

BIG SANDY FLY ASH POND CLOSURE PROJECT

WETLAND DELINEATION AND STREAM ASSESSMENT REPORT

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May 2013



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LIST OF ACRONYMS and ABBREVIATIONS

AEP American Electric Power, Incorporated

EPA Environmental Protection Agency

FAC Facultative

FACU Facultative upland

FACW Facultative wetland

GPS Global Positioning System

NRCS Natural Resources Conservation Service

NWI National Wetlands Inventory

OBL Obligate wetland

OHWM Ordinary high water mark

ORAM Ohio Rapid Assessment Method

PEM Palustrine emergent

PHWH Primary Headwater Habitat

PSS Palustrine scrub/shrub

UPL Upland

U.S. United States

USACE United States Army Corps of Engineers

USDA United States Department of Agriculture

USFWS United States Fish and Wildlife Service

USGS United States Geological Survey



1.0 INTRODUCTION

Kentucky Power Company, a unit of American Electric Power (AEP), is proposing to permanently close the Big Sandy Fly Ash Pond located in Lawrence County, Kentucky. AEP owns and operates the 1,097 MW Big Sandy Plant on the west bank of the Big Sandy River near Louisa, Kentucky. Currently, coal combustion fly ash from the plant is disposed in the Big Sandy Fly Ash reservoir, which is impounded by the Horseford Creek Dam located approximately 0.75-mile northwest of the plant. In expectation of future Federal Regulations pertaining to wet ash impoundments, AEP is proposing the design closure of the Plant's 130 acre wet fly ash impoundment; which is referred to as the Big Sandy Fly Ash Pond Closure Project ("Project"). AEP is proposing the completion of the Project since the fly ash pond will no longer be needed for wet sluice disposal beginning in 2016. It is AEP's desire to permanently close the facility by draining and capping the Big Sandy Fly Ash Pond. The lead federal agency for the Project is the United States Army Corps of Engineers, Louisville District (USACE). An overview of the wetland delineation limits for the proposed Project is illustrated on Figure 1.

Land uses within the Project survey area were assigned a general classification based upon the principal land characteristics of the location as observed from within a given area, aerial photograph review, and field surveys. General land use types within the Project survey area include: wooded uplands (young to mature oak-mixed mesophytic forests and young maple-mixed mesophytic forests), wetlands, and fly ash pond. Wooded uplands are the most dominant land use along the Project.

2.0 METHODOLOGY

The purpose of the field survey was to assess whether wetlands and other "waters of the U.S." exist within the approximately 602 acre Project survey area. Prior to conducting field surveys, digital and published county Natural Resources Conservation Service (NRCS) soil surveys, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, and U.S. Geological Survey (USGS) 7.5-minute topographic maps were reviewed as part of the process to determine the occurrence and location of potential wetland areas.

In May, June, and October 2012, URS biologists walked the Project study area to conduct a wetland delineation and stream assessment. The study area was determined by using the approximate limit of disturbance for the pond closure excavation activities.

During field surveys, the physical boundaries of observed water features were recorded using sub-meter accurate Trimble Global Positioning System (GPS) units. The GPS data was then imported in to ArcMap GIS software where the data was then reviewed and edited for errors.





The field survey results presented herein apply to the existing and reasonably foreseeable site conditions at the time of our assessment. They cannot apply to site changes of which URS is unaware and has not had the opportunity to review. Changes in the condition of a property may occur with time due to natural processes or human impacts at the project site or on adjacent properties. Changes in applicable standards may also occur as a result of legislation or the expansion of knowledge over time. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes beyond the control of URS.

2.1 WETLAND DELINEATION

The Project survey area was evaluated according to the procedures outlined in the U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual (1987 Manual) (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0) (Regional Supplement) (USACE, 2012). The Regional Supplement was released in April 2012 by the USACE to address regional wetland characteristics and improve the accuracy and efficiency of wetland delineation procedures. The 1987 Manual and Regional Supplement define wetlands as areas that have positive evidence of three environmental parameters: hydric soils, wetland hydrology, and hydrophytic vegetation. Wetland boundaries are placed where one or more of these parameters give way to upland characteristics.

Since quantitative data were not available for any of the identified wetlands, URS utilized the routine delineation method described in the 1987 Manual and Regional Supplement that consisted of a pedestrian site reconnaissance, including identifying the vegetation communities, soils identification, a geomorphologic assessment of hydrology, and notation of disturbance. The methodology used to examine each parameter is described in the following sections. The results of the wetland delineation are presented in Section 3.1 and completed USACE forms recorded for delineated wetlands at the site are provided in Appendix A.

2.1.1 SOILS

Soils were examined using a spade shovel to extract soil samples. The soils were examined for hydric soil characteristics. A *Munsell Soil Color Chart* (Kollmorgen Corporation, 2000) was used to identify the hue, value, and chroma of the matrix and mottles of the soils. Generally, mottled soils with a matrix chroma of two or less, or unmottled soils with a matrix chroma of one or less are considered to exhibit hydric soil characteristics (Environmental Laboratory, 1987). In





sandy soils, mottled soils with a matrix chroma of three or less, or unmottled soils with a matrix chroma of two or less are considered to be hydric soils.

Seven map units from one soil series and three soil series complexes are mapped within the Project survey area (USDA, 2013). Table 1 provides a list of these soil map units along with their basic attributes.

According to the *Web Soil Survey* (USDA, 2013) and the NRCS Hydric Soils List of Kentucky, there are no soil map units within the Project survey boundary listed as containing any hydric component.

2.1.2 HYDROLOGY

The *1987 Manual* requires that an area be inundated or saturated to the surface for an absolute minimum of five percent of the growing season (areas saturated between five percent and 12.5 percent of the growing season may or may not be wetlands, while areas saturated over 12.5 percent of the growing season fulfill the hydrology requirements for wetlands). The *Regional Supplement* states that the growing season dates are determined through onsite observations of the following indicators of biological activity in a given year: (1) above-ground growth and development of vascular plants, and/or (2) soil temperature (12-in. depth) is 41 degree Fahrenheit (°F) or higher as an indicator of soil microbial activity. Therefore, the beginning of the growing season in a given year is indicated by whichever condition occurs earlier, and the end of the growing season by whichever persists later.

The *Regional Supplement* also states that if onsite data gathering is not practical, the growing season can be approximated by the number of days between the average (five years out of ten, or 50 percent probability) date of the last and first 28°F air temperature in the spring and fall, respectively. The National Weather Service WETS data obtained from the NRCS National Water and Climate Center did not identify any growing season records for Lawrence County. The nearest county to the Project area, Boyd County, was identified with data indicating that in an average year, this period lasts from April 18 to October 22, or 187 days. Based on this information it is estimated that in the Project area, five percent of the growing season equates to approximately 9 days.

The soils and ground surface were examined for evidence of wetland hydrology in lieu of detailed hydrological data. This is an acceptable approach according to the *1987 Manual* and the *Regional Supplement*. Evidence indicating wetland hydrology typically includes primary indicators such as surface water, saturation, water marks, drift deposits, water-stained leaves, sediment deposits and oxidized rhizospheres on living roots; and secondary indicators such as,





drainage patterns, geomorphic position, micro-topographic relief, and a positive Facultative (FAC)-neutral test (USACE, 2011).

Review of USGS watershed data indicates that the Project is located within the Big Sandy River watershed (USGS, 2012). Within the Big Sandy River watershed, the Project study area is also within two minor watersheds; Blaine Creek and Big Sandy River.

2.1.3 VEGETATION

Dominant vegetation was visually assessed for each stratum (tree, sapling/shrub, herb and woody vine) and an indicator status of obligate wetland (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), and/or upland (UPL) was assigned to each plant species based on the U.S. Army Corps of Engineers 2012 National Wetland Plant List: Eastern Mountains and Piedmont Region, which encompasses the area of the Project. An area is determined to have hydrophytic vegetation when, under normal circumstances, 50 percent or more of the composition of the dominant species are OBL, FACW and/or FAC species. Vegetation of an area was determined to be non-hydrophytic when more than 50 percent of the composition of the dominant species was FACU and/or UPL species. In addition to the dominance test, the FAC-Neutral test and prevalence tests are used to determine if a wetland has a predominance of hydrophytic vegetation. Recent USACE guidance indicates that to the extent possible, the hydrophytic vegetation decision should be based on the plant community that is normally present during the wet portion of the growing season in a normal rainfall year (USACE, 2012). Table 2 lists the vegetation that was identified in delineated wetlands during field surveys.

2.1.4 WETLAND CLASSIFICATIONS

Wetlands were classified based on the naming convention found in *Classification of Wetlands* and *Deepwater Habitats of the United States* (Cowardin *et al*, 1979). All identified wetlands within the survey area were classified as freshwater, Palustrine systems, which include all nontidal wetlands dominated by trees, shrubs, emergents, mosses or lichens. Three Palustrine wetland classes were identified within the Project survey area. The three classes are as follows:

- *PEM* Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants.
- *PSS* Scrub/shrub wetlands are characterized by woody vegetation that is less than 3 inches diameter at breast height (DBH), and greater than 3.28 feet tall. The woody





angiosperms (i.e. small trees or shrubs) in this broad leaved deciduous community have relatively wide, flat leaves that are shed annually during the cold or dry season.

• **PFO** – Forested wetlands are characterized by woody vegetation that is 3 inches or more DBH, regardless of height. The woody angiosperms (i.e. trees or shrubs) in this broad leaved deciduous community have relatively wide, flat leaves that are shed annually during the cold or dry season.

2.1.5 OHIO RAPID ASSESSMENT METHOD V. 5.0

Since Kentucky does not have a functional assessment protocol for evaluating wetlands, the USACE Louisville district requested that URS ecologists follow the Ohio Environmental Protection Agency (Ohio EPA) Ohio Rapid Assessment Method for Wetlands v. 5.0 (ORAM). The ORAM method was developed to determine the relative ecological quality and level of disturbance of a particular wetland in order to meet requirements under Section 401 of the Clean Water Act. Wetlands are scored on the basis of hydrology, upland buffer, habitat alteration, special wetland communities, and vegetation communities. Each of these subject areas is further divided into subcategories under ORAM v. 5.0 resulting in a score that describes the wetland using a range from 0 (low quality and high disturbance) to 100 (high quality and low disturbance). Wetlands scored from 0 to 29.9 are grouped into "Category 1", 30 to 59.9 are "Category 2" and 60 to 100 are "Category 3". Transitional zones exist between "Categories 1 and 2" from 30 to 34.9 and between "Categories 2 and 3" from 60 to 64.9. However, according to the Ohio EPA, if the wetland score falls into the transitional range, it must be given the higher Category unless scientific data can prove it should be in a lower Category (Mack, 2001). The ORAM scores for the wetlands that were delineated are discussed in Section 3.1.4 of this report.

Category 1 Wetlands

Category 1 wetlands support minimal wildlife habitat, hydrological and recreational functions, and typically do not provide for or contain critical habitats for threatened or endangered species. In addition, Category 1 wetlands are often hydrologically isolated and have some or all of the following characteristics: low species diversity, no significant habitat or wildlife use, limited potential to achieve wetland functions, and/or a predominance of non-native species. These limited quality wetlands are considered to be a resource that has been severely degraded or has a limited potential for restoration, or is of low ecological functionality.

Category 2 Wetlands

Category 2 wetlands "...support moderate wildlife habitat, or hydrological or recreational functions," and as wetlands which are "...dominated by native species but generally without the





presence of, or habitat for, rare, threatened or endangered species; and wetlands which are degraded but have a reasonable potential for reestablishing lost wetland functions." Category 2 wetlands constitute the broad middle category of "good" quality wetlands, and can be considered a functioning, diverse, healthy water resource that has ecological integrity and human value. Some Category 2 wetlands are lacking in human disturbance and considered to be naturally of moderate quality; others may have been Category 3 wetlands in the past, but have been degraded to Category 2 status.

Category 3 Wetlands

Wetlands that are assigned to Category 3 have "....superior habitat, or superior hydrological or recreational functions." They are typified by high levels of diversity, a high proportion of native species, and/or high functional values. Category 3 wetlands include wetlands which contain or provide habitat for threatened or endangered species, are high quality mature forested wetlands, vernal pools, bogs, fens, or which are scarce regionally and/or statewide. It is important to stress that a wetland may be a Category 3 wetland because it exhibits one or all of the above characteristics. For example, a forested wetland located in the flood plain of a river may exhibit "superior" hydrologic functions (e.g. flood retention, nutrient removal), but not contain mature trees or high levels of plant species diversity.

2.2 STREAM ASSESSMENTS

Streams were identified by the presence of a defined bed and bank, and evidence of an ordinary high water mark (OHWM). As defined in Title 33 Code of Federal Regulations (CFR) 328.3(e), the term OHWM means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area (33 CFR 328.3e, 1993). Although not exhaustive, USACE Regulatory Guidance Letter No. 05-05 (RGL05-05) identifies 15 characteristics of a OHWM such as natural line impressed on the bank, shelving, changes in the soil character, scour and several other indicators (USACE, 2005). RGL05-05 recommends that two or more characteristics be used to make the OHWM determination unless there is particularly strong evidence for one.

Stream assessments were conducted using the methods described in the USACE's Operational Draft Regional Guidebook for the Functional Assessment Of High-Gradient Ephemeral And Intermittent Headwater Streams In Western West Virginia And Eastern Kentucky (USACE, 2010) and the U.S. EPA's Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish, Second Edition (Barbour et al. 1999).





2.2.1 USACE FUNCTIONAL ASSESSMENT OF HIGH-GRADIENT EPHEMERAL AND INTERMITTENT HEADWATER STREAMS IN WESTERN WEST VIRGINIA AND EASTERN KENTUCKY

Headwater streams are typically considered to be first-order and second-order streams, meaning streams that have no upstream tributaries (or "branches") and those that have only first-order tributaries, respectively. The stream order concept can be problematic when used to define headwater streams because stream-order designations vary depending upon the accuracy and resolution of the stream delineation. Headwater streams are generally not shown on USGS 7.5-minute topographic quadrangles and are sometimes difficult to distinguish on aerial photographs. Nevertheless, headwater streams are now recognized as useful monitoring units due to their abundance, widespread spatial scale and landscape position (Fritz, et al. 2006). Impacts to headwater streams can have a cascading effect on the downstream water quality and habitat value.

The headwater streams located within the Project area were evaluated using the USACE's Operational Draft Regional Guidebook for the Functional Assessment Of High-Gradient Ephemeral And Intermittent Headwater Streams In Western West Virginia And Eastern Kentucky (USACE, 2012). This Regional Guidebook indicates the objective of this method is to meet the needs of federal and state agencies for a procedure to assess potential impact and mitigation reaches of streams in eastern Kentucky and western West Virginia.

This assessment method relies on 11 variables to assess the functions of headwater streams within eastern Kentucky and western West Virginia that include channel canopy cover, channel substrate embeddedness, channel substrate size, potential channel bank erosion, large woody debris, riparian/buffer zone tree diameter, riparian/buffer zone snag density, riparian/buffer zone sapling/shrub density, riparian/buffer zone species richness, riparian/buffer zone soil detritus, riparian/buffer zone herbaceous cover, and watershed land-use.

The objective of the stream analysis is to create baseline conditions of the function of the streams within an area and to be able to compare the difference between pre-project and post-project conditions. This functional difference represents the potential loss or gain of functional capacity of the streams as a result of the Project.

Completed USACE high-gradient ephemeral and intermittent headwater stream forms are provided in Appendix C. Results of the high-gradient ephemeral and intermittent headwater stream assessments are discussed in Section 3.2.1 of this report.





2.2.2 U.S. EPA RAPID BIOASSESSMENT PROTOCOLS FOR USE IN STREAMS AND WADEABLE RIVERS

Streams within the Project survey corridor that were identified as perennial, containing substrate dominated by 50 percent or greater bedrock within the stream reach, containing major hydrologic inputs from groundwater, or an estimated gradual slope of four percent or less were not evaluated using the USACE's Functional Assessment of High-Gradient Ephemeral and Intermittent streams since the methodology was not intended for assessment of these types of streams. The stream assessment for these streams was conducted using the methods described in the U.S. EPA's *Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish, Second Edition* (Barbour et al. 1999). The protocols include a method for habitat assessment that is calibrated to the stream's biological condition, which is abbreviated as the "HABSCORE". The HABSCORE is an independent, non-invasive, repeatable procedure for statistically defensible biological surveys. It provides a method to assess the quality of instream and riparian habitat. The assessed stream locations within the Project survey area are included on Figures 3A and 3K.

HABSCORE relies on visual observations of 10 parameters including substrate type, embeddedness, sediment deposition, water velocity, flow status, channel alteration, general morphology, bank stability, riparian zone vegetation quantity and width to provide an overall assessment of the sampling site. The 200-point system is broken down into four categories: Optimal (160-200), Sub-Optimal (110-159), Marginal (60-109), and Poor (<60). The form includes nonparametric factors for basic water quality measurements, dominant plant species, land uses, non-point sources of pollution, woody debris, sediment odors, presence of oils and black deposits, among others. The protocols also distinguish between high-gradient and low-gradient streams with different forms for each. Results of the rapid bioassessment are discussed in Section 3.2.2 of this report

3.0 RESULTS

Within the 602 acre Project study area, URS delineated 17 wetlands, 154 streams, and one pond. The delineated wetlands and other water features are discussed in detail in the following sections.

3.1 WETLAND DELINEATION

The locations, approximate extents, and acreages of the wetlands delineated within the Project survey area are shown on Figures 3A and 3K. Completed USACE wetland delineation forms are provided in Appendix A. Color photographs were taken of each delineated wetland during the field survey and are provided in Appendix E1.





3.1.1 Preliminary Soils Evaluation

According to the USDA/NRCS Web Soil Survey of Lawrence County, Kentucky (USDA 2013) and the NRCS Hydric Soils List of Kentucky, one soil series and three soil series complexes are mapped within the Project survey area. No soil series within the Project survey area was identified with any hydric soil map units (NRCS, 2012). Soils in each wetland were observed and documented as part of the delineation methodology. Soil series located within the Project survey area are shown on Figures 2. Table 1 provides a detailed overview of all soil series within the Project survey area.

3.1.2 National Wetland Inventory Map Review

National Wetland Inventory (NWI) wetlands are areas of potential wetland that have been identified from USFWS aerial photograph interpretation which have typically not been field verified. Forested and heavy scrub/shrub wetlands are often not shown on NWI maps as foliage effectively hides the visual signature that indicates the presence of standing water and moist soils from an aerial view. The USFWS website states that the NWI maps are not intended or designed for jurisdictional wetland identification or location. As a result, NWI maps do not show all the wetlands found in a particular area nor do they necessarily provide accurate wetland boundaries. NWI maps are useful for providing indications of potential wetland areas, which are often supported by soil mapping and hydrologic predictions, based upon topographical analysis using USGS topographic maps.

According to the NWI maps of the Fallsburg and Prichard, Kentucky quadrangles, the Project survey area contains three mapped NWI wetlands: one Palustrine Emergent Persistent Semi-permanently Flooded Diked/Impounded wetland (PEM1Fh), one Lacustrine Limnetic Unconsolidated Bottom Permanently Flooded Diked/Impounded (L1UBHh) feature, and one Palustrine Unconsolidated Bottom Permanently Flooded Diked/Impounded (PUBHh) wetland (USFWS, 2012). Summary information on NWI mapped wetlands is presented in Table 3 and shown on Figure 2.

3.1.3 Delineated Wetlands

The delineation identified a total of 17 wetlands, totaling 1.64 acres, within the Project survey area as shown in Table 4. The 17 wetlands are of three different wetland habitat types: 11 PEM wetlands, five PEM/PSS wetlands, and one PFO wetland. See Table 3.1.3 for a summary of the delineated wetlands.

The locations, approximate extents, and acreages of the wetlands identified within the survey areas are shown on Figures 3A and 3K. Completed USACE wetland delineation forms are





provided in Appendix A. Color photographs were taken of each delineated wetland during the field survey and are provided in Appendix E1.

