or other remnant features that would indicate a former natural channel were observed. The waterbody was concluded to be a man-made agricultural ditch. Its drainage area is undetermined, as the feature does not correspond to topographic drainage patterns in USGS contour line. Rather, the channel exists in a broad, flat area.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**

Identify TNW: **Meramec River.**

Summarize rationale supporting determination: **The St. Louis District has determined that the Meramec River is a TNW from Mile 0 to Mile 49 at Pacific, MO; located 1.5 miles downstream of the Highway F bridge.**

2. **Wetland adjacent to TNW**

Summarize rationale supporting conclusion that wetland is “adjacent”:

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are “relatively permanent waters” (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

(i) **General Area Conditions:**

³ Supporting documentation is presented in Section III.F.

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

Watershed size: 2,150 square miles Meramec watershed 07140102
Drainage area: ~890 acres Best estimate; drainage area includes flat floodplain w/ little or no contour lines
Average annual rainfall: 40 inches
Average annual snowfall: 18 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

- Tributary flows directly into TNW.
 Tributary flows through Pick List tributaries before entering TNW.

Project waters are 1 (or less) river miles from TNW.
Project waters are Pick List river miles from RPW. Tributary 1 does not enter an RPW
Project waters are 1 (or less) aerial (straight) miles from TNW.
Project waters are Pick List aerial (straight) miles from RPW. Tributary 1 does not enter an RPW
Project waters cross or serve as state boundaries. Explain: The relevant reach water is intrastate.
Identify flow route to TNW⁵: Tributary 1 flows directly into the Meramec River.
Tributary stream order, if known: Second order.

(b) General Tributary Characteristics (check all that apply):

Tributary is: Natural
 Artificial (man-made). Explain: .
 Manipulated (man-altered). Explain: The upstream, NJD reach of Tributary 1 appears to consist of man-made agricultural ditches within relatively flat floodplain. The downstream reach described herein may have also been channelized.

Tributary properties with respect to top of bank (estimate):

Average width: Varies greatly through length, estimated 15 feet upstream and 35 feet downstream.
Average depth: 5-10 feet
Average side slopes: 2:1.

Primary tributary substrate composition (check all that apply):

- | | | |
|---|--|-----------------------------------|
| <input checked="" type="checkbox"/> Silts | <input type="checkbox"/> Sands | <input type="checkbox"/> Concrete |
| <input checked="" type="checkbox"/> Cobbles | <input checked="" type="checkbox"/> Gravel | <input type="checkbox"/> Muck |
| <input type="checkbox"/> Bedrock | <input type="checkbox"/> Vegetation. Type/% cover: | |
| <input type="checkbox"/> Other. Explain: . | | |

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Relatively stable, with some areas of scour and sloughing.

Presence of run/riffle/pool complexes. Unknown Explain: Tributary was at a high flow level during site visit.

Tributary geometry: Relatively straight

Tributary gradient (approximate average slope): 1 percent slope based on USGS contours

(c) Flow:

Tributary provides for: Intermittent but not seasonal flow

Estimate average number of flow events in review area/year: 11-20

Describe flow regime: Subject to runoff from agricultural ditches and slopes of hillsides to the west; also subject to backwater influence from Meramec River.

Other information on duration and volume: .

Surface flow is: Confined. Characteristics: Tributary does not appear to overtop; lower end appears confined to floodway within shelved upper banks. If out of banks, likely due to Meramec flooding, not flow of tributary.

Subsurface flow: Unknown. Explain findings: .

- Dye (or other) test performed: .

Tributary has (check all that apply):

- | | |
|--|---|
| <input checked="" type="checkbox"/> Bed and banks | |
| <input checked="" type="checkbox"/> OHWM ⁶ (check all indicators that apply): | |
| <input checked="" type="checkbox"/> clear, natural line impressed on the bank | <input checked="" type="checkbox"/> the presence of litter and debris |
| <input checked="" type="checkbox"/> changes in the character of soil | <input type="checkbox"/> destruction of terrestrial vegetation |
| <input checked="" type="checkbox"/> shelving | <input checked="" type="checkbox"/> the presence of wrack line |
| <input checked="" type="checkbox"/> vegetation matted down, bent, or absent | <input type="checkbox"/> sediment sorting |

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

⁶ A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

- leaf litter disturbed or washed away
- sediment deposition
- water staining
- other (list):
- Discontinuous OHWM.⁷ Explain: .
- scour
- multiple observed or predicted flow events
- abrupt change in plant community

