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

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 30-Jun-2008

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: St. Louis District, MVS-2008-206-JD1-SNR_Ephemeral Trib D

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State :	MO - Missouri
County/parish/borough:	St. Louis
City:	pacific
Lat:	38.49122436407848
Long:	-90.71731776211149
Universal Transverse Mercator:	[ ]
Name of nearest waterbody:	Clear Creek
Name of nearest Traditional Navigable Water (TNW):	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 the action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION:

☐ Office Determination Date:

☑ ☐ 15-May-2008
Field Determination Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION

There [are not] "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area.

☐ 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:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There [are] "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area.

1. Waters of the U.S.
a. Indicate presence of waters of U.S. in review area:[1]

Water Name	Water Type(s) Present
Ephemeral Trib D-MVS-2008-206	Non-RPWs that flow directly or indirectly into TNWs

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

Area: (m²)
Linear: 53 (m)

c. Limits (boundaries) of jurisdiction:

based on: Established by OHWM.
OHWM Elevation: (if known)

2. Non-regulated waters/wetlands:[3]

None

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

1.TNW
Not Applicable.

2. Wetland Adjacent to TNW
Not Applicable.

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

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

(i) General Area Conditions:

Watershed size: acres
Drainage area: 30 acres
Average annual rainfall: 38.17 inches
Average annual snowfall: 8.9 inches

(ii) Physical Characteristics
(a) Relationship with TNW:

☐ Tributary flows directly into TNW.
☑ Tributary flows through [1] tributaries before entering TNW.

Project waters are 1 (or less) river miles from TNW.
Project waters are 1 (or less) river miles from RPW.
Project Waters are 1 (or less) aerial (straight) miles from TNW.
Project waters are 1 (or less) aerial(straight) miles from RPW.

☐ Project waters cross or serve as state boundaries.
Explain:

Identify flow route to TNW:[5]

The unnamed, ephemeral tributary flows into Clear Creek, a perennial stream that flows directly to the Meramec River, a traditional navigable water of the U.S. subject to section 10 of the Rivers and Harbors Act of 1899 [33 U.S.C. 403].

Tributary Stream Order, if known:

Order	Tributary Name
1	Ephemeral Trib D-MVS-2008-206

(b) General Tributary Characteristics:
Tributary is:

Tributary Name	Natural	Artificial	Explain	Manipulated	Explain
Ephemeral Trib D-MVS-2008-206	X	-	-	-	-

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

Tributary Name	Width (ft)	Depth (ft)	Side Slopes
Ephemeral Trib D-MVS-2008-206	5	3	3:1

Primary tributary substrate composition:

Tributary Name	Silt	Sands	Concrete	Cobble	Gravel	Muck	Bedrock	Vegetation	Other
Ephemeral Trib D-MVS-2008-206	X	-	-	-	X	-	-	-	-

Tributary (conditions, stability, presence, geometry, gradient):

Tributary Name	Condition\Stability	Run\Riffle\Pool Complexes	Geometry	Gradient (%)
Ephemeral Trib D-MVS-2008-206	The tributary begins on the property and develops an OHW as it picks up more hydrological influences such as other converging drainage areas. The banks are moderatley eroding with some fairly steep banks with tree roots exposed.	None.	Meandering	2

(c) Flow:

Tributary Name	Provides for	Events Per Year	Flow Regime	Duration & Volume
Ephemeral Trib D-MVS-2008-206	Ephemeral flow	11-20	During the site visit, the flow was steadily increasing as it had been raining all day and the previous day as well. Upstream, the channel did not exhibit an OHW, but had water flowing due to the above normal rain fall for the season. A grade drop was observed, with additional drainage conveying into the channel. This area was used as the start of jurisdiction. Here a clear OHW was observed with matted down vegetation, wrack lines and evidence of a bed and bank.	-

Surface Flow is:

Tributary Name	Surface Flow	Characteristics
Ephemeral Trib D-MVS-2008-206	Confined	-

Subsurface Flow:

Tributary Name	Subsurface Flow	Explain Findings	Dye (or other) Test
Ephemeral Trib D-MVS-2008-206	Unknown	-	-

Tributary has:

			Discontinuous	

Tributary Name	Bed & Banks	OHWM	OHWM[7]	Explain
Ephemeral Trib D-MVS-2008-206	X	X	-	-

Tributaries with OHWM[6] - (as indicated above)

Tributary Name	OHWM	Clear	Litter	Changes in Soil	Destruction Vegetation	Shelving	Wrack Line	Matted\Absent Vegetation	Sediment Sorting	Leaf Litter	Scour	Sediment Deposition	Flow
Ephemeral Trib D-MVS-2008-206	X	X	X	X	X	-	X	X	-	X	-	X	

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction:

High Tide Line indicated by:
Not Applicable.