TABLE 3.1.3 SUMMARY OF DELINEATED WETLANDS WITHIN THE BIG SANDY POND CLOSURE PROJECT SURVEY AREA

| Cowardin Wetland Type ^a | ORAM Category 1 | ORAM Category 2 | ORAM Category 3 | Number of Wetlands | Acreage within Survey Corridor |
|---------------------------------------|--------------------|--------------------|--------------------|-----------------------|-----------------------------------|
| PEM | 11 | 0 | 0 | 11 | 0.65 |
| PEM/PSS | 2 | 3 | 0 | 5 | 0.44 |
| PFO | 0 | 1 | 0 | 1 | 0.55 |
| Total | 13 | 4 | 0 | 17 | 1.64 |

Cowardin Wetland Type^a: PEM = palustrine emergent, PSS = palustrine scrub/shrub, PFO = palustrine forested

3.1.4 Delineated Wetlands ORAM V5.0 Results

Within the Project survey area, 13 of the 17 wetlands are Category 1 wetlands, while the remaining four wetlands are Category 2 wetlands. No Category 3 wetlands were identified within the Project survey area. Wetland 15 had the lowest ORAM score, 21.5, while Wetland 14 had the highest score, 47. Completed ORAM forms for the wetlands are provided in Appendix B.

Category 1 Wetlands

Thirteen Category 1 wetlands, totaling 0.75 acre, were delineated within the Project survey area. The Category 1 wetlands were identified as 11 PEM wetlands (0.65 acre) and two PEM/PSS wetlands (0.12 acre). The highest Category 1 ORAM score was 29 (Wetland 13), and the lowest ORAM score was 21.5 (Wetland 15). These wetlands typically exhibited narrow upland buffers and intensive use of adjacent upland areas (fly ash pond), exhibited limited plant community development with a moderate to high percentage of invasive species, and characteristically had habitat and hydrology in the early stages of recovering from previous manipulation because of farming or other disturbances.

Category 2 Wetlands

Four Category 2 wetlands, totaling 0.87 acre, were delineated within the Project survey area. The four Category 2 wetlands were identified as three PEM/PSS wetlands (0.32 acre) and one





PFO wetland (0.55 acre). The highest scoring Category 2 wetland was 47 (Wetland 14), and the lowest was 32.5 (Wetland 16). The Category 2 wetlands generally exhibited fair to moderate plant communities with few invasive species, low to moderate plant community interspersion, low to high intensity surrounding land use (e.g. young second growth woodlots, shrub-land, etc.), and recovering and/or recovered natural hydrology and habitat.

Category 3 Wetlands

No Category 3 wetlands were delineated within the Project survey area.

3.2 DELINEATED STREAMS

URS identified 154 streams, totaling 42,420 linear feet, within the Project survey area as listed in Table 5. The locations of streams identified within the survey area are shown on Figures 3A through 3K. See Table 3.2 for a summary of the delineated streams.

The 154 streams assessed are composed of 136 ephemeral streams, 15 intermittent streams, and three perennial streams. Eleven streams were assessed using the U.S. EPA's RBA methodology, while the remaining 143 were assessed using the USACE HGM methodology (high gradient ephemeral and intermittent streams).

Review of USGS watershed data indicates that the Project is located within the Big Sandy River watershed (USGS, 2012). Within the Big Sandy River watershed, the Project study area is also within two minor watersheds; Blaine Creek and Big Sandy River.

Most assessed streams within the survey area appear to be tributaries that flow into or combine with other streams (waters of the U.S) and connect to Blaine Creek below the fly ash pond. A small area located at the southwest corner of the survey area contains tributaries that flow directly into the Big Sandy River.

TABLE 3.2 SUMMARY OF DELINEATED STREAMS WITHIN THE BIG SANDY POND CLOSURE PROJECT SURVEY AREA

| Flow Type | RBA Assessed Streams | High Gradient Stream Assessed Streams | Number of Streams | Linear Feet within Survey Area |
|--------------|-------------------------|---|----------------------|-----------------------------------|
| Ephemeral | 1 | 135 | 136 | 25,696 |
| Intermittent | 7 | 8 | 15 | 12,406 |
| Perennial | 3 | 0 | 3 | 4,318 |
| Total | 11 | 143 | 154 | 42,420 |





3.2.1 Functional Assessment Of High-Gradient Ephemeral And Intermittent Headwater Streams In Western West Virginia And Eastern Kentucky

Within the Project survey area, 143 streams were evaluated using the Functional Assessment of High-Gradient Ephemeral and Intermittent Headwater Streams in western West Virginia and eastern Kentucky method. The overall landscape and habitat functions of various streams within the Project survey area were observed having comparable resemblance in various areas of the property. Based on the landscape and habitat evaluation conducted by URS during the field survey, it was determined that seven separate stream habitat areas (SHA) exist within the Project survey area. The stream habitat area groupings were developed based on observed differences in habitat including topography, geology, slope, streamflow, and biological characteristics.

Stream Habitat Area 1: There are 20 streams within SHA 1. The canopy of SHA 1 is completely closed to partially open from the mature trees that surround the streams. There is also very little understory growth and very little to no herbaceous growth. Most of the substrate was comprised of sand, silt, some gravel and occasionally large rock particles. Most streams assessed in this location were on gentle slopes near the confluence with the main channel.

Stream Habitat Area 2: There are 10 streams within SHA 2. Most streams assessed in this location were on steep slopes that originate near the top of the ridge and extend downstream to where the hillside has been cut out for the perimeter road around the fly ash pond. The canopy of SHA 2 is completely closed near the top of the hill; however, there is less canopy cover at the downhill extents due to the fly ash pond. There is also little to moderate understory growth and very little herbaceous growth. Most of the substrate was comprised of sand, silt, some gravel and occasionally large rock particles. The streams do not directly connect to the fly ash pond.

Stream Habitat Area 3: There are 12 streams within SHA 3. Most streams assessed in this location were on steep slopes that appear to have been modified through tree removal, cut/fill material and landslides. The canopy of SHA 3 is completely open near the top of the streams, however, there is more canopy cover within the downhill extents due to the lack of clearing. There is moderate to heavy understory growth and moderate to heavy herbaceous growth. Most of the substrate was comprised of sand, silt, and some gravel.

Stream Habitat Area 4: There are 25 streams within SHA 4. The canopy of SHA 4 is completely closed to partially open from the mature trees that surround the streams. There is also very little understory growth and very little to no herbaceous growth. Most of the substrate was comprised of sand, silt, some gravel and occasionally large rock particles. Most streams assessed in this location of the property originate near the ridge tops and extend down to the fly ash pond.





Stream Habitat Area 5: There are 29 streams within SHA 5. The canopy of SHA 5 is completely closed to partially open from the mature trees and understory that surround the streams. There is moderate to thick understory growth from what appears to be previous logging or other disturbances, and little herbaceous growth. Most of the substrate was comprised of sand, silt, some gravel and occasionally large rock particles. Most streams assessed in this location of the property originate near the ridge tops and extend down to intermittent streams, perennial streams, or the fly ash pond.

Stream Habitat Area 6: There are 23 streams within SHA 6. Most streams assessed in this location were on steep slopes that originate near the top of the ridges and extend downstream to where the hillsides have been cut out for the perimeter road around the fly ash pond. The canopy of SHA 6 is completely closed near the top of the hillsides, however, there is less canopy cover at the downhill extents due to the fly ash pond. This part of the property appears to have undergone some selective logging within the past 20-40 years and has created moderate to thick understory growth. Most of the substrate was comprised of sand, silt, some gravel and occasionally large rock particles. Most of the streams do not directly connect to the fly ash pond.

Stream Habitat Area 7: There are 24 streams within SHA 7. Most streams assessed in this location were on steep slopes that originate near the top of benches or ridges and extend downstream to a perennial stream. The canopy of SHA 7 is completely closed due to the mature forest. There is little to no understory growth. Most of the substrate was comprised of sand, silt, some gravel and occasionally large rock particles. Near the confluence with the main channel, most streams had some larger substrate.

A form representing each of the stream habitat areas assessed using the Functional Assessment of High-Gradient Ephemeral and Intermittent Headwater Stream method is provided in Appendix C. Color photographs were taken of a representative sample of the streams during the field survey and are provided in Appendix E2.

3.2.2 Rapid Bioassessment Protocols For Use In Streams And Wadeable Rivers

Eleven streams were assessed using the U.S. EPA's Rapid Bioassessment method within the approximately 602-acre Project survey area. Field surveys within the Project survey area indicated these 11 streams, totaling 13,171 linear feet, were classified as one Optimal stream, four Sub-Optimal streams, and six Marginal streams. The designations for each of these stream types are described below.

A Rapid Bioassessment form for each stream is provided in Appendix D. Color photographs were taken of each stream during the field survey and are provided in Appendix E2.





Poor Streams – No Poor streams were identified within the survey area.

Marginal Streams – Six Marginal streams, totaling 5,580 linear feet, were identified during the field investigations and have scores that range between 62 (Stream 32) and 103 (Stream 4). The Marginal streams located within the Project survey area consisted of one ephemeral stream, four intermittent streams, and one perennial stream. The substrates of these streams were generally dominated by gravel and silt, with lesser amounts of cobble and boulder. The streams showed evidence of moderate epifaunal substrate, low pool variability, channel alteration, and a small riparian vegetative zone.

Sub-Optimal Streams – Four Sub-Optimal streams, totaling 6,210 linear feet, were identified during the field investigations and have scores that range between 112 (Stream 18) and 144 (Stream 15). The Sub-Optimal streams consisted of three intermittent streams and one perennial stream. The substrates of these streams were generally dominated by cobble, gravel, and boulder, with lesser amounts of sand, silt, and clay. The streams showed evidence of good epifaunal substrate, good pool variability, minimal channel alteration, good amount of riffles, and a riparian vegetative zone.

Optimal Streams – One Optimal stream totaling 1,381 linear feet was identified during the field investigations. Stream 68 is a perennial stream that received a score of 167. The substrate of the stream was generally dominated by boulder, cobble, gravel, with lesser amounts of bedrock and sand. The stream showed evidence of good epifaunal substrate, good pool variability, no channel alteration, good amount of riffles, and a riparian vegetative zone.

3.3 DELINEATED PONDS

One pond totaling 0.24 acre was identified within the Project survey area (Table 6). The pond appears to be man-made and used for stormwater control. The location of the pond identified within the Project survey area is shown on Figure 3I. A representative color photograph was taken of the pond during the field survey and is provided in Appendix E3.

4.0 SUMMARY

The delineation of the approximately 602 acre Project survey area identified a total of 17 wetlands, totaling 1.64 acres. The 17 wetlands are of three different wetland habitat types: 11 PEM wetlands, five PEM/PSS wetlands, and one PFO wetland. Of these wetlands, 13 wetlands are Category 1 wetlands and four wetlands are Category 2 wetlands. No Category 3 wetlands were identified within the Project survey boundary.





Field surveys identified 154 streams within the Project survey area totaling approximately 42,420 linear feet. The 154 streams were composed of 136 ephemeral streams, 15 intermittent streams, and three perennial streams. Eleven streams were assessed using the U.S. EPA's RBA methodology, while the remaining 143 were assessed using the USACE's Functional Assessment of High-Gradient Ephemeral and Intermittent Headwater Streams.

One pond totaling 0.24 acre was identified within the Project survey area and appears to be manmade for stormwater control use.





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SOIL MAP UNITS AND DESCRIPTIONS FOR THE BIG SANDY FLY ASH POND CLOSURE PROJECT SURVEY AREA TABLE 1

| Soil Series Symbol | Symbol | Map Unit Description | Percent of Survey Area by Series | Topographic Setting | Hydric | Hydric Component (%) |
|----------------------|----------------|---|-------------------------------------|---------------------|------------|-------------------------|
| Dumps | Dm | Dumps, mine; tailings; and tipples | 26 | Flyash pond | Not hydric | N/A |
| Grigsby | JÐ | Grigsby fine sandy loam, frequently flooded | 1 | Floodplain | Not hydric | N/A |
| Shelocta | ShF | Shelocta-Hazleton-Fedscreek complex, 30 to 60 percent slopes, stony | 7 | Hillslopes | Not hydric | N/A |
| ****40 et 1 | Ω_{pD} | Upshur-Rarden complex, 12 to 25 percent slopes | 3 | Hillslopes | Not hydric | N/A |
| Opsilui | UpF | Upshur-Rarden complex, 25 to 60 percent slopes, rocky | 25 | Hillslopes | Not hydric | N/A |
| α_1^* | VaF | Vandalia-Beech complex, 20 to 60 percent slopes, stony | 36 | Hillslopes | Not hydric | N/A |
| v anuana | VaF2 | Vandalia-Beech complex, 20 to 60 percent slopes, stony, eroded | 2 | Hillslopes | Not hydric | N/A |
| | | | | | | |

NOTES:

(1) Data sources include:

USDA, NRCS. 2013 Soil Survey Geographic (SSURGO) Database. Avialable online at: http://soildatamart.nrcs.usda.gov/

USDA, NRCS. April 2012. National Hydric Soils List by State. Available online at: http://soils.usda.gov/use/hydric/lists/state.html



Big Sandy Fly Ash Pond Closure Project



 ${\bf TABLE~2}$ VEGETATION IDENTIFIED WITHIN THE BIG SANDY FLY ASH POND CLOSURE PROJECT DELINEATED WETLANDS

| Common Name | Scientific Name | Stratum ^a | Eastern Mountains and Piedmont Supplement Indicator Status ^b |
|----------------------------|----------------------------|----------------------|--|
| Allegheny Blackberry | Rubus allegheniensis | S | FACU |
| American Elm | Ulmus americana | T | FACW |
| American Sycamore | Platanus occidentalis | S & T | FACW |
| Beggarticks sp. | Bidens spp. | Н | FAC |
| Black Willow | Salix nigra | S & T | OBL |
| Broad-Leaf Cat-Tail | Typha latifolia | Н | OBL |
| Canadian Goldenrod | Solidago canadensis | Н | FACU |
| Common Boneset | Eupatorium perfoliatum | S | FACW |
| Common Fox Sedge | Carex vulpinoidea | Н | OBL |
| Cottongrass Bulrush | Scirpus cyperinus | Н | FACW |
| Creeping-Jenny | Lysimachia nummularia | Н | FACW |
| Curly Dock | Rumex crispus | Н | FAC |
| Dark-Green Bulrush | Scirpus atrovirens | Н | OBL |
| Deer-Tongue Rosette Grass | Dichanthelium clandestinum | Н | FAC |
| Green Ash | Fraxinus pennsylvanica | S & T | FACW |
| False Nettle | Boehmeria cylindrica | Н | FACW |
| Hop Sedge | Carex lupulina | Н | OBL |
| Japanese Stilt Grass | Microstegium vimineum | S | FAC |
| Knotty-Leaf Rush | Juncus acuminatus | Н | OBL |
| Lamp Rush | Juncus effusus | Н | FACW |
| Lesser Poverty Rush | Juncus tenuis | Н | FAC |
| Little False Bluestem | Schizachyrium scoparium | Н | FACU |
| Narrow-Leaf Cat-Tail | Typha angustifolia | Н | OBL |
| Needle Spike-Rush | Eleocharis acicularis | Н | OBL |
| Pennsylvania Smartweed | Polygonum pensylvanicum | Н | FACW |
| Pointed Broom Sedge | Carex scoparia | Н | FACW |
| Poison Ivy | Toxicodendron radicans | Н | FAC |
| Purple-Stem American-Aster | Symphyotrichum puniceum | Н | OBL |
| Red-Root Flat Sedge | Cyperus erythrorhizos | Н | FACW |
| River Birch | Betula nigra | T | FACW |
| Sallow Sedge | Carex lurida | Н | OBL |
| Seedbox | Ludwigia alternifolia | Н | FACW |
| Sensitive Fern | Onoclea sensibilis | Н | FACW |
| Silver Maple | Acer saccharinum | Т | FACW |
| Single-Vein Sweetflag | Acorus calamus | Н | OBL |
| Small-Spike False Nettle | Boehmeria cylindrica | Н | FACW |
| Sphagnum Moss | Sphagnum spp. | Н | NI |
| Spotted Touch-Me-Not | Impatiens capensis | Н | FACW |





TABLE 2 VEGETATION IDENTIFIED WITHIN THE BIG SANDY FLY ASH POND CLOSURE PROJECT DELINEATED WETLANDS

| Common Name | Scientific Name | Stratum ^a | Eastern Mountains and Piedmont Supplement Indicator Status ^b |
|----------------------------|----------------------|----------------------|--|
| Spotted Trumpetweed | Eutrochium maculatum | Н | FACW |
| Squarrose Sedge | Carex squarrosa | Н | FACW |
| Swamp Rose | Rosa palustris | S | OBL |
| Sweet-Scented Joe-Pye-Weed | Eutrochium purpureum | Н | FAC |
| White Grass | Leersia virginica | Н | FACW |
| White Turtlehead | Chelone glabra | Н | OBL |
| Yellow Bristle Grass | Setaria pumila | Н | FAC |

 $^{^{}a}$ H = herb, S = shrub or sapling, T = tree, V = vine

b Wetland Indicator Status
OBL - Obligate Wetland - Occurs almost always (99% probability) in wetlands

FACW - Facultative Wetlands - Usually occurs in wetlands (67 - 99% probability)

FAC - Facultative Wetlands - Osuary occurs in wetlands (07 - 99% probability)
FACU - Facultative - Equally likely to occur in wetlands or non-wetlands (34 - 66% probability)
FACU - Facultative Upland - Usually occurs in non-wetlands (67 - 99% probability)
UPL - Obligate Upland - Occurs almost always in non-wetlands (99% probability)

NI - No Indicator - There is insufficient information on habitat preference





TABLE 3

NWI WETLANDS WITHIN THE BIG SANDY FLY ASH POND CLOSURE PROJECT SURVEY AREA

| Wetland Type | NWI Code | NWI Habitat Type ¹ | Total Number of Each Habitat Type | NWI Quadrangle |
|-----------------------------------|------------|--|--------------------------------------|----------------|
| Freshwater Emergent Wetland | PEM1Fh | Palustrine Emergent Persistent Semipermanently Flooded Diked/Impounded | 1 | Fallsburg |
| Lake | LIUBHh | Lacustrine Limnetic Unconsolidated Bottom Permanently Flooded Diked/Impounded | 1 | Fallsburg |
| Freshwater Pond | PUBHh | Palustrine Unconsolidated Bottom Permanently Flooded Diked/Impounded | 1 | Fallsburg |
| Total Number of NIXI Wetlands - 3 | W Wotlands | - 3 | | |

Total Number of PEM = 1, PFO = 0, PSS = 0, PUB = 1, R = 0, L = 1

NWI Habitat Type 1: USFWS National Wetlands Inventory Classification De-coder: http://137.227.242.85/Data/interpreters/wetlands.aspx



Big Sandy Fly Ash Pond Closure Project



DELINEATED WETLANDS WITHIN THE BIG SANDY FLY ASH POND CLOSURE PROJECT SURVEY AREA TABLE 4

| | | | | WITHIN THE DIG SAINE LEI ASHI ONE CEOSONE I NOTE SON LEI ANNE | NOS TOSECTIONS | |
|--------------|----------------------------|----------------|---------------------------------------|---|----------------|-----------------------------------|
| Wetland Name | Latitude | Longitude | Cowardin Wetland Type ^a | ORAM Score | ORAM Category | Acreage within Survey Corridor |
| Wetland 01 | 38.185144 | -82.65042 | PEM/PSS | 23 | 1 | 0.06 |
| Wetland 02 | 38.184948 | -82.650542 | PEM | 23 | 1 | 0.03 |
| Wetland 03 | 38.184148 | -82.64005 | PEM | 22 | 1 | 0.08 |
| Wetland 04 | 38.184414 | -82.640347 | PEM | 23 | 1 | 0.14 |
| Wetland 05 | 38.18358 | -82.639877 | PEM | 24 | 1 | 0.11 |
| Wetland 06 | 38.185745 | -82.637086 | PEM/PSS | 40 | 2 | 0.03 |
| Wetland 07 | 38.182916 | -82.638806 | PEM | 28.5 | 1 | 0.07 |
| Wetland 08 | 38.18342 | -82.638723 | PEM | 27.5 | 1 | 0.04 |
| Wetland 09 | 38.185936 | -82.635573 | PEM/PSS | 24 | 1 | 0.06 |
| Wetland 10 | 38.187993 | -82.633528 | PEM | 23 | 1 | 0.02 |
| Wetland 11 | 38.187827 | -82.632687 | PEM | 23 | 1 | 0.05 |
| Wetland 12 | 38.188183 | -82.631769 | PEM | 22 | 1 | 0.02 |
| Wetland 13 | 38.187824 | -82.631001 | PEM | 29 | 1 | 0.03 |
| Wetland 14 | 38.179076 | -82.625342 | PEM/PSS | 47 | 2 | 0.21 |
| Wetland 15 | 38.179389 | -82.625917 | PEM | 21.5 | 1 | 0.06 |
| Wetland 16 | 38.179511 | -82.624825 | PEM/PSS | 32.5 | 2 | 0.08 |
| Wetland 17 | 38.185963 | -82.625944 | PFO | 46 | 2 | 0.55 |
| Total: 17 | PEM: 11, PEM/PSS: 5, PFO:1 | /PSS: 5, PFO:1 | | | | 1.64 |