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

- High Tide Line indicated by:
 - oil or scum line along shore objects
 - fine shell or debris deposits (foreshore)
 - physical markings/characteristics
 - tidal gauges
 - other (list):
- Mean High Water Mark indicated by:
 - survey to available datum;
 - physical markings;
 - vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: **No chemical characteristics were observed during the field review. The watershed is a mix of forested hill slopes, and agricultural fields. The agricultural fields indicate a potential for the contribution of agrichemicals such as fertilizer nutrients and pesticides. Its receiving waterbody, the Meramec River, is listed on the 2010 303(d) list for bacteria and lead.**

Identify specific pollutants, if known:.

(iv) Biological Characteristics. Channel supports (check all that apply):

- Riparian corridor. Characteristics (type, average width): **Narrow line of trees on either bank, generally no greater than a single tree canopy in width.**
- Wetland fringe. Characteristics:.
- Habitat for:
 - Federally Listed species. Explain findings: .
 - Fish/spawn areas. Explain findings: .
 - Other environmentally-sensitive species. Explain findings: .
 - Aquatic/wildlife diversity. Explain findings: **Nominal function as habitat. Likely use as travel corridor for terrestrial wildlife, between the forested corridor of the Meramec River and adjacent upland forested areas to the west of the site. May also provide corridor for aquatic species such as amphibians and reptiles, between the Meramec River and emergent Wetland 1. The downstream end of Tributary 1 may provide habitat for riverine aquatic species during backwater events, but Tributary 1 is generally not believed to be a significant source of habitat for fish and other riverine species.**

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: **1.05 acres**

Wetland type. Explain: **Emergent.**

Wetland quality. Explain: **Wetland has moderate to low diversity and floristic quality, but appears to have persistent hydrology as observed in aerial photographs. Wetland does not appear to be routinely disturbed through agriculture.**

Project wetlands cross or serve as state boundaries. Explain:.

(b) General Flow Relationship with Non-TNW:

Flow is: **Ephemeral flow.** Explain: **Wetland 1 is adjacent to a non-jurisdictional agricultural swale. Downstream of the wetland, the swale gains bed, bank and OHM and becomes intermittent Tributary 1.**

Surface flow is: **Overland sheetflow**

Characteristics: **While the flow of the NJD agricultural swale to Tributary 1 is confined, there does not appear to be a confined inflow/outflow between Wetland 1 and the Tributary 1's agricultural swale. Rather, exchange of hydrology between Wetland 1 and the agricultural swale/Tributary 1 appears to occur as overland flow. Wetland 1 and Tributary 1/agricultural swale are all within the Meramec River floodplain. Wetland 1 also appears to receive hydrology from groundwater seepage from the bluff located on Wetland 1's western side.**

Subsurface flow: **Pick List.** Explain findings: .

- Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- Directly abutting
- Not directly abutting

⁷Ibid.

- Discrete wetland hydrologic connection. Explain: See remarks above for 2 (i)(b).
- Ecological connection. Explain: Wetland 1 is adjacent to Tributary 1 and its upstream agricultural swale. Wetland 1's proximity to Tributary 1 reasonably allows Wetland 1 to serve as additional habitat for mammalian, reptilian/amphibian, and avian species utilizing Tributary 1 and its associated riparian corridor. During hydrologic exchange, the wetland functions associated with Wetland 1 (such as nutrient capture, runoff and overflow storage, etc.) likely affect the chemical and physical characteristics of Tributary 1.
- Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **1 (or less)** river miles from TNW.
 Project waters are **Pick List** aerial (straight) miles from TNW.
 Flow is from: **Wetland to navigable waters**.
 Estimate approximate location of wetland as within the **500-year or greater** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: **No chemical characteristics for the water within Wetland 1 have been documented. However, the wetland occurs immediately adjacent to a large agricultural field used for row-crop production. Therefore, the wetland is likely subject to hydrologic introduction of agrichemicals such as fertilizers, herbicides and pesticides.**
 Identify specific pollutants, if known:

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain: **Emergent vegetation including *Carex* and *Cyperus* spp., *Xanthium* sp., and others. Percent vegetative coverage within Wetland 1 varies widely from year to year depending upon seasonal hydrology. In aerial photos, during years with wet seasonal hydrology, large portions of Wetland 1 appear to exhibit vegetative suppression due to inundation. During years with dry seasonal hydrology, Wetland 1 appears to be almost entirely vegetated, with a verdant appearance distinguishing it from its non-wetland adjacent areas.**
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings: **The position of Wetland 1 within the undeveloped Meramec River floodplain, with nearby forested riparian corridor, indicate a likelihood for utilization by wildlife. Deer and turkey occur within the project area, and the wetland appears suitable for use by wading bird species that are likely found along the Meramec River. The hydrology of Wetland 1 and connectivity to drainage patterns within the site also indicate a potential for utilization by amphibian species.**

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **1**
 Approximately (**1.05**) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>	<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>
Wetland 1 does not abut			

Summarize overall biological, chemical and physical functions being performed: **Wetland 1 is adjacent to Tributary 1 and its upstream agricultural swale, which flow directly to the Meramec River. Wetland 1's proximity to Tributary 1 reasonably allows Wetland 1 to serve as additional habitat for mammalian, reptilian/amphibian, and avian species utilizing Tributary 1, its associated riparian corridor, and the overall undeveloped Meramec River floodplain. During hydrologic exchange, the wetland functions associated with Wetland 1 (such as nutrient capture, runoff and overflow storage, etc.) likely affect the chemical and physical characteristics of Tributary 1 and the downstream Meramec River.**

C. **SIGNIFICANT NEXUS DETERMINATION**

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW.

Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: Tributary 1 is a non-Relatively Permanent Flow water (RPW) that possesses features of an intermittent tributary with defined bed and bank, and an ordinary high water mark (OHW). The total drainage area of the tributary is estimated to be approximately 890 acres. The channel is fed from a series of drainage patterns in steep upland hills located west of the Meramec River floodplain, as well as from field runoff and man-made agricultural ditches. At the start of the jurisdictional portion of Tributary 1, its width averages approximately 5 feet at the OHW and 15 feet at the top-of-bank. At the downstream end of Tributary 1, its width averages approximately 12 feet at the OHW and 35 feet at the top-of-bank. The channel is incised approximately 4 feet at its upstream jurisdictional beginning, and as much as 12 feet or more at its downstream end. The OHW was observed to be approximately 1.5 feet at the upstream end; the OHM was submerged at the downstream end at the time of observation. Features observed supporting clear evidence of flow and an OHW throughout the entire channel include: scour, leaf litter washed away, angular definition between bed and bank, and a clear line impressed upon the bank. Based on observed characteristics and its location within the Meramec River watershed, on-site Tributary 1 is considered to be a first order stream transitioning into a second-order stream. We observed that Tributary 1 has the capacity to carry surface flow hydrology via a confined channel to the Meramec River. Wetland 1 is an approximate 1.5-acre emergent wetland, located adjacent to the upstream, non-jurisdictional portion of Tributary 1. At the confluence point between Tributary 1 and the Meramec River, the Meramec River has been designated as a Traditional Navigable Waterway (TNW) by the St. Louis District. Since Tributary 1 maintains hydrologic connectivity to the Meramec River, a significant nexus has been established between the non-RPW and a TNW. Wetland 1 appears to experience hydrologic and ecological connectivity to Tributary 1, and therefore is also linked to the downstream TNW. Hydrologic connectivity refers to the flow that transports organic matter and nutrients, energy, and/or aquatic organisms throughout the system (Freeman et al., 2006). The following outlines how the non-RPW Tributary 1 and its associated Wetland 1 maintain a significant nexus through hydrologic and ecologic connectivity to the Meramec River, a TNW.

Tributary 1 contributes to the chemical and physical make-up of the Meramec River, through its ability to convey sediments and attached nutrients during hydrologic pulses generated by precipitation events. As previously indicated, the on-site channel is enveloped in a narrow wooded corridor. Partly because of this corridor, the channel appears relatively stable and allows for stable rates of sediment transport. The watershed of Tributary 1 is also predominantly agricultural area. Runoff from agricultural areas is typically subject to contamination at some level from nutrients from fertilizers, as well as agrichemicals such as herbicides and pesticides. Tributary 1 is believed to transmit these substances, therefore affecting the Meramec River with increased levels of non-point source pollutant loads. Conversely, Wetland 1 may offset these effects by capturing and uptaking nutrients, or preventing transport by storing surface runoff. Storage of run-off within Wetland 1 may also influence the hydrologic characteristics of the Meramec River.