Mean High Water Mark indicated by:
Not Applicable.

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

Tributary Name	Explain	Identify specific pollutants, if known
Ephemeral Trib D-MVS-2008-206	Water was muddy only because a high volume of water was coming off the slope due to the recent and current rain events. The precipation for the year has been above normal.	unknown

(iv) Biological Characteristics. Channel supports:

Tributary Name	Riparian Corridor	Characteristics	Wetland Fringe	Characteristics	Habitat
Ephemeral Trib D-MVS-2008-206	X	Average of 50 feet of mature tree and shrub vegetation on both sides of the tributary. An urban area is found along a portion of the eastern border.	-	-	-

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

(i) Physical Characteristics:
(a) General Wetland Characteristics:
Properties:
Not Applicable.

(b) General Flow Relationship with Non-TNW:
Flow is:
Not Applicable.

Surface flow is:
Not Applicable.

Subsurface flow:
Not Applicable.

(c) Wetland Adjacency Determination with Non-TNW:
Not Applicable.

(d) Proximity (Relationship) to TNW:
Not Applicable.

(ii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Not Applicable.

(iii) Biological Characteristics. Wetland supports:
Not Applicable.

3. Characteristics of all wetlands adjacent to the tributary (if any):
All wetlands being considered in the cumulative analysis:
Not Applicable.

Summarize overall biological, chemical and physical functions being performed:
Not Applicable.

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.

Findings for: Ephemeral Trib D-MVS-2008-206
The unnamed, non-Relatively Permanent Flow Water (non-RPW) posesses features of an ephemeral tributary with an ordinary high water mark (OHW). It averages appoximately 4 feet at the bed width and approximately 4-5 feet for the bank height. Features observed supporting clear evidence of flow and an OHW throughout the entire channel include: sediment deposition, scour, and a clear line impressed on the bank. Based on observed characteristics and its location within the watershed, the unnamed tributary indicates first order stream hydrology. There is not any interruption of flow or hydrologic connectivity between the 175 linear foot tributary and Clear Creek. Based on observed conditions, the unnamed tributary has the capacity to carry surface flow hydrology via a confined channel to Clear Creek. The on-site segment of Clear Creek is perennial, which flows to the Meramec River. Clear Creek joins the Meramec River less less than 1 mile from the project site. It has been determined that the non-RPW maintains hydrologic connectivity to Clear Creek and the Meramec River, thereby providing a significant nexus between the non-RPW and a TNW. Hydrologic connectivity refers to the flow that transports organic matter and nutrients, energy, and aquatic organisms throughout the system (Freeman et al., 2006). The following outlines how the unnamed non-RPW maintains a significant nexus to Clear Creek and the Meramec River through its hydrologic connectivity. The non-RPWs surrounding riparian area and general conditions of its watershed consist of forested conditions, suggesting an continual source of organic input through interception of leaf litter and coarse woody debris. During the site visit, evidence of the following in-stream organic components were observed: leaves, woody debris, and leaf fragments. Organic material, such as those described, are processed by a number of fungi, bacteria, and invertebrates. Leaves and other detrital material are processed by a feeding group referred to as shredders, which can include larvae of craneflies, caddisflies, nymphs of stoneflies, and crayfish. Shredders break down coarse particulate matter, allowing the processed material to be utilized by a secondary group, commonly referred to as collectors. Collectors then process the finer materials of organic matter, eventually contributing to the dissovled organic matter content and fine particulate matter content that continually flows downstream (Smith and Smith 2001). In general, as the coarse particulate organic matter and fine particulate organic matter is transferred downstream, invertebrate populations migrate with the material. The diversity of aquatic fauna in headwater streams contributes to the biodiversity of a river (Meyer et al. 2007), and as these drifting invertebrate populations are being transported downstream, they fit into the complex foodweb of Clear Creek and the Meramec River. The unnamed non-RPW influences the chemistry of Clear Creek through its transport of sediments and nutrients and geochemical cycling. Rainfall within this area provides a frequent pulse of hydrology, thus providing a source of hydrology to local waterways. It is anticipated that the on-site tributary contributes to the chemical make up of Clear Creek, through its ability to convey sediments and nutrients during these pulses. Although specific pollutants were not observed within the channel, it is anticipated that the watercourse is the recipient of non-point source pollutants such as fertilizers, pesticides, and other pollutants that are common to an urban environment. These nutrients and chemicals can be transported downstream to Clear Creek as they are carried in suspension in stormwater. After water flows through the channel, the process of drying produces natural chemical and physical changes in the headwater stream. It has been identified that in even when headwater streams dry up, they continue to be an integral part of the overall stream conditions through their influence on river chemistry (Izbicki 2007). 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. Headwater streams are utilized not only by species unique to headwater 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 2007). The non-RPW maintains a hydrologic connection to Clear Creek through an open and defined channel. Evidence of water flow was indicated through the presence of clear indicators of an OHW. Due to the hydrologic connection, the unnamed tributary has the capacity to contribute hydrology, carry pollutants, provide habitat for aquatic life cycles, and provide organic input to downstream waters. Based on these hydrologic connections, it has been determined that the non-RPW maintains a signficiant nexus to Clear Creek and subsequently the the Meramec River. LITERATURE CITED Chapra, S.C. 1997. Surface Water-Quality Modeling. WCB McGraw-Hill, BurrRidge, Illinois Freeman, M.C., C.M. Pringle, and C. R. Jackson. 2007. Hydrologic Connectivity and the Contribution of Stream Headwaters to Ecological Integrity at Regional Scales. Journal of the American Water Resources Association 43:5-14. Izbicki, J.A. 2007. Physical and Temporal Isolation of Mountain Headwater Streams in the Western Mojave Desert, Southern California. Journal of the American Water Resources Association. 43: 26-40. Meyer, J.L., D.L. Strayer, J.B. Wallace, S.L. Eggert, G.S. Helfman, and N.E. Leonard. 2007. The Contribution of Headwater Streams to Biodiversity in River Networks. Journal of the American Water Resources Association. 43: 86-103. Smith, R.L. and T.M. Smith. 2001. Ecology and Field Biology. Benjamin Cummings, New York, pp. 644-650.