Cowardin Wetland Typea: PEM = palustrine emergent, PSS = palustrine scrub/shrub, PFO = palustrine forested



Big Sandy Fly Ash Pond Closure Project



TABLE 5
DELINEATED STREAMS WITHIN THE BIG SANDY PLANT POND CLOSURE PROJECT SURVEY AREA

| Report Name | Latitude | Longitude | Waterbody | Flow Regime | Form Used ^a | Score | Stream Quality or Habitat Area | Linear Feet within Survey Area |
|----------------|-----------|------------|---------------------------|----------------|---------------------------|-------|-----------------------------------|-----------------------------------|
| Stream 01 | 38.18278 | -82.642085 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 402 |
| Stream 01a | 38.18292 | -82.642209 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 9/1 |
| Stream 02 | 38.182358 | -82.641507 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 411 |
| Stream 02a | 38.182345 | -82.641158 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 157 |
| Stream 03 | 38.182731 | -82.642327 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 313 |
| Stream 04 | 38.179875 | -82.625015 | Tributary to Blaine Creek | Intermittent | RBA | 103 | Marginal | 3,343 |
| Stream 05 | 38.179566 | -82.625246 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 70 |
| Stream 06 | 38.180497 | -82.640554 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 170 |
| Stream 07 | 38.18074 | -82.64076 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 278 |
| Stream 08 | 38.182257 | -82.642054 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 101 |
| Stream 09 | 38.182792 | -82.64174 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 479 |
| Stream 09a | 38.182594 | -82.641687 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 611 |
| Stream 09b | 38.182694 | -82.64161 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 194 |
| Stream 10 | 38.183665 | -82.644132 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 56 |
| Stream 11 | 38.184825 | -82.643639 | Tributary to fly ash pond | Intermittent | HGS | NA | Area 4 | 491 |
| Stream 11a | 38.18441 | -82.643544 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 111 |
| Stream 11b | 38.184944 | -82.643781 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 104 |
| Stream 11c | 38.184638 | -82.64308 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 381 |
| Stream 11d | 38.184545 | -82.64252 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 129 |
| Stream 11e | 38.184364 | -82.644005 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 62 |
| Stream 12 | 38.184279 | -82.644254 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 95 |
| Stream 13 | 38.185593 | -82.648905 | Tributary to fly ash pond | Intermittent | RBA | 96 | Marginal | 816 |
| Stream 13a | 38.185804 | -82.648927 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 5 | 95 |
| Stream 13b | 38.186405 | -82.648953 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 5 | 908 |
| Stream 13c | 38.186111 | -82.649453 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 5 | 185 |
| Stream 14 | 38.177507 | -82.639347 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 6 | 183 |
| Stream 15 | 38.17573 | -82.642819 | Tributary to fly ash pond | Intermittent | RBA | 144 | Sub-Optimal | 568 |
| Stream 15a | 38.176481 | -82.642261 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 6 | 47 |
| Stream 15b | 38.176163 | -82.642182 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 6 | 104 |





TABLE 5
DELINEATED STREAMS WITHIN THE BIG SANDY PLANT POND CLOSURE PROJECT SURVEY AREA

| | Latitude | Longitude | Waterbody | Flow Regime | Form Used ^a | Score | Stream Quality or Habitat Area | Linear Feet within Survey Area |
|--------------|-----------|------------|---------------------------|----------------|---------------------------|-------|-----------------------------------|-----------------------------------|
| Stream 15c 3 | 38.176046 | -82.642318 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 6 | 173 |
| Stream 15d 3 | 38.175778 | -82.642329 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 6 | 245 |
| Stream 15e 3 | 38.175752 | -82.642651 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 6 | 61 |
| Stream 15f 3 | 38.175687 | -82.643729 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 6 | 646 |
| Stream 15g 3 | 38.175682 | -82.643372 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 6 | 275 |
| | 38.17767 | -82.642599 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 6 | 132 |
| Stream 17 3 | 38.179089 | -82.645326 | Tributary to fly ash pond | Intermittent | HGS | NA | Area 6 | 797 |
| Stream 17a 3 | 38.179664 | -82.644962 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 6 | 111 |
| Stream 17b 3 | 38.179373 | -82.645296 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 6 | 112 |
| Stream 17c 3 | 38.178786 | -82.646264 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 6 | 233 |
| Stream 18 | 38.18225 | -82.648104 | Tributary to fly ash pond | Intermittent | RBA | 112 | Sub-Optimal | 1,120 |
| Stream 18a 3 | 38.182426 | -82.64647 | Tributary to fly ash pond | Ephemeral | S9H | NA | Area 5 | 86 |
| Stream 18b 3 | 38.182388 | -82.646877 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 5 | 100 |
| Stream 18c 3 | 38.182425 | -82.647548 | Tributary to fly ash pond | Ephemeral | S9H | NA | Area 5 | 113 |
| Stream 18d 3 | 38.182362 | -82.647975 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 5 | <i>L</i> 8 |
| Stream 18e 3 | 38.182258 | -82.648736 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 5 | 43 |
| Stream 18f 3 | 38.182427 | -82.64916 | Tributary to fly ash pond | Ephemeral | S9H | NA | Area 5 | 114 |
| Stream 18g 3 | 38.182275 | -82.649426 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 5 | 69 |
| Stream 19 3 | 38.183625 | -82.646425 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 5 | 182 |
| Stream 20 3 | 38.184248 | -82.649346 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 5 | 740 |
| Stream 20a 3 | 38.184416 | -82.648381 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 5 | 18 |
| Stream 20b 3 | 38.183988 | -82.649448 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 5 | 138 |
| Stream 20c 3 | 38.183736 | -82.64961 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 5 | 294 |
| Stream 21 3 | 38.183258 | -82.637508 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 3 | 84 |
| Stream 22 3 | 38.183653 | -82.63824 | Tributary to fly ash pond | Intermittent | SSH | NA | Area 3 | 981 |
| Stream 23 3 | 38.183783 | -82.638926 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 3 | 165 |
| Stream 23a 3 | 38.183776 | -82.63877 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 3 | LL |
| Stream 24 3 | 38.181997 | -82.635548 | Tributary to fly ash pond | Ephemeral | RBA | 29 | Marginal | 177 |
| Stream 25 3 | 38.182203 | -82.63839 | Tributary to fly ash pond | Ephemeral | SDH | NA | Area 3 | 415 |





TABLE 5
DELINEATED STREAMS WITHIN THE BIG SANDY PLANT POND CLOSURE PROJECT SURVEY AREA

| Report Name | Latitude | Longitude | Waterbody | Flow Regime | Form Used ^a | Score | Stream Quality or Habitat Area | Linear Feet within Survey Area |
|----------------|-----------|------------|---------------------------|----------------|---------------------------|-------|-----------------------------------|-----------------------------------|
| Stream 26 | 38.179403 | -82.624443 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 178 |
| Stream 27 | 38.179562 | -82.624478 | Tributary to Blaine Creek | Ephemeral | SSH | NA | Area 1 | 154 |
| Stream 28 | 38.18034 | -82.624501 | Tributary to Blaine Creek | Ephemeral | SSH | NA | Area 1 | 185 |
| Stream 29 | 38.180985 | -82.624289 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 138 |
| Stream 30 | 38.188125 | -82.633499 | Tributary to Blaine Creek | Perennial | RBA | 68 | Marginal | 558 |
| Stream 31 | 38.188061 | -82.630791 | Tributary to Blaine Creek | Intermittent | RBA | 62 | Marginal | 371 |
| Stream 32 | 38.188102 | -82.631772 | Tributary to Blaine Creek | Intermittent | RBA | 80 | Marginal | 315 |
| Stream 33 | 38.183828 | -82.6441 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 64 |
| Stream 34 | 38.184202 | -82.643787 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 4 | 141 |
| Stream 34a | 38.184134 | -82.643645 | Tributary to fly ash pond | Ephemeral | S9H | NA | Area 4 | 100 |
| Stream 35 | 38.185591 | -82.646285 | Tributary to fly ash pond | Intermittent | HGS | NA | Area 4 | 561 |
| Stream 35a | 38.185921 | -82.645834 | Tributary to fly ash pond | Ephemeral | S9H | NA | Area 4 | 211 |
| Stream 35b | 38.185204 | -82.6465 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 4 | 28 |
| Stream 36 | 38.177545 | -82.638531 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 6 | 280 |
| Stream 37 | 38.176969 | -82.642526 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 6 | 171 |
| Stream 38 | 38.17922 | -82.644498 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 6 | 279 |
| Stream 39 | 38.181365 | -82.645372 | Tributary to fly ash pond | Intermittent | SSH | NA | Area 6 | 169 |
| Stream 40 | 38.1813 | -82.645778 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 6 | 157 |
| Stream 41 | 38.181378 | -82.645992 | Tributary to fly ash pond | Intermittent | SSH | NA | Area 6 | 652 |
| Stream 41a | 38.18117 | -82.646067 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 6 | 56 |
| Stream 42 | 38.182146 | -82.648394 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 5 | 114 |
| Stream 43 | 38.184011 | -82.647594 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 5 | 368 |
| Stream 44 | 38.1842 | -82.649991 | Tributary to fly ash pond | Perennial | RBA | 142 | Sub-Optimal | 2,379 |
| Stream 44a | 38.18488 | -82.650217 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 5 | 554 |
| Stream 44b | 38.182484 | -82.653843 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 5 | 633 |
| Stream 44c | 38.181227 | -82.653997 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 5 | 232 |
| Stream 45 | 38.183078 | -82.637348 | Tributary to fly ash pond | Ephemeral | SSH | NA | Area 3 | 93 |
| Stream 46 | 38.18363 | -82.638883 | Tributary to fly ash pond | Intermittent | SSH | NA | Area 3 | 432 |
| Stream 47 | 38.182258 | -82.635048 | Tributary to fly ash pond | Ephemeral | SDH | NA | Area 3 | 48 |





TABLE 5
DELINEATED STREAMS WITHIN THE BIG SANDY PLANT POND CLOSURE PROJECT SURVEY AREA

| | | | _ | | | | | |
|----------------|-----------|------------|------------------------------|----------------|---------------------------|-------|-----------------------------------|-----------------------------------|
| Report Name | Latitude | Longitude | Waterbody | Flow Regime | Form Used ^a | Score | Stream Quality or Habitat Area | Linear Feet within Survey Area |
| Stream 48 | 38.183095 | -82.638419 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 3 | 73 |
| Stream 49 | 38.181963 | -82.637701 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 3 | 601 |
| Stream 50 | 38.185788 | -82.635826 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 3 | 116 |
| Stream 51 | 38.185756 | -82.635877 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 3 | 75 |
| Stream 52 | 38.181211 | -82.628042 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 2 | 47 |
| Stream 53 | 38.182467 | -82.627866 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 2 | 64 |
| Stream 54 | 38.182315 | -82.627723 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 2 | 39 |
| Stream 55 | 38.184567 | -82.629622 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 2 | 88 |
| Stream 56 | 38.178126 | -82.633154 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 6 | 36 |
| Stream 57 | 38.178022 | -82.630229 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 6 | 43 |
| Stream 58 | 38.174032 | -82.647949 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 604 |
| Stream 59 | 38.174786 | -82.646863 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 188 |
| Stream 59a | 38.174412 | -82.646894 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 304 |
| Stream 60 | 38.176137 | -82.646625 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 769 |
| Stream 60a | 38.175762 | -82.647063 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 149 |
| Stream 61 | 38.180213 | -82.627552 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 2 | 31 |
| Stream 62 | 38.182122 | -82.627641 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 2 | 0L |
| Stream 63 | 38.182254 | -82.627658 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 2 | LL |
| Stream 64 | 38.184825 | -82.629898 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 2 | LL |
| Stream 65 | 38.185999 | -82.630599 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 2 | 61 |
| Stream 66 | 38.186103 | -82.630655 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 2 | 30 |
| Stream 67 | 38.178037 | -82.63036 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 6 | 51 |
| Stream 68 | 38.175615 | -82.647681 | Tributary to Fuller's Branch | Perennial | RBA | 167 | Optimal | 1,381 |
| Stream 68a | 38.174678 | -82.648721 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 76 |
| Stream 68b | 38.17473 | -82.648255 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 79 |
| Stream 68c | 38.17447 | -82.648223 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 224 |
| Stream 68d | 38.175023 | -82.647836 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 158 |
| Stream 68e | 38.174797 | -82.648466 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 69 |
| Stream 68f | 38.175329 | -82.647784 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 89 |





TABLE 5
DELINEATED STREAMS WITHIN THE BIG SANDY PLANT POND CLOSURE PROJECT SURVEY AREA

| Report Name | Latitude | Longitude | Waterbody | Flow Regime | Form Used ^a | Score | Stream Quality or Habitat Area | Linear Feet within Survey Area |
|----------------|-----------|------------|------------------------------|----------------|---------------------------|-------|-----------------------------------|-----------------------------------|
| Stream 68g | 38.174959 | -82.648427 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 130 |
| Stream 68h | 38.17541 | -82.647479 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 200 |
| Stream 68i | 38.17517 | -82.648242 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 104 |
| Stream 68j | 38.175685 | -82.647456 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 102 |
| Stream 68k | 38.175554 | -82.647476 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 139 |
| Stream 681 | 38.177244 | -82.647641 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 99 |
| Stream 68m | 38.177145 | -82.647626 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 85 |
| Stream 68n | 38.177322 | -82.647374 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 204 |
| Stream 680 | 38.176957 | -82.647088 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 256 |
| Stream 68p | 38.1764 | -82.647351 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 85 |
| Stream 68q | 38.176428 | -82.646887 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 251 |
| Stream 68r | 38.176653 | -82.647099 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 997 |
| Stream 69 | 38.176948 | -82.648002 | Tributary to Fuller's Branch | Ephemeral | HGS | NA | Area 7 | 412 |
| Stream 70 | 38.183888 | -82.650984 | Tributary to fly ash pond | Intermittent | HGS | NA | Area 5 | 747 |
| Stream 70a | 38.183487 | -82.651216 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 5 | <i>SL</i> |
| Stream 70b | 38.183499 | -82.650664 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 5 | 310 |
| Stream 71 | 38.185572 | -82.653279 | Tributary to fly ash pond | Intermittent | RBA | 118 | Sub-Optimal | 1,816 |
| Stream 71a | 38.185856 | -82.652998 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 5 | 797 |
| Stream 71b | 38.18583 | -82.653492 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 5 | 131 |
| Stream 71c | 38.186375 | -82.654015 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 5 | 548 |
| Stream 71d | 38.1858 | -82.654716 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 5 | 440 |
| Stream 71e | 38.185899 | -82.655866 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 5 | 81 |
| Stream 71f | 38.185596 | -82.655933 | Tributary to fly ash pond | Ephemeral | HGS | NA | Area 5 | 222 |
| Stream 72 | 38.181433 | -82.624959 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 175 |
| Stream 73 | 38.182305 | -82.625104 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 210 |
| Stream 74 | 38.184755 | -82.626268 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 336 |
| Stream 75 | 38.185768 | -82.626399 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 801 |
| Stream 76 | 38.186226 | -82.626544 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 385 |
| Stream 77 | 38.185364 | -82.625733 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 98 |





DELINEATED STREAMS WITHIN THE BIG SANDY PLANT POND CLOSURE PROJECT SURVEY AREA TABLE 5

| Report | | | | | | | | |
|------------------|-----------|------------------------|---------------------------|----------------|---------------------------|-------|-----------------------------------|-----------------------------------|
| | Latitude | Latitude Longitude | Waterbody | Flow Regime | Form Used ^a | Score | Stream Quality or Habitat Area | Linear Feet within Survey Area |
| Stream 78 38 | 38.183861 | -82.624616 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 354 |
| Stream 78a 38 | 38.183771 | -82.624265 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 120 |
| Stream 78b 38 | 38.183921 | -82.62445 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 61 |
| Stream 78c 38 | 8.184067 | 38.184067 -82.624865 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 96 |
| Stream 79 38 | 38.182304 | -82.623863 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 542 |
| Stream 79a 38 | 38.182473 | -82.623487 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 391 |
| Stream 79aa 38 | 38.182373 | -82.622941 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 53 |
| Stream 80 38 | 8.186308 | 38.186308 -82.626727 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 132 |
| Stream 80a 3 | 38.18624 | -82.62678 | Tributary to Blaine Creek | Ephemeral | HGS | NA | Area 1 | 80 |
| Total: 154 | | | | | | | | 42,420 |

Form $Used^a$: RBA = Rapid Bioassessment Protocol, HGS = High Gradient Stream Score b : NA = Not Applicable