The presence of the forested riparian corridor also suggests a continual source of organic input through transfer of leaf litter and coarse woody debris. Coarse particulate organic matter and fine particulate organic matter is transferred downstream, benefitting aquatic invertebrate populations. Additionally, particulate organic matter provides a food source for invertebrates functioning at the decomposer level. While the on-site channel does not appear to sustain benthic macroinvertebrate populations, the channel does contribute to the medium required for healthy invertebrate populations in downstream reaches. The diversity of aquatic fauna in headwater streams contributes to the biodiversity of the larger receiving waters (Meyer et al. 2007). Given the proximity of Tributary 1 to the Meramec River, its ability to carry organic particulates likely contributes directly to the biodiversity of the Meramec River.

The characteristics of headwater streams can have a direct impact on the physical and chemical properties of receiving waters in other ways unrelated to the direct input of nutrients or pollutants. The temperature of waters conducted through a stream system can have a direct effect on the health of aquatic ecosystems. Runoff collected from exposed surfaces such as agricultural fields can be elevated in temperature from solar heating. Exposed stream systems (those lacking a wooded canopy) can also experience elevated water temperatures due to solar heating. Stream systems with wooded canopy shade their water from the sun, allowing water temperatures to cool to ranges considered beneficial to aquatic ecosystems. Since on-site Tributary 1 possesses a wooded canopy, it likely contributes to the health and function of the Meramec River by lowering the temperature of water entering into it.

Lastly, headwater streams have been documented as providing necessary habitat for a variety of birds, mammals, reptiles, and amphibious populations. Because headwater streams have a small catchment, area, they are varied and maintain some of the most diverse habitats within a lotic system. Headwaters streams are utilized not only by species unique to headwaters streams, but are also used by animals requiring headwater streams for certain life stages and/or are utilized by animals that migrate between headwater environments and larger waters (Meyer et al. 2007). Tributary 1 has been observed to function as a backwater of the Meramec River during high flow events, providing resting and foraging habitat during such events. The forested corridor of Tributary 1 is located between large tracts of forested upland areas to the west, and the forested corridor of the Meramec River to the east. Therefore, Tributary 1 and its corridor also likely function as a wildlife corridor between the two areas. The presence of Wetland 1 is also believed to increase the diversity of habitat for species within the Meramec River floodplain. In aerial photographs, Wetland 1 often has substantial areas of inundation. This emergent area likely provides habitat for amphibian, reptilian, and avian species; many of which may be solely dependent upon aquatic ecosystems.

The non-RPW Tributary 1 is considered primarily as an intermittent stream flowing only approximately 1/2 mile prior to reaching the Meramec River, a TNW. Tributary 1 has the capacity to provide positive benefits to the Meramec River, as it is a segment enveloped in a wooded corridor. Tributary 1 contributes hydrology to downstream waters, carries sediments and other pollutants, provides habitat for aquatic life cycles, and provides organic input to downstream waters. Wetland 1 is an emergent wetland adjacent to an upper, NJD reach of Tributary 1. Although this reach was determined to be by NJD based on physical characteristics such as lack of bed/bank and OHM, the reach nonetheless maintains hydrologic connectivity to the Meramec River. Therefore, the functions of Wetland 1; including chemical, physical, and ecological; also affect downstream Tributary 1 and hence the Meramec River as well. Based on these hydrologic and ecologic connections, it has been determined that Tributary 1 and Wetland 1 maintain a significant nexus to the Meramec River.

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D.:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:

TNWs: 14,200 linear feet 240 width (ft), Or, 80 acres.
 Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**

Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
 Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

Tributary waters: linear feet width (ft).
 Other non-wetland waters: acres.
 Identify type(s) of waters: .

3. **Non-RPWs⁸ that flow directly or indirectly into TNWs.**

Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

Tributary waters: 2,816 linear feet 15 width (ft).
 Other non-wetland waters: acres.
 Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**

⁸See Footnote # 3.

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
- Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .
- Wetlands directly abutting an RPW where tributaries typically flow “seasonally.” Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: **1.05** acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from “waters of the U.S.,” or
- Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain: .
- Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
Identify type(s) of waters: .
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in “SWANCC,” the review area would have been regulated based solely on the “Migratory Bird Rule” (MBR).
- Waters do not meet the “Significant Nexus” standard, where such a finding is required for jurisdiction. Explain:
- Other: (explain, if not covered above): **Upper segment of Tributary 1, which appeared to be man-made and lacked defined bed/bank and OHM.**

⁹ To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰ **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.**