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE:

1. TNWs and Adjacent Wetlands:
Not Applicable.

2. RPWs that flow directly or indirectly into TNWs:
Not Applicable.

Provide estimates for jurisdictional waters in the review area:
Not Applicable.

3. Non-RPWs that flow directly or indirectly into TNWs:[8]

Provide estimates for jurisdictional waters in the review area:

Tributary Name	Type	Size (Linear) (m)	Size (Area) (m²)
Ephemeral Trib D-MVS-2008-206	Non-RPWs that flow directly or indirectly into TNWs	53.34	-
Total:		**53.34**	**0**

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.
Not Applicable.

Provide acreage estimates for jurisdictional wetlands in the review area:
Not Applicable.

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

Provide acreage estimates for jurisdictional wetlands in the review area:
Not Applicable.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs:
Not Applicable.

Provide estimates for jurisdictional wetlands in the review area:

Not Applicable.

7. Impoundments of jurisdictional waters:[9]
Not Applicable.

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:[10]
Not Applicable.

Identify water body and summarize rationale supporting determination:
Not Applicable.

Provide estimates for jurisdictional waters in the review area:
Not Applicable.

F. NON-JURISDICTIONAL WATERS. INCLUDING WETLANDS

☐ 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 soley 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):

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (ie., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment:
Not Applicable.

Provide acreage estimates for non-jurisdictional waters in the review area, that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction.
Not Applicable.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD
(listed items shall be included in case file and, where checked and requested, appropriately reference below):

Data Reviewed	Source Label	Source Description
--Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant	SCI Wetland Delineation and Aerial Photograph	Aerial photograph with consultants field photos labeled and tributaries labeled.
--Data sheets prepared/submitted by or on behalf of the applicant/consultant	-	-

----Office does not concur with data sheets/delineation report	SCI data sheets	Photographs and data sheets. Do not concur with isolated call of drainaeway B. Eveidence of wrack lines and pipe acting as conduit.
--U.S. Geological Survey map(s).	Pacific, MO	USGS topo map dated 1974
--National wetlands inventory map(s).	Pacific, MO	USGS topo map dated 1974
--Photographs	-	-
----Aerial	-	-
----Other	-	-

B. ADDITIONAL COMMENTS TO SUPPORT JD:
Not Applicable.

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[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).

[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.

[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.

[7]-Ibid.

[8]-See Footnote #3.

[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.