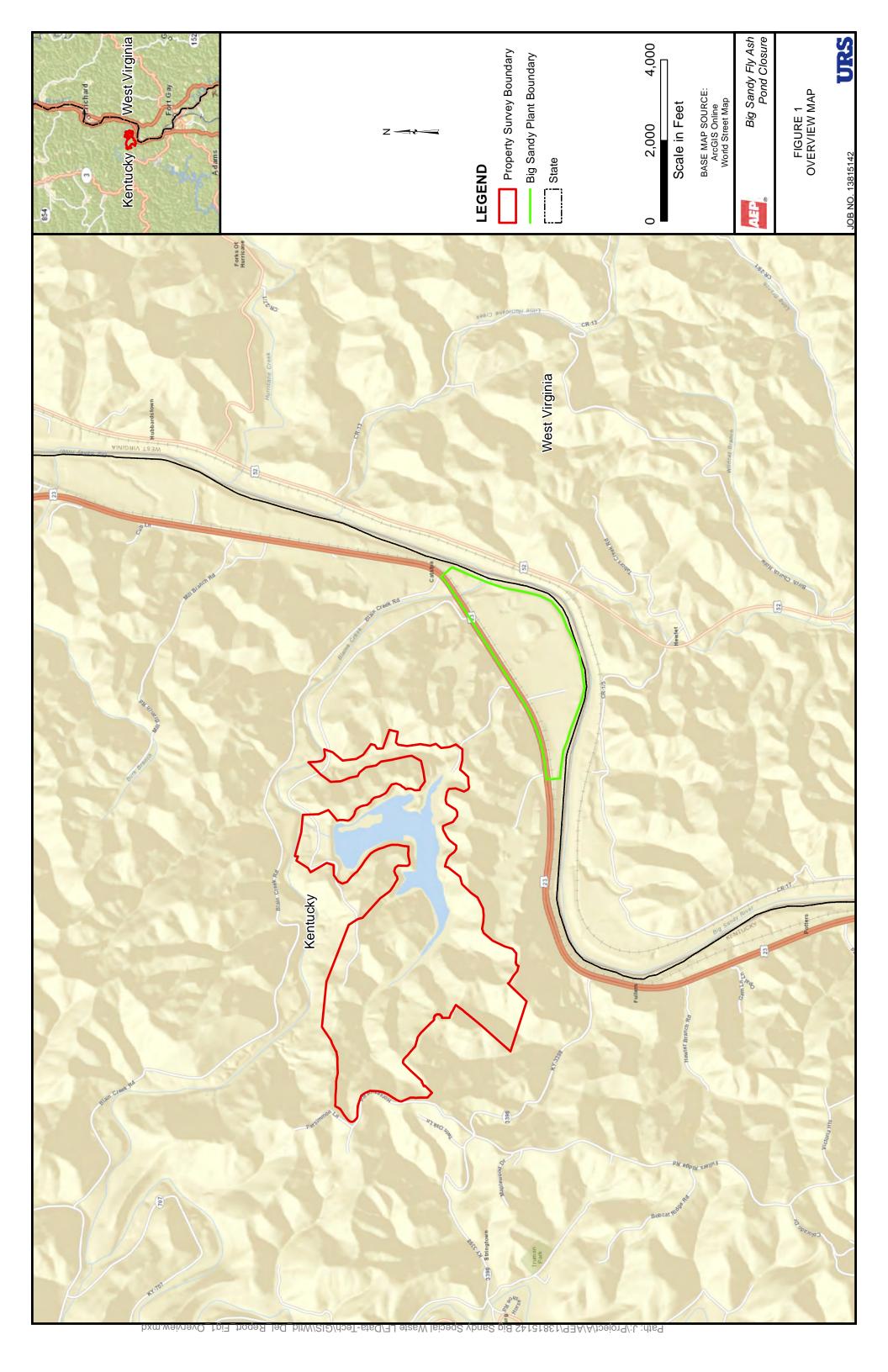


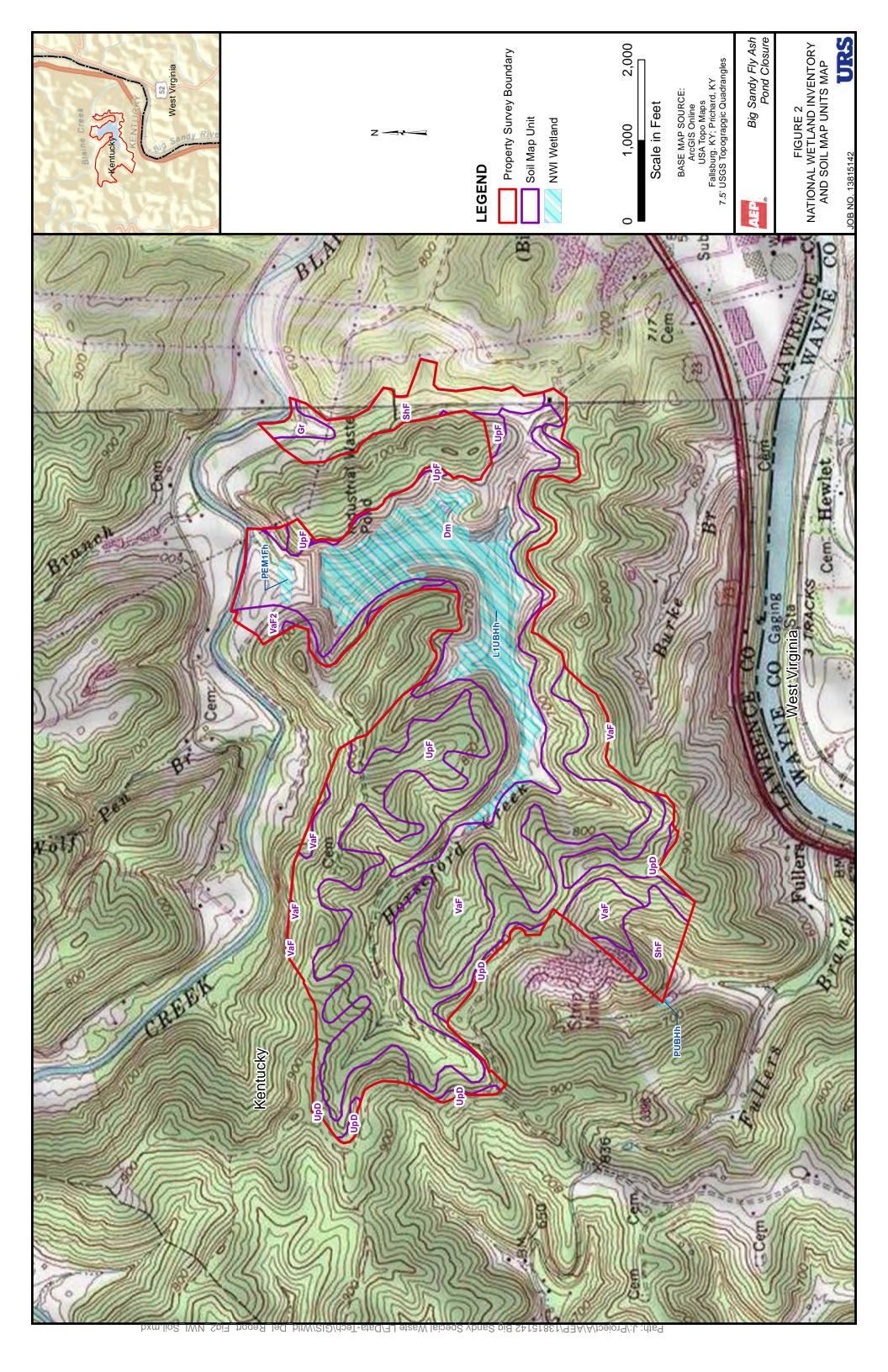


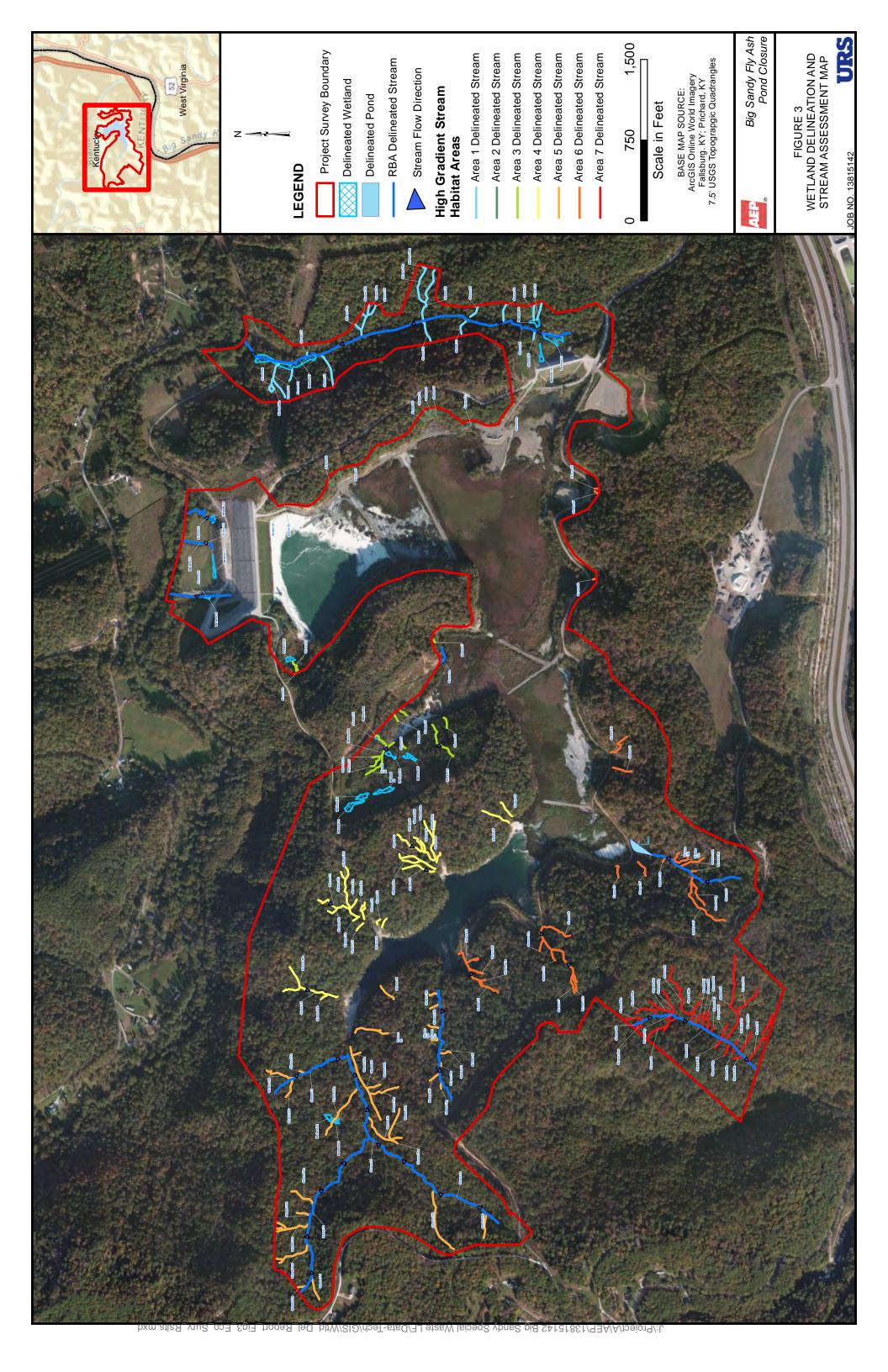
TABLE 6 DELINEATED PONDS WITHIN THE BIG SANDY FLY ASH POND CLOSURE PROJECT SURVEY AREA

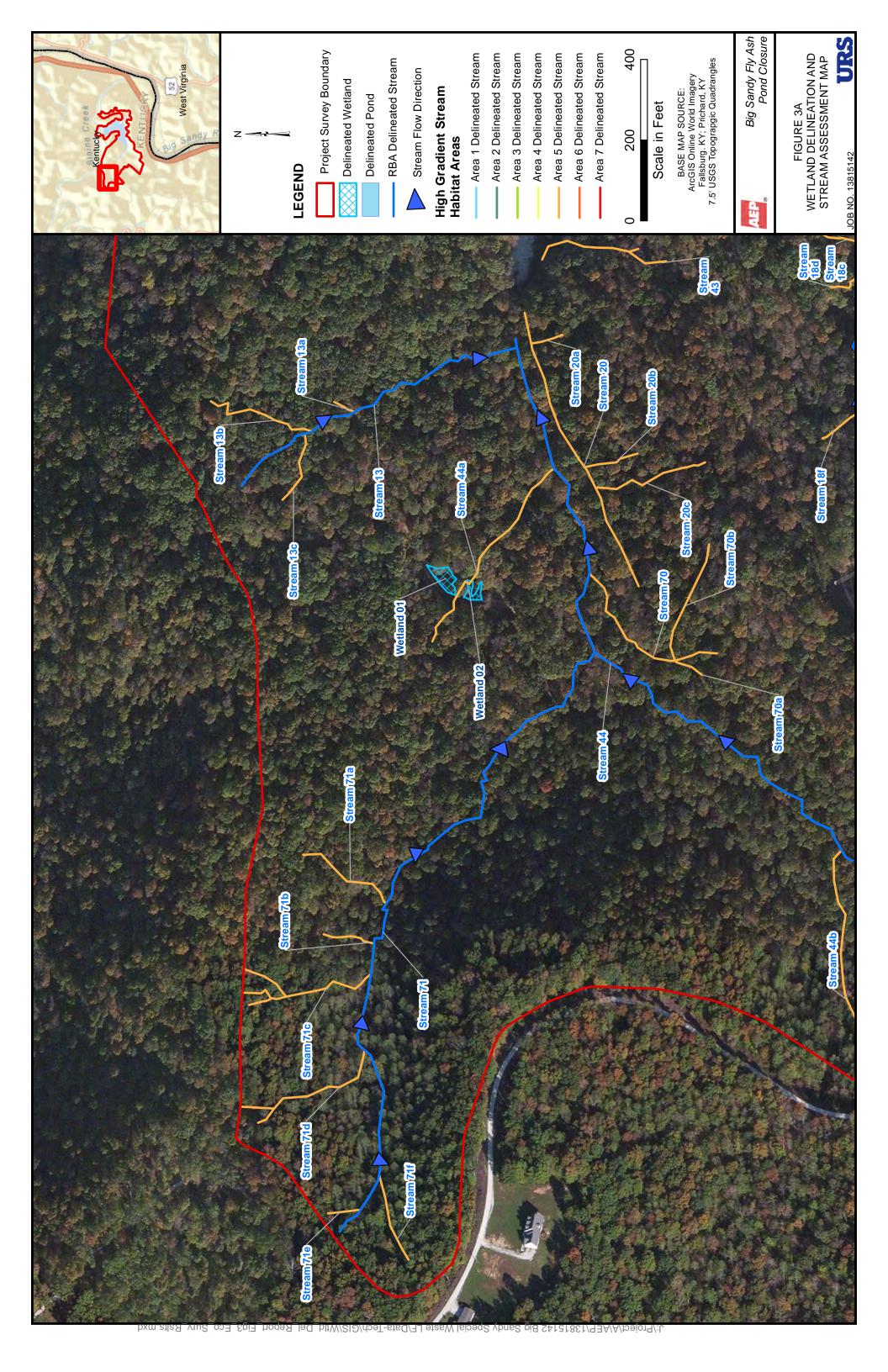
| Report Name | Latitude | Longitude | Acreage within Survey Corridor |
|----------------|-----------|------------|--------------------------------|
| Pond 1 | 38.177116 | -82.641885 | 0.24 |
| Total: 1 | | | 0.24 |

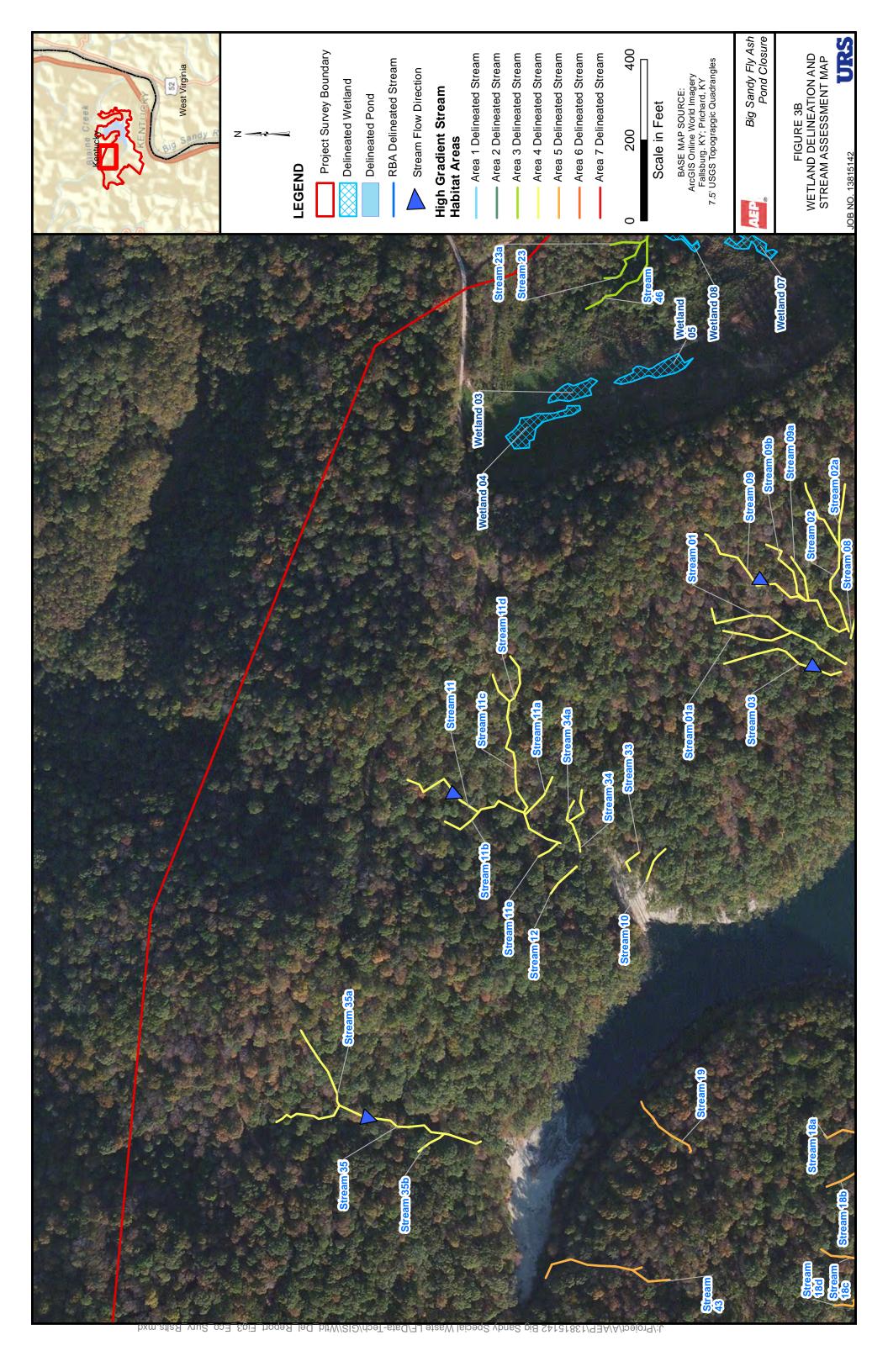




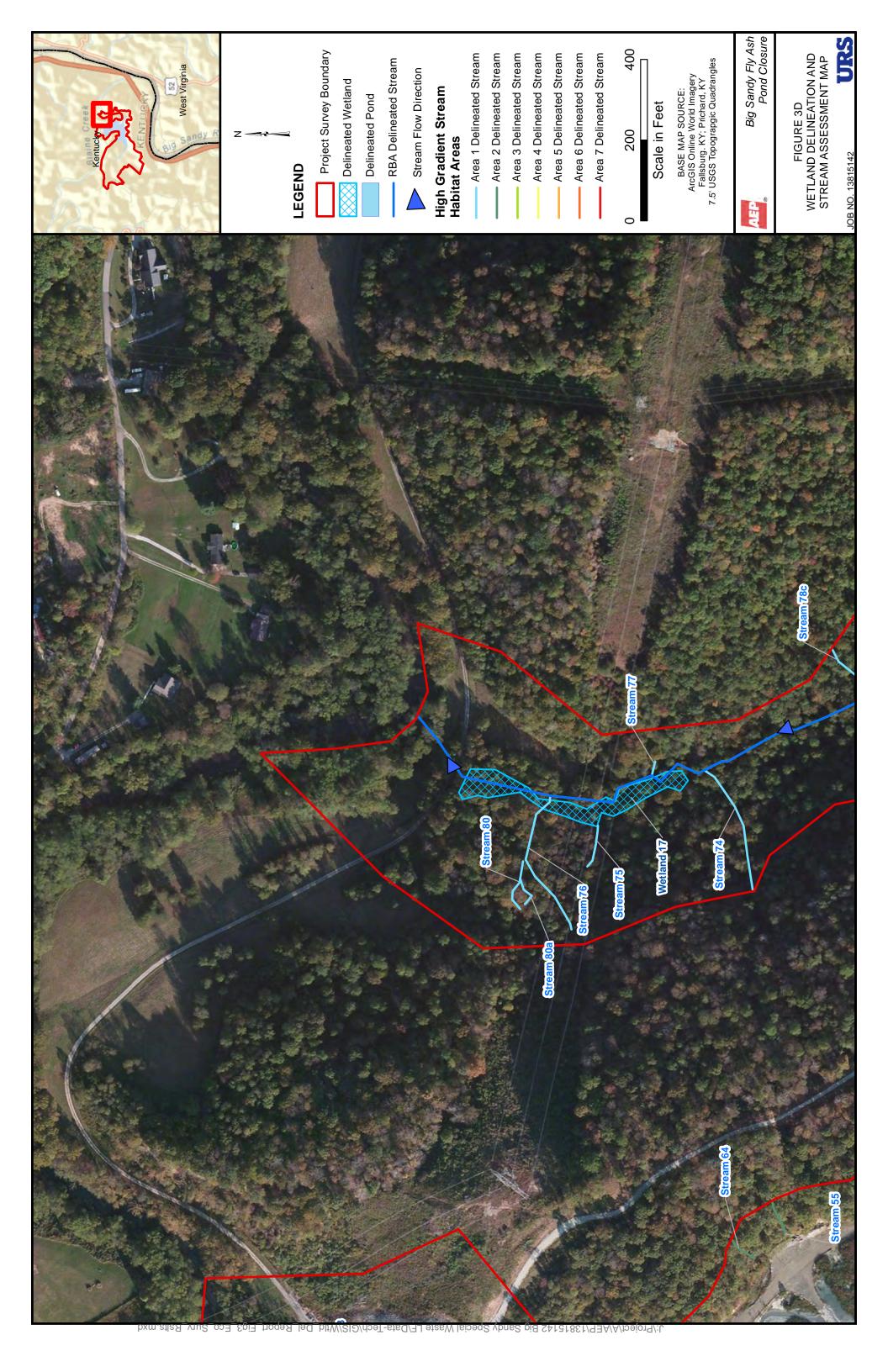


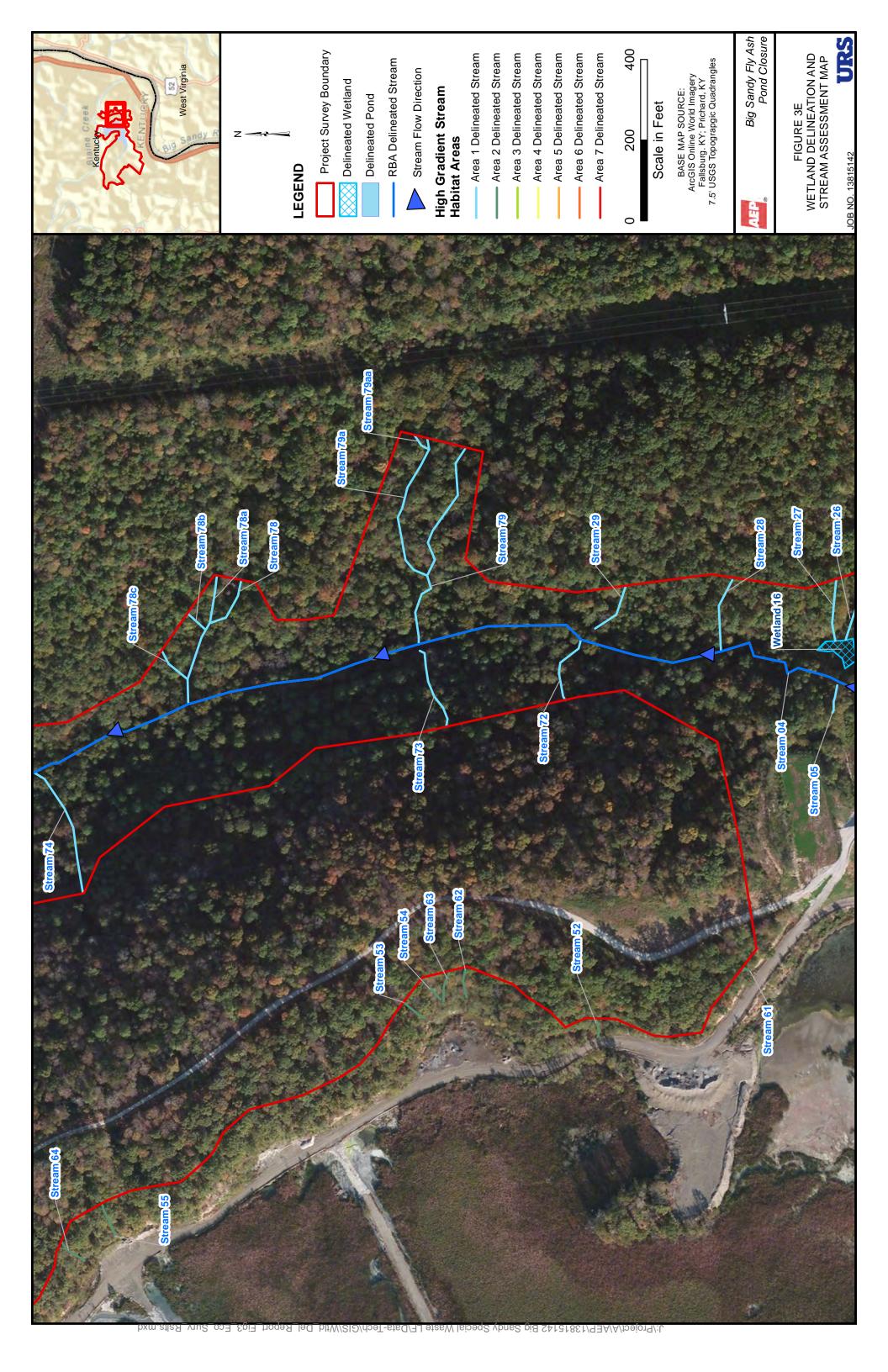




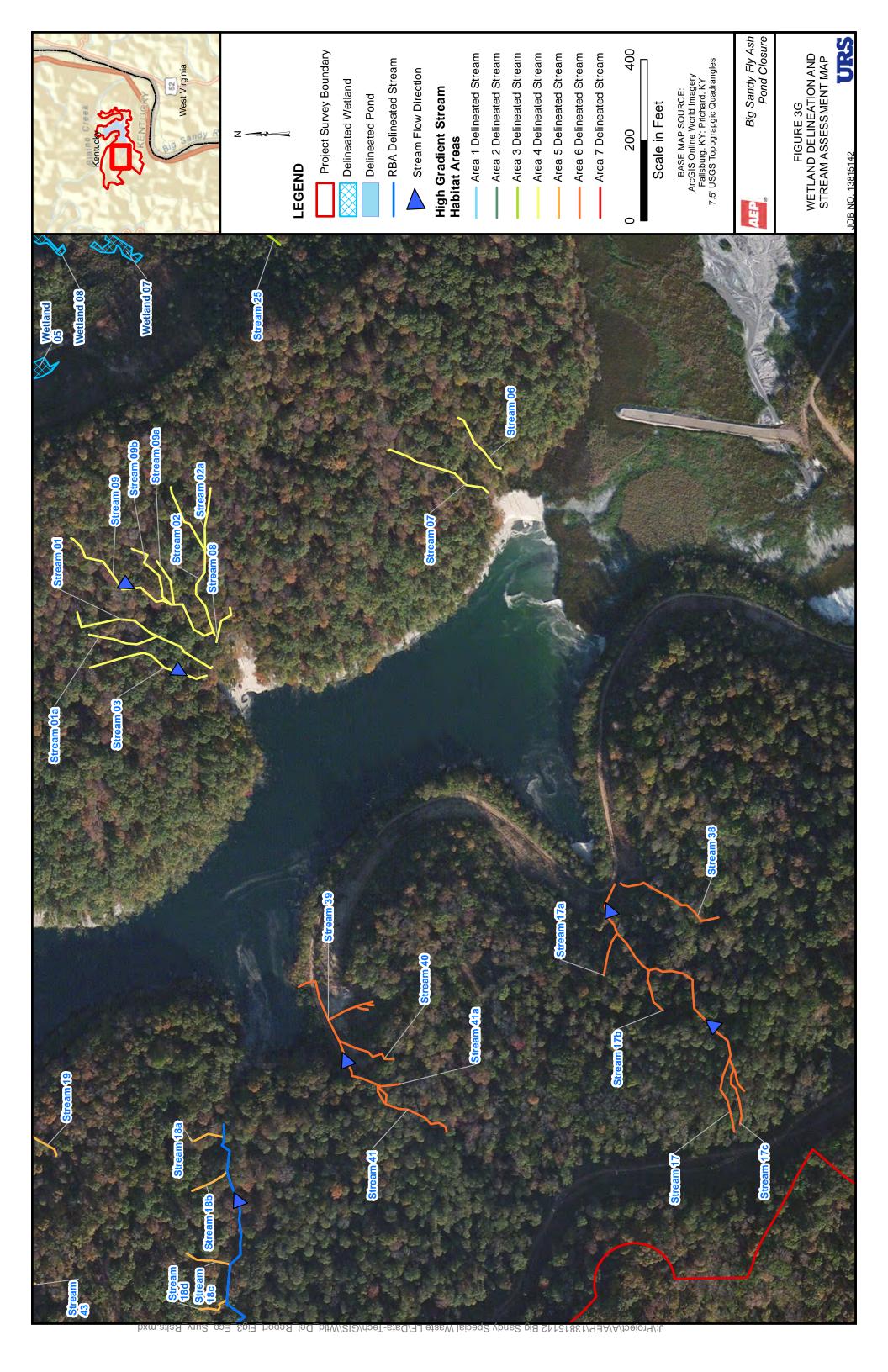


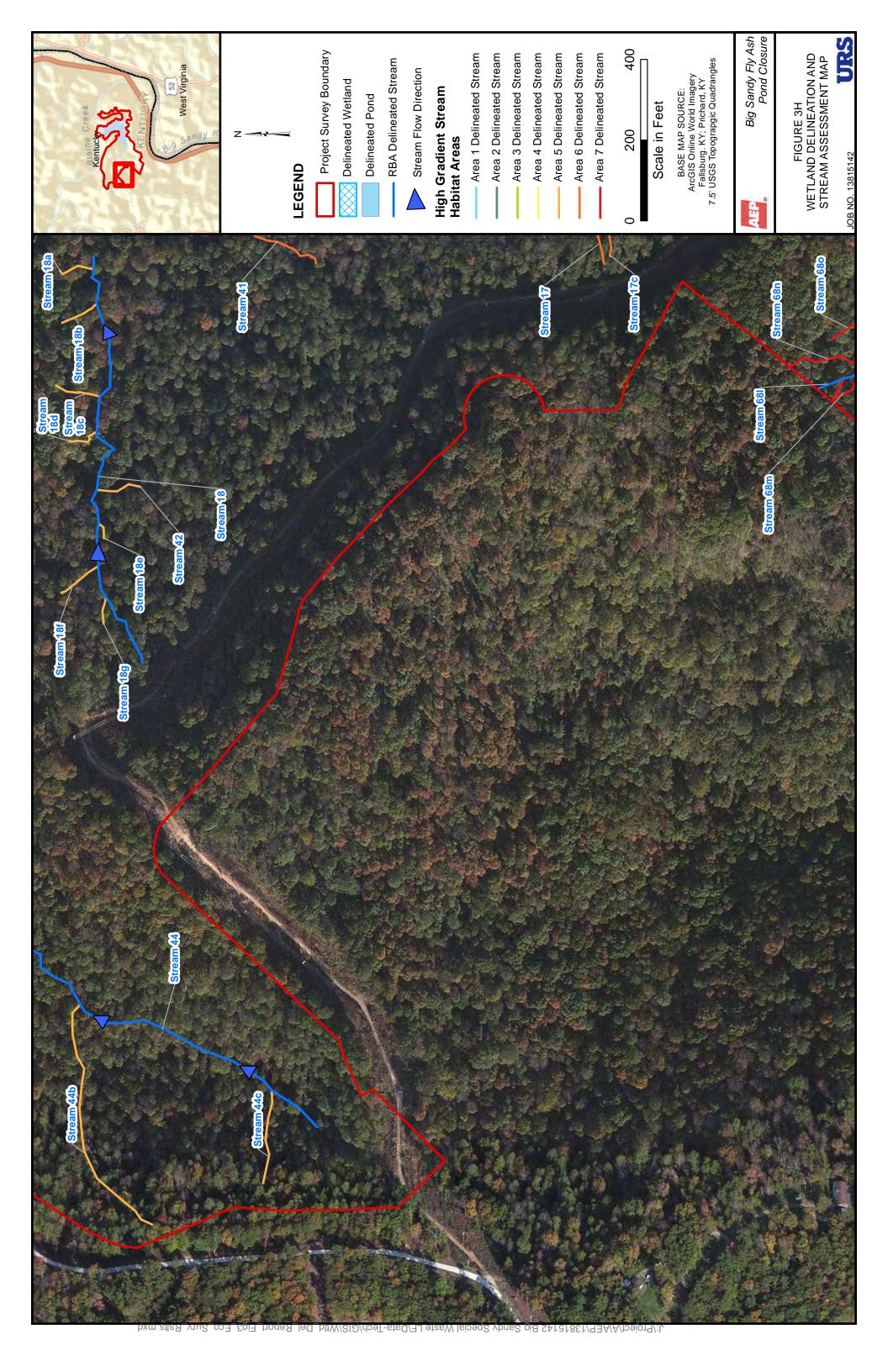


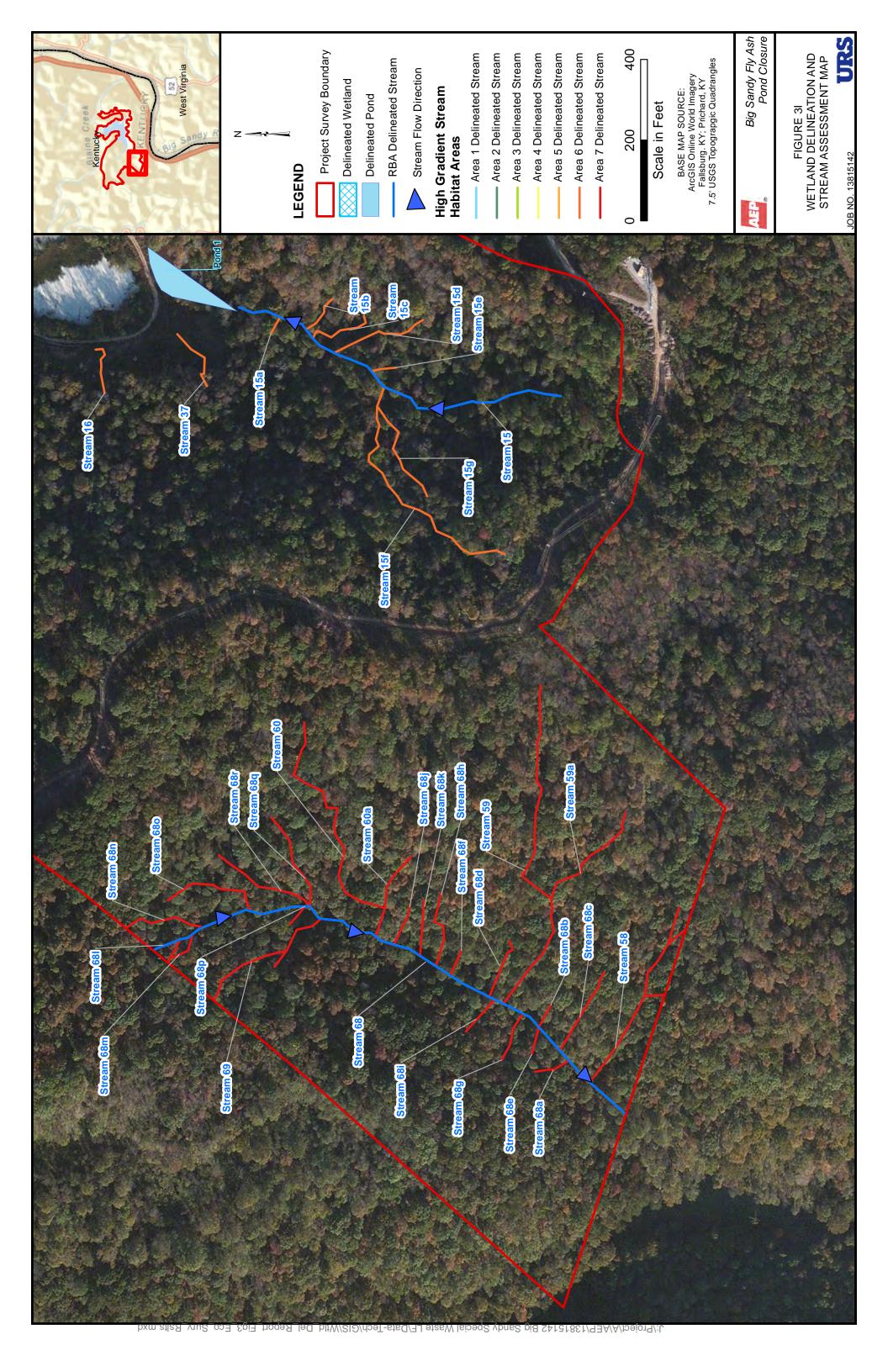


















APPENDIX A

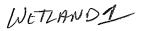
U.S. ARMY CORPS OF ENGINEERS WETLAND DELINEATION DATA FORMS



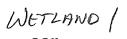
WETLAND 1

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

| Project/Site: Att BK SANDY POND CLOSURE City/Cour | nty: Louisa, Lawnewle Sampling Date: 05/23/12 |
|---|---|
| | State: / Sampling Point: O/ |
| Investigator(s): BAO, MDT Section, | Township Range: |
| Landform (hillslope, terrace, etc.): Departs Coarse Local relief (| |
| Landionn (Initisiope, terrace, etc.). Propret Street 28 1951/11/2 | (concave, convex, none) |
| Subregion (LRR or MLRA): Lat: St. 195/44 | |
| Soil Map Unit Name: | NWI classification: VA |
| Are climatic / hydrologic conditions on the site typical for this time of year? Yes | No (If no, explain in Remarks.) |
| Are Vegetation, Soil, or Hydrology significantly disturbed | 1? Are "Normal Circumstances" present? Yes _ 😕 No |
| Are Vegetation, Soil, or Hydrology naturally problematic | ? (If needed, explain any answers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing sample | ling point locations, transects, important features, etc. |
| Literate Catt Descents | s the Sampled Area vithin a Wetland? Yes No |
| TO HAVE BEEN A HISTORICALLY EXCAUATED | |
| HYDROLOGY | |
| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
| Primary Indicators (minimum of one is required; check all that apply) | Surface Soil Cracks (B6) |
| Surface Water (A1) True Aquatic Plants (B1- | ` ' 1 |
| High Water Table (A2) Hydrogen Sulfide Odor (| · · · · · · · · · · · · · · · · · · · |
| Saturation (A3)Oxidized Rhizospheres | · |
| Water Marks (B1) Presence of Reduced Inc | |
| Sediment Deposits (B2) Recent Iron Reduction in | |
| Drift Deposits (B3) Thin Muck Surface (C7) | |
| Algal Mat or Crust (B4) Other (Explain in Remar Iron Deposits (B5) | rks) Stunted or Stressed Plants (D1) Geomorphic Position (D2) |
| Inundation Visible on Aerial Imagery (B7) | Shallow Aquitard (D3) |
| Water-Stained Leaves (B9) | Microtopographic Relief (D4) |
| Aquatic Fauna (B13) | ✓ FAC-Neutral Test (D5) |
| Field Observations: | |
| Surface Water Present? Yes No _ | |
| Water Table Present? Yes No Depth (inches): | i |
| Saturation Present? Yes No Depth (inches): | I |
| (includes capillary fringe) | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previo | ius inspections), ii avaijabie. |
| Remarks: | |
| | |
| | |
| | |
| | |
| WETLAND & ABOTTING EPH. STREYAM | 1 S-MOTO52312-07-5/DE#/ |
| | |
| | |
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| | |



| VEGETATION (Five Strata) - Use s | cientific names of | piants. | | Sampling Point: |
|--|----------------------|-------------|-------------|---|
| | | Dominant | | Dominance Test worksheet: |
| Tree Stratum (Plot size:) | <u>% Cover</u> | Species? | Status | Number of Dominant Species |
| 1. NONE | assente and a second | | | That Are OBL, FACW, or FAC: (A) |
| 2 | | | | |
| 3. | | | | Total Number of Dominant |
| | | | | Species Across All Strata: (B) |
| 4 | | | | Percent of Dominant Species 7 |
| 5 | | | | That Are OBL, FACW, or FAC: |
| 6. | | | | |
| 7 | | | | Prevalence Index worksheet: |
| | | - Total Co | | Total % Cover of: Multiply by: |
| Sapling Stratum (Plot size: | | = Total Cov | /ei | OBL species X1 = |
| | | | ra 3 | FACW species |
| 1. PLANTUS OCCIDENTALIS | | | | |
| 2. FRAXINUS penns/lvanica | | | FHCW | FAC species x 3 = / 50 |
| 3 | | | | FACU species x 4 = |
| 4 | | | | UPL species x 5 = |
| 5 | | | | .00 |
| | | | | Column Totals: |
| 6 | | | | Prevalence Index = B/A = 2.05 |
| 7 | | | | Hydrophytic Vegetation Indicators: |
| | <u> </u> | = Total Cov | /er | <u> </u> |
| Shrub Stratum (Plot size: | | | _ | 1 - Rapid Test for Hydrophytic Vegetation |
| 1. Pubus allegheniensis | | \angle | FACU | 2 - Dominance Test is >50% |
| 2 | | | | 3 - Prevalence Index is ≤3.01 |
| | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 3 | | | | data in Remarks or on a separate sheet) |
| 4 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 5 | | | | resistant flyarophytic vegetation (Explain) |
| 6 | | | | 1 |
| 7 | | | | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| | | = Total Cov | /er | |
| Herb Stratum (Plot size:) | | - rotal oot | 701 | Definitions of Five Vegetation Strata: |
| 1. Dichan thelium Classdestinum | | X_ | CAC | Tree – Woody plants, excluding woody vines, |
| | | | | approximately 20 ft (6 m) or more in height and 3 in. |
| 2. Importions capensis | | | • | (7.6 cm) or larger in diameter at breast height (DBH). |
| 3. Scirpus atrovirus | | _X | OBL | |
| 4. Carex Vulginoidea | | | OBL | Sapling – Woody plants, excluding woody vines, |
| 5. Onoclea sensibilis | 5 | | FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. |
| 6 | | | | than 3 m. (7.0 dm) DBM. |
| o | | | | Shrub – Woody plants, excluding woody vines, |
| 7 | | | ~ | approximately 3 to 20 ft (1 to 6 m) in height. |
| 8 | | | | |
| 9 | | | | Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody |
| 10 | | | | plants, except woody vines, less than approximately |
| | | | | 3 ft (1 m) in height. |
| 11. | | | | |
| 12 | | | | Woody vine - All woody vines, regardless of height. |
| | _130_ | = Total Cov | /er | |
| Woody Vine Stratum (Plot size: | | | | |
| 1 | | | | |
| 2 | | | | |
| 3. | | | | |
| | | | | Hydrophytic |
| | | | | Vegetation |
| 5 | | | | Present? Yes No |
| | | = Total Cov | /er | |
| Remarks: (Include photo numbers here or or | a separate sheet) | | | |
| Terrando, findade prote numbere nere of or | , a sopulate ellect, | | | |
| | | | | |
| | | | | |
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| | | | | |



| W- | BAO- | 052 | 3/2 | | 0 | / |
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Sampling Point:

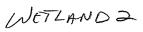
| | • ` | • | th needed to docu | | | | · maroatorory |
|-------------------|---|-------------|-------------------|-------------------------------|-----------------------------------|--------------------|---|
| Depth (inches) | Matrix Color (moist) | % | Color (moist) | x Features %T | ype ¹ Loc ² | Texture | Remarks |
| 0-6 | 104R4/1 | | | | C M | | |
| | | 70 | 104R 5/8 | | | Chay | |
| 6-12 | 10'42 6/1 | 100 | | | | - | |
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| | oncentration, D=Dep | letion, RM= | Reduced Matrix, M | S=Masked Sa | nd Grains. | | Pore Lining, M=Matrix. |
| Hydric Soil | | | | | | | ors for Problematic Hydric Soils ³ : |
| Histoso | | | Dark Surface | | CO\ /## DA 447 | | m Muck (A10) (MLRA 147) |
| | pipedon (A2) istic (A3) | | | | S8) (MLRA 147 LRA 147, 148) | | ast Prairie Redox (A16) MLRA 147, 148) |
| | en Sulfide (A4) | | | ed Matrix (F2) | • | | dmont Floodplain Soils (F19) |
| | d Layers (A5) | | Depleted Ma | | | | MLRA 136, 147) |
| | uck (A10) (LRR N) | | Redox Dark | | | | d Parent Material (TF2) |
| | d Below Dark Surfac | e (A11) | | rk Surface (F | 7) | | ry Shallow Dark Surface (TF12) |
| | ark Surface (A12) | DD N | Redox Depr | essions (F8) iese Masses (| E10) /I DD N | Oth | ner (Explain in Remarks) |
| | Mucky Mineral (S1) (I A 14 7 , 148) | -KK N, | MLRA 1 | | 1 12) (LIXIX IV, | | |
| | Gleyed Matrix (S4) | | | ace (F13) (ML | RA 136, 122) | ³ Indic | ators of hydrophytic vegetation and |
| | Redox (S5) | | | | (F19) (MLRA 1 | | tland hydrology must be present, |
| | d Matrix (S6) | | | | | unl | ess disturbed or problematic. |
| Restrictive | Layer (if observed): | | | | | | |
| Type: | | | | | | | \checkmark |
| | iches): | | | | | Hydric Soil F | Present? Yes No No |
| Remarks: | | | | | | | |
| | | | | | | | |
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WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

| Project/Site: Atp BIKSANDY POND CLOSURE City/County: | LUVISA, LAWNEWCE Sampling Date: 05/03/12 |
|---|--|
| Applicant/Owner: AFP Investigator(s): BAO, MOT Section, Tov | State: K/ Sampling Point: 0 2 |
| Investigator(s): BAO, MOT Section, Toy | wnship, Range: |
| Local relief (cor | ncave, convex, none): Con CAVE Slope (%) |
| Subregion (LRR or MLRA): Lat: 38 18494 | Long: - 80. (05054) Datum: |
| Soil Map Unit Name: UpF | NIM describerion: |
| • | |
| Are climatic / hydrologic conditions on the site typical for this time of year? Yes | |
| Are Vegetation $\underline{\mathcal{V}}$, Soil $\underline{\mathcal{V}}$, or Hydrology $\underline{\mathcal{V}}$ significantly disturbed? | Are "Normal Circumstances" present? Yes No |
| Are Vegetation, Soil, or Hydrology naturally problematic? | (If needed, explain any answers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing sampling | g point locations, transects, important features, etc. |
| Libraria Cali Danaanio Van V No | e Sampled Area in a Wetland? Yes No |
| DEM WETLAND LOCATED ON SIDE OF TO HAVE BEEN A HISTORICALLY EXCAL | ACCESS NOAD THAT APPEARS |
| HYDROLOGY | |
| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
| Primary Indicators (minimum of one is required; check all that apply) | Surface Soil Cracks (B6) |
| Surface Water (A1) True Aquatic Plants (B14) | Sparsely Vegetated Concave Surface (B8) |
| High Water Table (A2) Hydrogen Sulfide Odor (C1 | |
| Saturation (A3) | Living Roots (C3) Moss Trim Lines (B16) |
| Water Marks (B1) Presence of Reduced Iron (| (C4) Dry-Season Water Table (C2) |
| Sediment Deposits (B2) Recent Iron Reduction in Ti | lled Soils (C6) Crayfish Burrows (C8) |
| Drift Deposits (B3) Thin Muck Surface (C7) | Saturation Visible on Aerial Imagery (C9) |
| Algal Mat or Crust (B4) Other (Explain in Remarks) | |
| Iron Deposits (B5) | Geomorphic Position (D2) |
| Inundation Visible on Aerial Imagery (B7) | Shallow Aquitard (D3) |
| Water-Stained Leaves (B9) | Microtopographic Relief (D4) |
| Aquatic Fauna (B13) | FAC-Neutral Test (D5) |
| Field Observations: | |
| Surface Water Present? Yes No Depth (inches): | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ |
| Water Table Present? Yes No Depth (inches): | |
| Saturation Present? Yes No Depth (inches): | Wetland Hydrology Present? Yes No |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous | inspections), if available: |
| | |
| Remarks: | |
| | |
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| | |
| 11. 7. 10 10 | |
| WETTAND IS ABUTTINA EXITEMENTAL S. | STNEAM S-MOT-053312-07 SIDE #/ |
| | 1 2 3 10 E 11 |
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VEGETATION (Five Strata) - Use scientific names of plants.

| /EGETATION (Five Strata) – Use scientific | names of plants | 3. | Sampling Point: |
|--|---------------------|-------------|---|
| To a Charles (Diet size) | Absolute Domir | | Dominance Test worksheet: |
| Tree Stratum (Plot size:) | % Cover Spec | | Number of Dominant Species |
| 1. NONE 2. | | | That Are OBL, FACW, or FAC: (A) |
| 2 | | | Total Number of Dominant |
| | | | Species Across All Strata: (B) |
| 4 | | | Percent of Dominant Species That Are OBL FACW or FAC: |
| 5 | | | That Are OBL, FACW, or FAC: (A/B) |
| 6. | | | Prevalence Index worksheet: |
| 7. < | | | Total % Cover of: Multiply by: |
| Sapling Stratum (Plot size:) | = Total | Cover | OBL species |
| | | | FACW species 35 x 2 = 70 |
| 2. | | | FAC species 40 x3 = 120 |
| | | | FACU species x 4 = |
| 3 | | | UPL species x 5 = |
| 4 | | | Column Totals: 125 (A) 240 (B) |
| 5 | | | . , |
| 6 7. | | | Prevalence Index = B/A = / . ? > |
| | = Total | Cover | Hydrophytic Vegetation Indicators: |
| Shrub Stratum (Plot size:) | = Otal | Cover | 1 - Rapid Test for Hydrophytic Vegetation |
| | | | ∠ 2 - Dominance Test is >50% |
| 2. | | | 3 - Prevalence Index is ≤3.0¹ |
| 1. NONE 2. 3. | | | 4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet) |
| 4 | | | Problematic Hydrophytic Vegetation (Explain) |
| 5 | | | Problematic Hydrophytic Vegetation (Explain) |
| 6 | | | Indicators of hydric soil and wattend hydroles |
| 7 | | | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| | = Total | Cover | Definitions of Five Vegetation Strata: |
| Herb Stratum (Plot size:) | 12- | FACW | |
| 1. Sarpus cyperinus | | | Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. |
| 2. Scinpus atrouriens | | _ OBV | (7.6 cm) or larger in diameter at breast height (DBH). |
| 3. Junius effus 16 | $-\frac{70}{20}$ | _ FACW | Sapling – Woody plants, excluding woody vines. |
| 4. Cares Vulenonder | $-\frac{30}{20}$ | | approximately 20 ft (6 m) or more in height and less |
| 5. D. chanthelium clargestinum | | - GAE | than 3 in. (7.6 cm) DBH. |
| 6. Impations caponsis 7. Vuncus tenuis | | FACW FAC | Shrub – Woody plants, excluding woody vines, |
| | | | approximately 3 to 20 ft (1 to 6 m) in height. |
| 8 | | | Herb – All herbaceous (non-woody) plants, including |
| 9 | | | herbaceous vines, regardless of size, and woody |
| 10 | | | plants, except woody vines, less than approximately 3 ft (1 m) in height. |
| 11. | | | |
| 12. | | 0 | Woody vine – All woody vines, regardless of height. |
| Woody Vine Stratum (Plot size:) | <u> 140</u> = 10tal | Cover | |
| and the same of th | | | |
| 2 | | | |
| 3 | | | |
| 4. | | | Hydrophytic |
| -/ 4 | | | Vegetation Present? Yes No |
| 98 | = Total | | riesent: res_/_ NO |
| Remarks: (Include photo numbers here or on a separa | | . = | |
| Tremains. (include prioro numbers here or on a separa | io oneer.j | | |
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| COLL | | |
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| W-BAD-058312-03 | 2 |
|-----------------|---|
| Sampling Point: | |

| Profile Des | cription: (Describe t | o the dep | th needed to do | ocument the | indicator | or confirm | n the absence of i | ndicators.) |
|-------------|---|-------------|-----------------|---|-------------------|------------------|-----------------------|---|
| Depth | Matrix | | | tedox Feature | | 1 2 | T (| D |
| (inches) | Color (moist) | <u> %</u> | Color (moist) | | Type ¹ | Loc ² | Texture | Remarks |
| D-19 | 10/R 6/1 | 10 | 10 yr 5/8 | 7 30 | | _nl_ | Swyciny | |
| 10-12 | 10 (ny 1 | 100 | | | | | ciny_ | |
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| 1Tuno: C=C | oncentration, D=Deple | ation RM- | -Poduced Matrix | MS=Macke | d Sand Gr | aine | 21 ocation: DI ~D | ore Lining, M=Matrix. |
| Hydric Soil | | euon, rawi- | -Neduced Math | K, IVIO-IVIASKE | u Sanu Gi | airis. | | s for Problematic Hydric Soils ³ : |
| Histosol | | | Dark Sur | face (S7) | | | | Muck (A10) (MLRA 147) |
| | pipedon (A2) | | | e Below Surfa | ce (S8) (I | VILRA 147 | | t Prairie Redox (A16) |
| | istic (A3) | | | k Surface (S9 | | | | LRA 147, 148) |
| Hydroge | en Sulfide (A4) | | | leyed Matrix | | | | nont Floodplain Soils (F19) |
| | d Layers (A5) | | | Matrix (F3) | | | | LRA 136, 147) |
| | ıck (A10) (LRR N) | | | ark Surface (I | | | | Parent Material (TF2) |
| | d Below Dark Surface | (A11) | | Dark Surface | | | | Shallow Dark Surface (TF12) |
| | ark Surface (A12) ⁄lucky Mineral (S1) (L l | DD N | | epres <mark>sions</mark> (F Iganese Mass | | /I DD N | Other | (Explain in Remarks) |
| | A 147, 148) | KK N, | | 4 136) | 665 (F12) | (LIXIX IV, | | |
| | Gleyed Matrix (S4) | | | Surface (F13) | (MLRA 1 | 36, 122) | ³ Indicate | ors of hydrophytic vegetation and |
| | Redox (S5) | | | t Floodplain S | | | | nd hydrology must be present, |
| | Matrix (S6) | | | | | | | s disturbed or problematic. |
| Restrictive | Layer (if observed): | | | | | | | |
| Type: | | | | | | | | |
| Depth (in | ches): | | | | | | Hydric Soil Pre | sent? Yes No |
| Remarks: | | | | | | | | |
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WETLAND 3 WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

| Project/Site: AFP BIG SANDY City/C | County: LAWRENCE Sampling Date: (252 4)2 |
|--|--|
| Applicant/Owner: AEP | State: Ly Sampling Point: 0 / |
| Investigator(s): BAO, MDT Section | • |
| Landform (hillslope, terrace, etc.): HILSLOPE SEEP Local reli | |
| | |
| Subregion (LRR or MLRA): Lat: Lat: | |
| | NWI classification: |
| Are climatic / hydrologic conditions on the site typical for this time of year? $$ Y | es No (If no, explain in Remarks.) |
| Are Vegetation, Soil, or Hydrology significantly disturb | oed? Are "Normal Circumstances" present? Yes NoX |
| Are Vegetation N, Soil N, or Hydrology N naturally problems | atic? (If needed, explain any answers in Remarks.) |
| SUMMARY OF FINDINGS - Attach site map showing sam | pling point locations, transects, important features, etc. |
| Hydrophytic Vegetation Present? Yes No | Is the Sampled Area |
| Hydric Soil Present? Yes No | within a Wetland? Yes X No |
| Wetland Hydrology Present? Yes No | |
| Remarks: | |
| PEM WETLAND SEEP LOCATEDON HIUSL JUNIUS EFFUSES, FORMERLY EXCAUATED A | OPE. WETLAND IS DOMINATED BY * HEEA (BORROW AREA) |
| HYDROLOGY | |
| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
| Primary Indicators (minimum of one is required; check all that apply) | Surface Soil Cracks (B6) |
| Surface Water (A1) True Aquatic Plants (I | |
| High Water Table (A2) Hydrogen Sulfide Odd | |
| ✓ Saturation (A3) Oxidized Rhizosphere | • |
| Water Marks (B1) Presence of Reduced Sediment Deposits (B2) Recent Iron Reductio | • • • |
| Sediment Deposits (B2) Recent Iron Reductio Drift Deposits (B3) Thin Muck Surface (C | |
| Algal Mat or Crust (B4) Other (Explain in Ren | |
| Iron Deposits (B5) | ✓ Geomorphic Position (D2) |
| Inundation Visible on Aerial Imagery (B7) | Shallow Aquitard (D3) |
| Water-Stained Leaves (B9) | Microtopographic Relief (D4) |
| Aquatic Fauna (B13) | → FAC-Neutral Test (D5) |
| Field Observations: | 4/ |
| Surface Water Present? Yes No Depth (inches):/ | <u>/ - ' </u> |
| Water Table Present? Yes No Depth (inches): | |
| Saturation Present? Yes No Depth (inches): _S | Wetland Hydrology Present? Yes No |
| (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre | vious inspections), if available: |
| | |
| Remarks: | |
| | |
| | |
| I I I I CAT GOVE ON A COMMENT OF THE | |
| HILLSIDE SEEP W/ SATURATION & | INUMDATION PRESENT, SEEPHELE |
| THROUGH BEDROCK LAYERS | |
| I Was ALL BOLDKOCK THISES | |
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WEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: Wmd4 524/2-

| | Absolute | | | Dominance Test worksheet: |
|--|----------|---|-------------|--|
| Tree Stratum (Plot size:) | % Cover | Species? | Status | Number of Dominant Species |
| 1 | | | | That Are OBL, FACW, or FAC: (A) |
| 2 | | | | Total Manda and David |
| 3. | | | | Total Number of Dominant Species Across All Strata: (B) |
| | | | | Species Across All Strata: (B) |
| 4 | | · ———————————————————————————————————— | | Percent of Dominant Species |
| 5 | | | | That Are OBL, FACW, or FAC: _ / (O) (A/B) |
| 6 | | | | |
| 7. | | | | Prevalence Index worksheet: |
| | | = Total Co | /er | Total % Cover of: Multiply by: |
| Sapling Stratum (Plot size:) | | . – 10141 00 | VCI | OBL species x 1 = |
| and the second s | | | | FACW species 65 x2= 130 |
| 1 | | | | FAC species 40 x3 = 120 |
| 2 | | | | |
| 3 | | | | FACU species/O x 4 =4o |
| 4 | | · | | UPL species x 5 = |
| 5 | | | | Column Totals: |
| 6. | | | | |
| 7 | | | | Prevalence Index = B/A = 2.4 |
| | | = Total Co | ver | Hydrophytic Vegetation Indicators: |
| Shrub Stratum (Plot size:) | | . , , , , , , , , , , , , , , , , , , , | | 1 - Rapid Test for Hydrophytic Vegetation |
| 1 | | | | ∠ 2 - Dominance Test is >50% |
| | | | | 3 - Prevalence Index is ≤3.0¹ |
| 2 | | | | i l |
| 3 | | · | | 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) |
| 4 | | | | · 1 |
| 5 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 6. | | | | |
| | | · | | ¹ Indicators of hydric soil and wetland hydrology must |
| 1 | | | | be present, unless disturbed or problematic. |
| Herb Stratum (Plot size:) | | = Total Co | ver | Definitions of Five Vegetation Strata: |
| | 00 | \checkmark | FACW | The Man banks and Banks and |
| 1. Juncus offices | | . <u> </u> | | Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. |
| 2. Junes tenus | | . <u> </u> | FAC | (7.6 cm) or larger in diameter at breast height (DBH). |
| 3. WOOLGRASS-Scinpus Cyperinus | 10 | | FACW | |
| 4. SFEBBOX - LUDWIHIA afternifolia | | | FACU | Sapling – Woody plants, excluding woody vines, |
| 5. GOLDEN ROD SPO SOLIDAHO SED. | | | FAC | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. |
| 6. FORTAIL SEDEL SPP. | -5 | | FAC | tilan sin. (7.6 cm) DBH. |
| | | · —— | FAC | Shrub – Woody plants, excluding woody vines, |
| 7. LOTPYT COED - EUTROCHUM PURPULEUM | | | | approximately 3 to 20 ft (1 to 6 m) in height. |
| 8. Sch. 2010hyrium Scoparium | | | PACU | |
| 9. NARROWLEAF CATTAIL TOPHA AVALLATIONA | _& | | OBL | Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody |
| 10. DARK GREEN BULRUSH - 9C-SEAVY ATTENDED | | | | plants, except woody vines, less than approximately |
| 11 | | | | 3 ft (1 m) in height. |
| | | · | | |
| 12 | 310 | · | | Woody vine – All woody vines, regardless of height. |
| | 117 | = Total Co | ver | |
| Woody Vine Stratum (Plot size:) | | | | |
| 1 | | · - | | |
| 2 | | | | |
| 3 | | | | |
| | | | | Hydrophytic |
| 4 | | | | Vegetation |
| 5 | | | | Present? Yes No No |
| | | = Total Co | ver | |
| Remarks: (Include photo numbers here or on a separate sh | neet.) | | | |
| , p. 1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1- | / | | | |
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| Profile Desc | ription: (Describe to | o the depth n | eeded to docu | ıment the i | ndicator | or confirm | the abse | nce of indicators.) |
|-------------------------|--|---------------|---|------------------|-------------------|-------------------|-----------------------|---|
| Depth | Matrix | | | lox Features | | . 2 | · | |
| (inches) | Color (moist) | | Color (moist) | % | Type ¹ | _Loc ² | Textur | e Remarks |
| 0-8. | VSEE BELO | | | | | | | |
| -8- | REFUSAL | BEDIEUC. | L. | | | | | |
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| | | | | | | | | |
| ¹ Type: C=Co | oncentration, D=Deple | etion, RM=Re | duced Matrix, N | —— ∕IS=Masked | d Sand Gra | ains. | ² Location | n: PL=Pore Lining, M=Matrix. |
| Hydric Soil I | | <u> </u> | | | | | | ndicators for Problematic Hydric Soils ³ : |
| Histosol | (A1) | _ | Dark Surfac | ce (S7) | | | | _ 2 cm Muck (A10) (MLRA 147) |
| Histic Ep | pipedon (A2) | _ | Polyvalue E | | , , , | - | , 148) | _ Coast Prairie Redox (A16) |
| Black His | | - | Thin Dark S | , , | | 47, 148) | | (MLRA 147, 148) |
| | n Sulfide (A4) | - | Loamy Gley Depleted M | - | (F2) | | | Piedmont Floodplain Soils (F19) |
| | l Layers (A5) ck (A10) (LRR N) | = | Depleted M Redox Dark | ` , | -6) | | | (MLRA 136, 147) Red Parent Material (TF2) |
| | Below Dark Surface | (A11) _ | Depleted D | • | • | | - | Very Shallow Dark Surface (TF12) |
| | ark Surface (A12) | _ | Redox Dep | | | | * | Other (Explain in Remarks) |
| | lucky Mineral (S1) (Ll | RR N, _ | Iron-Manga | | es (F12) (| LRR N, | | |
| | 147, 148) | | MLRA 1 | - | | | | 3 |
| | leyed Matrix (S4) | - | Umbric Sur Piedmont F | | | · · | | ³ Indicators of hydrophytic vegetation and |
| | edox (S5) Matrix (S6) | _ | Flegillolit F | iooupiairi S | ons (F19) | (WILKA 14 | +0) | wetland hydrology must be present, unless disturbed or problematic. |
| | ayer (if observed): | | | | | | | amood distanced or problematic. |
| Type: | | | _ | | | | | |
| Depth (inc | ches): | | _ | | | | Hydric | Soil Present? Yes No |
| Remarks: | | | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | | | | |
| | | | | | | | | * |
| | L Distors | BCD SOI | LS GRA | NELY, SI | HUDY | CLBY | W 17-1 | + VARIOUS MOTTLING. |
| | | | | , | | (| | , |
| | AT S' | REFUSIA | L AT B | EDRO | CK. | | | |
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| | MOTTLES - | ORANG | E. WHITISH | AREN 1 | Rines. | | | |
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| | THE VA | 12003 | MOTT | UNH | £ 111 | ISANI | E-0 | GIRAVEZ ALLUVIUM |
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| | APPEAR | es to | BE Cr | 71960 | 224 | HIST | ORIE T | DISTURBANCE |
| | | | | , , , , , | 107 | 1168. | | 763, 070.07711 00 |
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WETLAND 4

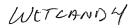
W-MDT. 050410-02

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

| Project/Site: At P BIG SANDI/ City/Ci | ounty: Louis 4, LANGENCE Sampling Date: 2012, May C |
|--|---|
| | State: OH Sampling Point: OD |
| Investigator(s): BAO, MDT Section | on Township Range |
| Landform (hillslope, terrace, etc.): SEEP Local relie | of (concave convex none): Cartilles Signs (0/): |
| Subregion (LRR or MLRA): Lat: Lat: | |
| | |
| Soil Map Unit Name: UpF | NWI classification: NA |
| Are climatic / hydrologic conditions on the site typical for this time of year? You | ¥. |
| Are Vegetation 🔑 , Soil <u>Y</u> , or Hydrology <u>Y</u> significantly disturt | |
| Are Vegetation/, Soil/, or Hydrology/ naturally problema | atic? (If needed, explain any answers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing sam | ppling point locations, transects, important features, etc. |
| Hydrophytic Vegetation Present? Yes _ ★ No Hydric Soil Present? Yes _ ★ No Wetland Hydrology Present? Yes _ ★ No | Is the Sampled Area within a Wetland? Yes / No |
| Remarks: | У. |
| PEM WETLAND SEEP LOCKTED ON HILLSLO DISTURBED SOILS. (FORMER BORROW ARE | |
| HYDROLOGY | |
| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
| Primary Indicators (minimum of one is required; check all that apply) | Surface Soil Cracks (B6) |
| Surface Water (A1) True Aquatic Plants (I | . , |
| High Water Table (A2) Hydrogen Sulfide Odd Saturation (A3) Oxidized Rhizosphere | · · · |
| Water Marks (B1) — Presence of Reduced | |
| Sediment Deposits (B2) Recent Iron Reductio | |
| Drift Deposits (B3) Thin Muck Surface (C | |
| Algal Mat or Crust (B4) Other (Explain in Ren | narks) Stunted or Stressed Plants (D1) |
| Iron Deposits (B5) | <u>K</u> Geomorphic Position (D2) |
| Inundation Visible on Aerial Imagery (B7) | Shallow Aquitard (D3) |
| Water-Stained Leaves (B9) | Microtopographic Relief (D4) |
| Aquatic Fauna (B13) | K FAC-Neutral Test (D5) |
| Field Observations: Surface Water Present? Yes No _X_ Depth (inches): | |
| Water Table Present? Yes V No Depth (inches): 204 | 2 FACK |
| Saturation Present? Yes X No Depth (inches): Sun | |
| (includes capillary fringe) | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre | vious inspections), if available: |
| Damada | |
| Remarks: | |
| | |
| HILLSIDE SEEP W/ SATURATION P | PESCAT |
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| 1.1-MIDT- | 050410-00 |
|-------------|-----------------|
| <i>U</i> ** | Sampling Point: |

| | cription: (Describe to the | | | | or confirm | the absence of i | ndicators.) |
|-------------------|---|----------------------------|-----------------|---------------------|------------------|-----------------------|--|
| Depth (inches) | Matrix Color (moist) | Red Color (moist) | ox Feature % | | Loc ² | Texture | Remarks |
| 17-4 | & SEE BELOW & | | | | | | 1,0,10,10 |
| 11- | REFUGAL | | | - **- | | | |
| | | | | | | | |
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| | | | | | | | |
| | oncentration, D=Depletion | , RM=Reduced Matrix, M | IS=Maske | d Sand Gr | ains. | | ore Lining, M=Matrix. |
| Hydric Soil | | Dork Surfac | o (C7) | | | | s for Problematic Hydric Soils ³ : |
| Histoso | pipedon (A2) | Dark Surfac Polyvalue B | | ace (S8) (N | ILRA 147. | | Muck (A10) (MLRA 147) t Prairie Redox (A16) |
| | istic (A3) | Thin Dark S | | | | | LRA 147, 148) |
| | en Sulfide (A4) | Loamy Gley | | (F2) | | | mont Floodplain Soils (F19) |
| | d Layers (A5) uck (A10) (LRR N) | Depleted Ma Redox Dark | | F6) | | | LRA 136, 147) Parent Material (TF2) |
| _ | d Below Dark Surface (A1 | | • | • | | | Shallow Dark Surface (TF12) |
| | ark Surface (A12) | Redox Depr | - | | | Other | r (Explain in Remarks) |
| | Mucky Mineral (S1) (LRR I | I, Iron-Manga MLRA 1 | | ses (F12) (| LRR N, | | |
| | A 147, 148) Gleyed Matrix (S4) | Umbric Surf | • | (MLRA 13 | 6, 122) | ³ Indicate | ors of hydrophytic vegetation and |
| | Redox (S5) | Piedmont F | | - | | | nd hydrology must be present, |
| | d Matrix (S6) | | | | , | unles | s disturbed or problematic. |
| | Layer (if observed): | | | | | | |
| | iches): | | | | | Hydric Soil Pre | esent? Yes No |
| Remarks: | | | | | | | |
| | | | | | | | |
| y/ | DISTURBED | 90128 £ | SANIE | SU CL | py u | urut some | - Kon Buri |
| 7 | DISTURBED |) 0 , 0 2 | 77,70 | * | (| | |
| | y" REFUGAL Y at BED. | | | | | | |
| | 4 at BED. | rock | | | | | |
| | | | | | | | |
| | VARIOUS M | otenus was | OBSE | RVED | ALO | va w/ i | INSONIED GRAVEZ |
| | * | | | | | , | |
| | • • | | | S.D. 1COC | | HAI MI | OFAR DUE to |
| | HISTORK I | DISTURBANCE | , | | | | |
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W-MOT-058410-00

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

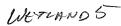
| /EGETATION (Five Strata) – Use scientific na | | | | Sampling Point: |
|--|----------|---------------|-------------------------|--|
| Tree Stratum (Plot size:) | | | t Indicator ? Status | Dominance Test worksheet: |
| | | | | Number of Dominant Species That Are OBL, FACW, or FAC: (A) |
| 1 | | | - | That Are OBL, FACW, or FAC: (A) |
| 2 | | | . — — | Total Number of Dominant |
| 4 | | | · | Species Across All Strata: (B) |
| | | | | Percent of Dominant Species |
| 5 | | | | That Are OBL, FACW, or FAC: (A/B) |
| 6 | | | | Prevalence Index worksheet: |
| 7 | | | | Total % Cover of: Multiply by: |
| Sapling Stratum (Plot size:) | | = Total Co | over | OBL species |
| 1 | | | | FACW species |
| 2. | | | | FAC species 50 x 3 = 156 |
| 3. | | | | FACU species x 4 = 20 |
| 4 | | | | UPL species x 5 = |
| 5. | | | | Column Totals: /2 (A) 29u (B) |
| | | | | |
| 6 | | | | Prevalence Index = B/A = |
| 7 | | - Total Co | wor | Hydrophytic Vegetation Indicators: |
| Shrub Stratum (Plot size:) | | - TOTAL CC | lvei | 1 - Rapid Test for Hydrophytic Vegetation |
| 1 | , | | | 2 - Dominance Test is >50% |
| | | | | X 3 - Prevalence Index is ≤3.01 |
| 3 | | | | 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) |
| 4 | | | | Problematic Hydrophytic Vegetation (Explain) |
| 5 | | | | 1 robicinatio riyarophytic vegetation (Explain) |
| 6 | | | | ¹ Indicators of hydric soil and wetland hydrology must |
| 7 | | _ | | be present, unless disturbed or problematic. |
| Harb Stratum (Diot aizar | ~ | = Total Co | over | Definitions of Five Vegetation Strata: |
| Herb Stratum (Plot size:) 1. √υνως εθθεξές | 1.16 | V | FACW | Tree – Woody plants, excluding woody vines. |
| 2. Junes tenus | | $\overline{}$ | PAC | approximately 20 ft (6 m) or more in height and 3 in. |
| • | | | FACW | (7.6 cm) or larger in diameter at breast height (DBH). |
| 3. WOOLGEASE - SCIRPUS CYPERNUS 4. SFFOBER - LUDWIGHT alternifolia | | | FACW | Sapling – Woody plants, excluding woody vines, |
| 5. GOLDENROD - SOLIDAGE SAR. | | | FAC | approximately 20 ft (6 m) or more in height and less |
| 6. PORTOR SEPTER - Setaria SEP. | | | FAC | than 3 in. (7.6 cm) DBH. |
| • | | | FAC | Shrub - Woody plants, excluding woody vines, |
| 7. SOF PILE WHED - FUFFOCHINA PURPUREUM | - | | FACU | approximately 3 to 20 ft (1 to 6 m) in height. |
| 8. Schiff CHTTA" - Tupha Arhustifolia | <u> </u> | | | Herb – All herbaceous (non-woody) plants, including |
| 10. DARKHALEN BULROSH - SCIEDUS AFROVIEM | | | OBL. | herbaceous vines, regardless of size, and woody |
| • | | | OBL | plants, except woody vines, less than approximately 3 ft (1 m) in height. |
| 11. SPHAGNUM MASS SPP. | _~_ | | OBL | |
| 12. | 121 | | | Woody vine - All woody vines, regardless of height. |
| Woody Vine Stratum (Plot size:) | 121 | = Total Co | over | |
| | | | | |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | Hydrophytic |
| 4 | | | | Vegetation |
| 5 | | T. I. I. O. | | Present? Yes K No |
| | | = Total Co | over | |
| Remarks: (Include photo numbers here or on a separate s | heet.) | | | |
| | | | | |
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WETLANDS

W-MDT-052412-03

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

| Project/Site: ACP BIG SHV DV | City/County: LAWRENCE Sampling Date: 2012, MAY 84 |
|--|--|
| Applicant/Owner: AFP | State: (Sampling Point: 03</td |
| Investigator(s): BAD, MD'T | State: Sampling Point: 3 |
| | |
| Subregion (I BB or MI BA): | Second relief (concave, convex, none): Slope (%): 38./835% Long: 83.637677 Datum: Datum: |
| | |
| | NWI classification: |
| Are climatic / hydrologic conditions on the site typical for this time of your state of the stat | · · · · · · · · · · · · · · · · · · · |
| | y disturbed? Are "Normal Circumstances" present? Yes NoX |
| Are VegetationN, SoilN, or HydrologyN naturally pr | oblematic? (If needed, explain any answers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing | g sampling point locations, transects, important features, etc. |
| Hydrophytic Vegetation Present? Hydric Soil Present? Wes No Wetland Hydrology Present? Yes No | I IS THE SAMPLED Area |
| Remarks: PEM WETCAND LOCATED AT AREA WITH DISTURBED SOILS. | TOE-OF-SLOPE. * PREVIOUSLY EXCHUPTED |
| HYDROLOGY | |
| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
| Primary Indicators (minimum of one is required; check all that apply) | Surface Soil Cracks (B6) |
| Surface Water (A1) True Aquatic F | |
| High Water Table (A2) Hydrogen Sulf | . , , |
| | ospheres on Living Roots (C3) Moss Trim Lines (B16) |
| Water Marks (B1) Presence of R Sediment Deposits (B2) Recent Iron Re | educed Iron (C4) Dry-Season Water Table (C2) eduction in Tilled Soils (C6) Crayfish Burrows (C8) |
| Drift Deposits (B3) Thin Muck Sur | |
| Algal Mat or Crust (B4) Other (Explain | |
| Iron Deposits (B5) | ∑ Geomorphic Position (D2) |
| Inundation Visible on Aerial Imagery (B7) | Shallow Aquitard (D3) |
| Water-Stained Leaves (B9) | Microtopographic Relief (D4) |
| Aquatic Fauna (B13) | FAC-Neutral Test (D5) |
| Field Observations: | 1000 |
| Surface Water Present? Yes No Depth (inches | 3):/,5 |
| Water Table Present? Yes No _X Depth (inches | |
| Saturation Present? Yes No Depth (inches (includes capillary fringe) | s): Surface Wetland Hydrology Present? Yes No |
| Describe Recorded Data (stream gauge, monitoring well, aerial phot | os, previous inspections), if available: |
| | |
| Remarks: | |
| | |
| , , | NUNDATION & SATURATION PRESENT |
| TOE- OF SLOPE WITH 1" | 0000000 1 000 1 000 1 005600T |
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| | | Dominant Inc Species? S | tatue | ominance Test worksheet: | |
|--|---|----------------------------|-----------------|--|--|
| | | opecies: | INL | umber of Dominant Species at Are OBL, FACW, or FAC: | |
| 2 | | | —— то | otal Number of Dominant | |
| 3 | | | | pecies Across All Strata: (B) | |
| l | | | _{Pe} | ercent of Dominant Species | |
| 5 | | | Th | nat Are OBL, FACW, or FAC:(A/B) | |
| 5 | | | Dr. | evalence Index worksheet: | |
| | | | | Total % Cover of: Multiply by: | |
| Sapling Stratum (Plot size:) | | = Total Cover | — | BL species $\frac{\partial \mathcal{H}}{\partial x} \times 1 = \frac{\partial \mathcal{H}}{\partial x}$ | |
| · | | | - 1 | ACW species x 2= 40 | |
| made de primario de la companya del companya del companya de la co | | | | AC species 76 $\times 3 = 210$ | |
| 3 | | | | ACU species 25 x 4 = 106 | |
| | | | | PL species x 5 = | |
| · | | | | 170 | |
| 5. | | | | | |
| <u> </u> | | | | Prevalence Index = B/A = 2.69 | |
| • | | = Total Cover | Hy | drophytic Vegetation Indicators: | |
| Shrub Stratum (Plot size:) | | - Total Gover | _ | _ 1 - Rapid Test for Hydrophytic Vegetation | |
| l | | | | 2 - Dominance Test is >50% | |
| 2 | | | \ | 3 - Prevalence Index is ≤3.0¹ | |
| 3 | | | | 4 - Morphological Adaptations (Provide supporting | |
| l | | | | data in Remarks or on a separate sheet) | |
| 5 | | | - | Problematic Hydrophytic Vegetation ¹ (Explain) | |
| 5 | | | | allendare of the transport | |
| 7. | | | lin | ndicators of hydric soil and wetland hydrology must present, unless disturbed or problematic. | |
| | : | = Total Cover | | efinitions of Five Vegetation Strata: | |
| Herb Stratum (Plot size:) | ~ | V , | | _ | |
| BLUESTEM - Sch. Zochyrium Scoparium | 70 | , , | <i>lc∪</i> Trap | Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, | |
| 2. JUNCUS TENNIS CATTO - TUPHA ANGUENTONIA | | | BL (7. | | |
| BROADLEAD CATTALE TUPNA LABOLIA | | | | | |
| 5. WOOLFIRASS - SCINDUS CUPERNUS | 10 | | ap | | |
| i. Dand Finen Burnett - Scraps attorning | | | 3L tha | | |
| " " | | | Sh | | |
| . JUNEUS EFFORES B. SPHAGNUM WOSS SP. | | | BL ap | proximately 3 to 20 ft (1 to 6 m) in height. | |
| | | | He | Herb – All herbaceous (non-woody) plants, including | |
|), | | | he | herbaceous vines, regardless of size, and woody | |
| 0 | | | | plants, except woody vines, less than approximately 3 ft (1 m) in height. | |
| 1 | *************************************** | | | | |
| 2 | 139 | = Total Cover | \ w | oody vine – All woody vines, regardless of height. | |
| Voody Vine Stratum (Plot size:) | | - Total Cover | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| l | | | | ydrophytic egetation | |
| 5 | | | 1 - | esent? Yes No | |
| | | = Total Cover | | | |
| Remarks: (Include photo numbers here or on a separate sh | | | | | |
| | | | | | |

W-MOT-0504/2-03

SOIL

| 20 | · |
|----|-----------------|
| | Sampling Point: |

| Profile Desc | ription: (Describe to the dep | h needed to docume | ent the indica | tor or confirm | the absence | of indicators.) |
|----------------|--------------------------------|----------------------------------|-----------------|---------------------------------|-------------|--|
| Dep t h | Matrix | Redox | Features | | | |
| (inches) | Color (moist) % | Color (moist) | <u>%</u> Typ | e ¹ Loc ² | Texture | Remarks |
| 0-4_ | +SEE BELOW * | | | | | |
| ~ | REFUSAL | | | | | |
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| 1- 0.0 | | Dadward Makin MC | | | 21 | Den Linia Manage |
| | oncentration, D=Depletion, RM= | Reduced Matrix, MS= | Masked Sand | Grains. | | L=Pore Lining, M=Matrix. ators for Problematic Hydric Soils ³ : |
| Hydric Soil I | | Dad Confere (| 07) | | | · · |
| Histosol | • , | Dark Surface (| |) /841 D A 447 | | cm Muck (A10) (MLRA 147) |
| | ipedon (A2) | Polyvalue Belo Thin Dark Surf | | | . 148) C | Coast Prairie Redox (A16) (MLRA 147, 148) |
| Black His | | Loamy Gleyed | | (A 147, 140) | E | Piedmont Floodplain Soils (F19) |
| | n Sulfide (A4) Layers (A5) | Depleted Matri | | | — ' | (MLRA 136, 147) |
| | ck (A10) (LRR N) | Redox Dark St | . , | | F | Red Parent Material (TF2) |
| | Below Dark Surface (A11) | Depleted Dark | | | | 'ery Shallow Dark Surface (TF12) |
| | rk Surface (A12) | Redox Depres | | | | Other (Explain in Remarks) |
| Sandy M | lucky Mineral (S1) (LRR N, | Iron-Manganes | se Masses (F | 2) (LRR N, | • | |
| MLRA | 147, 148) | MLRA 136) | | | | |
| Sandy G | leyed Matrix (S4) | Umbric Surface | | | | licators of hydrophytic vegetation and |
| | edox (S5) | Piedmont Floo | dplain Soils (l | 19) (MLRA 1 4 | • | vetland hydrology must be present, |
| | Matrix (S6) | | | | u | nless disturbed or problematic. |
| Restrictive L | ayer (if observed): | | | | | |
| Туре: | | | | | | |
| Depth (inc | ches): | | | | Hydric Soil | Present? Yes No |
| Remarks: | | | | | | |
| | | | | | | |
| | V > - | | | | | |
| | * DISTURBED S | OILS SANDI | 1010 | | | |
| | * DISTURBED S | , -, -, - | TURY | WITH S | OME GR | 1-AVE7 |
| | REFUSAL WA | 5 197 4" | /% | | | |
| | | HT | 136000 | CR. | | |
| | Solls Amotors | | | , | | etes finance |
| | 100 NOTED | WY VARIOU | s mor | TIING 8 | E LINSON | 7 |
| | <u> </u> | _ | | | , 0,,00,, | OF GRAVEL |
| | ALLUVIUM | Inscrune | D BED | ROCU | THAT | ADDED OF DIE |
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| | to Histor | C DISTUR | BANCE | atomic . | | |
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| INETLAND 6 | N-BAO-052412-05 |
|--|---|
| WETLAND DETERMINATION DATA FORM - Easters | n Mountains and Piedmont |
| Project/Site: AEP BIG SANDY City/County: LOUISA Applicant/Owner: AEP | |
| Investigator(s): B. OTTO M. THOMPLEY UKS Section, Township, Rar Landform (hillslope, terrace, etc.): Toe OF SLope Local relief (concave, conv Subregion (LRR or MLRA): Lat: 38, 195 745 Long Soil Map Unit Name: Lat: 38, 195 745 Long Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "I Are Vegetation X, Soil X, or Hydrology X naturally problematic? (If new SUMMARY OF FINDINGS — Attach site map showing sampling point to Hydrophytic Vegetation Present? | nge: |
| Hydric Soil Present? Wetland Hydrology Present? Yes No within a Wetlan | |
| PEM/PSS WETZAND THAT IS LOCATED AT TOE-O STREAM S-MOTS/24/12-OLD (EPHEMENAL). SONS WERE DI HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) | Secondary Indicators (minimum of two required) Surface Soil Cracks (B6) |
| Surface Water (A1) | Dry-Season Water Table (C2) |
| Field Observations: Surface Water Present? Yes X No Depth (inches): Aw Water Table Present? Yes No Depth (inches): Wes Saturation Present? Yes X No Depth (inches): Surface Wes (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections | etland Hydrology Present? Yes <u>X</u> No |
| TOE-OF-SLOPE, ROADSIDE DITCH FLOW INT 15 ABUTTINH EPHEMERIAL STREAM | TO WETLAND, & WETLAND |

*W-BA-0-050412-05*Sampling Point:

| , | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|---|---|-------------|---------------|--|
| Tree Stratum (Plot size:) | % Cover | Species? | <u>Status</u> | Number of Dominant Species |
| 1. | | | | That Are OBL, FACW, or FAC: (A) |
| 2. | | | | Total Number of Dominant |
| 3. | | | | Species Across All Strata: |
| 4 | | | | Developed of Demineral Constitution |
| 5 | | | | That Are OBL, FACW, or FAC: (A/B) |
| 6. | | | | |
| 7. | | | | Prevalence Index worksheet: |
| | | = Total Cov | /er | Total % Cover of: Multiply by: |
| Sapling Stratum (Plot size:) | 2 | | | OBL species x1 = 55 |
| 1. SALIX NIGRA | | | OBL | FACW species 60 x 2 = 120 |
| 2. PLANTUS OCIDENTALIS | 5_ | | FACW | FAC species x 3 = |
| 3 | | | | FACU species x 4 = |
| 4 | | | | UPL species x 5 = |
| 5 | | | | Column Totals:(A)(B) |
| 6 | | | | Prevalence Index = B/A =2.03 |
| 7 | | | | |
| | 25 | = Total Cov | /er | Hydrophytic Vegetation Indicators: |
| Shrub Stratum (Plot size:) | | | | 1 - Rapid Test for Hydrophytic Vegetation |
| 1. | | | | 2 - Dominance Test is >50% |
| 2. | | | | 3 - Prevalence Index is ≤3.0 ¹ |
| 3. | | | | 4 - Morphological Adaptations (Provide supporting |
| 4 | | | | data in Remarks or on a separate sheet) |
| 5 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 6 | | | | 4 |
| 7. | | | | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| | | = Total Cov | /er | Definitions of Five Vegetation Strata: |
| Herb Stratum (Plot size:) | | | | Definitions of Five Vegetation Strata: |
| 1. JUNIUS EFFUGUS | 15 | | FACW | Tree – Woody plants, excluding woody vines, |
| 2. SOLIDAGO SPP. | /0_ | | FAC | approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). |
| 3. Typha Jostifolia | 15_ | | OBL | (7.0 GH) of larger in diameter at breast neight (DBH). |
| 4. Scirpus cyperinus | <u> -5. </u> | | FACW | Sapling – Woody plants, excluding woody vines, |
| 5. Scippis atrovirens | _35_ | X | FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. |
| 6. VUNCUS tenius | 30 | × | FAC | |
| 7. | 98.16 | | , | Shrub – Woody plants, excluding woody vines, |
| 8. | | | | approximately 3 to 20 ft (1 to 6 m) in height. |
| 9 | | | | Herb – All herbaceous (non-woody) plants, including |
| 10 | | | | herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately |
| 11 | | | | 3 ft (1 m) in height. |
| | | | | THE STATE OF THE S |
| 12 | 110 | - Total Ca | | Woody vine - All woody vines, regardless of height. |
| Woody Vine Stratum (Plot size:) | 1100 | = Total Cov | ver | |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| | | | | Hydrophytic |
| 4 | | | | Vegetation |
| 5 | | | | Present? Yes No |
| | | = Total Cov | ver | |
| Remarks: (Include photo numbers here or on a separate | sheet.) | | - | |
| | | | | |
| | | | | |
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| | | | | |

| Sampling Point: | |
|-----------------|--|

| Profile Des | scription: (Describe t | o the depth | needed to docu | ment the indicator | or confirm | the absence of | of indicators.) |
|-------------|--|---------------|---------------------------|------------------------------------|------------|----------------|--|
| Depth | Matrix Color (moist) | % | Redo Color (moist) | ox Features % Type ¹ | Loc² | Texture | Pomorko |
| (inches) | Color (moist) | | | BELOW | 1/ | rexture | Remarks |
| 0-8 | | | X DCE | <u>IJeuses</u> | | | |
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| | | | | | | | |
| 1-Type: C=(| Concentration, D=Depl | | aduced Matrix M | S-Masked Sand Gr | aine | 21 ocation: DI | =Pore Lining, M=Matrix. |
| | Indicators: | suon, rivi-ri | educed Matrix, M | is-iviaskeu sahu Gi | allis. | | tors for Problematic Hydric Soils ³ : |
| Histoso | | | Dark Surface | e (S7) | | | cm Muck (A10) (MLRA 147) |
| | Epipedon (A2) | | | elow Surface (S8) (I | ILRA 147, | | past Prairie Redox (A16) |
| | Histic (A3) | | | urface (S9) (MLRA | 147, 148) | | (MLRA 147, 148) |
| | gen Sulfide (A4) | | | ed Matrix (F2) | | | edmont Floodplain Soils (F19) |
| | ed Layers (A5) fuck (A10) (LRR N) | | Depleted Ma Redox Dark | | | | (MLRA 136, 147) ed Parent Material (TF2) |
| | ed Below Dark Surface | (A11) | | ark Surface (F7) | | | ery Shallow Dark Surface (TF12) |
| _ | Dark Surface (A12) | | Redox Depr | | | ✓ot | her (Explain in Remarks) |
| | Mucky Mineral (S1) (L | RR N, | • | nese Masses (F12) | LRR N, | | |
| 1 | RA 147, 148) Gleyed Matrix (S4) | | MLRA 13 Umbric Surfa | ace (F13) (MLRA 1 : | 36, 122) | 3Indi | cators of hydrophytic vegetation and |
| | Redox (S5) | | | oodplain Soils (F19) | - | | etland hydrology must be present, |
| | ed Matrix (S6) | | | | | | less disturbed or problematic. |
| Restrictive | Layer (if observed): | | | | | | |
| Type: _ | | | | | | | |
| | nches): | | | | | Hydric Soil | Present? YesX_ No |
| Remarks: | | | | | | | |
| | HYDRIC S | 016 | ASSUM @ | う | | | |
| ¥ | DISTURBED | Sei | LS - 6 | EAVELY, SI | andy s | Surycin | y WITH VARIOUS |
| | MOTTLINH | | | • | | | |
| | | | | | | | |
| | THE VARI | 9 <i>08 N</i> | OTTLING | & UNSOR | TED F | IR AVEZ 1 | ALLUVIUM WITH |
| | 1 | | | | | | ì |
| | FRACTURE | D BEE | nock. | APPEARS | DUE | to H | ISTORIC IMPACT |
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WETLAND 7

W. MPT-052412-de

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

| Project/Site: AEP BIG-SANDY City/C | County: LOUISH, LAWRENCE Sampling Date: 24 MAY 2012 |
|---|---|
| Applicant/Owner: AEP | county: <u>LOUISIA, LAWRUNCE</u> Sampling Date: 24, MM 20/2 State: <u>LU</u> Sampling Point: |
| Investigator(s): B. OTTO, M. THOMAYER Section | |
| | |
| Landform (hillslope, terrace, etc.): HUSLOPE SEEP Local reli Subregion (LRR or MLRA): Lat: 38 /8 39/0 | 1 long: -82 (0.36.80(a Datum: |
| Soil Map Unit Name: Upr | NWI classification: |
| | |
| Are climatic / hydrologic conditions on the site typical for this time of year? Y | to all a state of the state of |
| Are Vegetation | Ded? Are "Normal Circumstances" present? Yes No |
| Are Vegetation, Soil, or Hydrology naturally problems | |
| SUMMARY OF FINDINGS – Attach site map showing sam | ipling point locations, transects, important features, etc. |
| Hydrophytic Vegetation Present? Yes No | Is the Sampled Area |
| Hydric Soil Present? Yes No | within a Wetland? Yes <_ No |
| Wetland Hydrology Present? Yes No | |
| Remarks: | , |
| | TO DAY HUISIDE FORMER ROADON MAIN |
| YEM WETLAND WITH MINIMUM POS LECTIO | EN CHICKDE, POICHERE PORTOW HILLER |
| PEM WETLAND WITH MINIMUM POS LOCATE AREA THAT IS NOW A HILLBIDE SE | ed.* |
| HYDROLOGY | |
| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
| Primary Indicators (minimum of one is required; check all that apply) | Surface Soil Cracks (B6) |
| | • • |
| Surface Water (A1) True Aquatic Plants (High Water Table (A2) Hydrogen Sulfide Odd | |
| 1 ' | es on Living Roots (C3) Moss Trim Lines (B16) |
| Water Marks (B1) Presence of Reduced | |
| Sediment Deposits (B2) Recent Iron Reductio | |
| Drift Deposits (B3) Thin Muck Surface (C | |
| Algal Mat or Crust (B4) Other (Explain in Ren | |
| Iron Deposits (B5) | ✓ Geomorphic Position (D2) |
| Inundation Visible on Aerial Imagery (B7) | Shallow Aquitard (D3) |
| Water-Stained Leaves (B9) | Microtopographic Relief (D4) |
| Aquatic Fauna (B13) | ✓ FAC-Neutral Test (D5) |
| Field Observations: | |
| Surface Water Present? Yes No Depth (inches): | |
| Water Table Present? Yes No Depth (inches): | |
| Saturation Present? Yes No Depth (inches): Sav | Wetland Hydrology Present? Yes X No |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre | vious inspections), if available: |
| Remarks: | |
| | |
| | |
| | |
| ANEA IS A FORMER BORROW; IT HAS | |
| 1 | PEEN HIGHLY PISTURBED WHICH |
| HAS CAUSED GIROUND | ' |
| HAS CAUSED GROUND WATER TO SEZ | P OUT BEDROGE |
| | |
| | |
| | |
| | |

| | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|---|--|-------------|-----------|---|
| Tree Stratum (Plot size:) | | Species? | | Number of Dominant Species |
| 1 | | - | | That Are OBL, FACW, or FAC: (A) |
| 2 | and the same of th | | | |
| 3 | | | | Total Number of Dominant Species Across All Strata: (B) |
| | | | | Opecies Across All Strata. (B) |
| 4 | | | | Percent of Dominant Species |
| 5 | | | | That Are OBL, FACW, or FAC:(A/B) |
| 6 | | | | Prevalence index worksheet: |
| 7 | | | | Total % Cover of: Multiply by: |
| 8 | | | | OBL species x1 = 20 |
| | | = Total Cov | er | |
| Sapling/Shrub Stratum (Plot size:) | | | C . 1 | FACW species 92 x2=/84 |
| 1. SALIX NIHOTA | 5 | | FACW | FAC species x 3 = (@0 |
| 2. PLANTUS OCCIDENTALIS | 5 | | FACW | FACU species 2 x4 = 8 |
| 3 | | | | UPL species x 5 = |
| 4 | | | | Column Totals: |
| 5 | | | | |
| 6 | | | | Prevalence Index = B/A = 2.03 |
| 7 | | | | Hydrophytic Vegetation Indicators: |
| | | | | 1 - Rapid Test for Hydrophytic Vegetation |
| 8 | | | | ∠ 2 - Dominance Test is >50% |
| 9 | | | | 3 - Prevalence Index is ≤3.0¹ |
| 10 | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| Liet Chet (Dist size) | 10 | = Total Cov | er | data in Remarks or on a separate sheet) |
| Herb Stratum (Plot size:) | | . / | Carl | · ' |
| 1. JUNCUS EFFUSUS | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 2. SCIRPUS CUPERINUS | | | | |
| 3. Saidatio Sp. | _10_ | | FAC | Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 4. ONOCLEA SENSIBILIS | 2_ | | FACW | |
| 5. Carex VULPINOIDER | 10 | | OBL | Definitions of Four Vegetation Strata: |
| 6. SCIRPUS ATROVIRENS | _5 | | 031 | Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or |
| 7. TYPHA LATIFOLIA | | | | more in diameter at breast height (DBH), regardless of |
| 8. EUPATORIUM PURPUREUM | | | | height. |
| 9. RUBUS AMERILENSIS | | | FACU | Sapling/Shrub – Woody plants, excluding vines, less |
| | | | | than 3 in. DBH and greater than or equal to 3.28 ft (1 |
| 10 | | | | m) tall. |
| 11. | | | | Herb - All herbaceous (non-woody) plants, regardless |
| 12 | 15.1 | | | of size, and woody plants less than 3.28 ft tall. |
| Woody Vine Stratum (Plot size:) | 124 | = Total Cov | er | Woody vine All woody vines greater than 3.28 ft in |
| | | | | height. |
| 1 | - Andrews and the second | | | |
| 2 | - | | | |
| 3 | - | · | ···· | |
| 4 | - | | | I bode who die |
| 5 | | | | Hydrophytic Vegetation |
| 6 | | | | Present? Yes _ K No |
| | | = Total Cov | er | |
| Remarks: (include photo numbers here or on a separate | sheet) | | | |
| The manner (middle proses manner of the copanies) | | | | |
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SOIL

| | cription: (Describe | to the depth | | | | or confirm | n the abser | nce of indicators.) |
|-----------------------|--|--------------|------------------------------|------------------|--------------|------------------|-------------|--|
| Depth (inches) | <u>Matrix</u> Color (moist) | | Redo Color (moist) | ox Features % | | Loc ² | Texture | Remarks |
| D-8 | - 1 | NnBE | | | 1100 | | SILTYCLA | A |
| 0-0 | 1 | 121(13) C | ' | | | | | |
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| | **** | | | | | | - | |
| | Concentration, D=Depl | etion, RM=Re | educed Matrix, M | S=Masked | Sand Gra | ains. | | PL=Pore Lining, M=Matrix. |
| - | Indicators: | | 5 . 6 . | (07) | | | | dicators for Problematic Hydric Soils ³ : |
| Histoso | , , | | Dark Surface | ` ' | oo (CO) (N | II DA 447 | | 2 cm Muck (A10) (MLRA 147) |
| | pipedon (A2) listic (A3) | | Polyvalue Be Thin Dark Si | | | | , 140) | Coast Prairie Redox (A16) (MLRA 147, 148) |
| _ | en Sulfide (A4) | | Loamy Gley | | | ,, | | Piedmont Floodplain Soils (F19) |
| | d Layers (A5) | | Depleted Ma | atrix (F3) | • | | | (MLRA 136, 147) |
| | uck (A10) (LRR N) | | Redox Dark | • | • | | | _ Very Shallow Dark Surface (TF12) |
| | ed Below Dark Surface | e (A11) | Depleted Da | | • • | | 7 | Other (Explain in Remarks) |
| | ark Surface (A12) Mucky Mineral (S1) (L | PP N | Redox Depro | | | DD N | | |
| | A 147, 148) | ixix iv, | MLRA 13 | | 55 (1 12) (1 | -IXIX IV, | | |
| | Gleyed Matrix (S4) | | Umbric Surfa | • | MLRA 13 | 6, 122) | 3 | Indicators of hydrophytic vegetation and |
| Sandy | Redox (S5) | | Piedmont Fl | oodplain S | oils (F19) | (MLRA 1 | | wetland hydrology must be present, |
| | d Matrix (S6) | | Red Parent | Material (F | 21) (MLR | A 127, 14 | 7) | unless disturbed or problematic. |
| _ | Layer (if observed): | | | | | | | |
| Type: // Depth (ir | SEDROCK nches): | | | | | | Hvdric S | Soil Present? Yes X No |
| Remarks: | | | | | | | | |
| , (0.1) | | | | | | | | |
| | | | | | | | | |
| . / | | | | | - 0 - | | 1771 | 1.70 |
| X | SOILS | WEX | CE DI | STOR | め日 | $>$ ν | JUH | - VARIOUS |
| 1. | 2001 | | | | | | | |
| | | <u></u> | | | | | | |
| | MOTTLES | S Er 1 | COLOR | S. L | ARH | EN | MOUN | T OF GNAVEZ |
| | | - | | • | | <i>F F</i> | | C. Circii |
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| | VARIOUS | Mo. | MLES | جر ر | 1N50 | RIC | D 6 | RAVEL WITH |
| | FRACTUR | ED BE | orock | Арр | EAR | 2 D | J€. | To HISTORIC |
| | DISTUR | | | | | | | |
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W-MOT-052412-07

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

| Project/Site: AFP 1345 S/AADA/ | winty LOVISA LAWRENCE Sampling Date: 24 MAN 201- |
|---|--|
| Applicant/Owner: AFP | State: Sampling Date: 24 May 20/2 State: Sampling Point: 7 n, Township, Range: |
| Investigatorial BOTTO MITHOMANIA Society | Township Penger |
| Landform (Allindam Annual at): HIUShOF SETSO Land alling | f (consisting, range) |
| Landform (hillslope, terrace, etc.): HINSLOPE, SEEP Local relie Subregion (LRR or MLRA): Lat: 38./8342 | r (concave, convex, none): Slope (%): 20 |
| | Long: |
| | NWI classification: |
| Are climatic / hydrologic conditions on the site typical for this time of year? Ye | |
| Are Vegetation, Soil, or Hydrology significantly disturb | |
| Are Vegetation \mathcal{N} , Soil \mathcal{N} , or Hydrology \mathcal{N} naturally problemat | ic? (If needed, explain any answers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing samp | oling point locations, transects, important features, etc. |
| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks: Yes No Yes No No Remarks: | ls the Sampled Area within a Wetland? Yes No |
| PEM WETLAND LOCATED ON HIMSIDE, * FOR HUISIDE SEEP. * HYDROLOGY | MER BORROW AREA THAT 15 NOW A |
| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
| Primary Indicators (minimum of one is required; check all that apply) | Surface Soil Cracks (B6) |
| Surface Water (A1) True Aquatic Plants (B | |
| High Water Table (A2) Hydrogen Sulfide Odo | ' - ' - ' - ' - ' - ' - ' - ' - ' - |
| Saturation (A3) Oxidized Rhizosphere: | s on Living Roots (C3) Moss Trim Lines (B16) |
| Water Marks (B1) Presence of Reduced | |
| Sediment Deposits (B2) Recent Iron Reduction | · · · · · · · · · · · · · · · · · · · |
| Drift Deposits (B3) Thin Muck Surface (C7 | |
| Algal Mat or Crust (B4) Other (Explain in Rem | |
| Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) | Geomorphic Position (D2) Shallow Aguitard (D3) |
| Water-Stained Leaves (B9) | Microtopographic Relief (D4) |
| Aquatic Fauna (B13) | ★ FAC-Neutral Test (D5) |
| Field Observations: | |
| Surface Water Present? Yes No Depth (inches): | |
| Water Table Present? Yes No _ /_ Depth (inches): | |
| Saturation Present? Yes No Depth (inches): | Wetland Hydrology Present? Yes No |
| (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, prev | ious inspections), if available: |
| Remarks: | |
| Tomano. | |
| | |
| ANEA IS A FORMER BORROW ARE | - TO SEEP OUT OF BEDROCK |
| | THE PEEN HIMALY DISTURBED |
| WHICH HAS CAUSED GROUNDWATER | - TO STOP OUT OF BONDON |
| | Joe De localette |
| | |
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VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W-MOT 0524 12-07

| | Absolute | | | Dominance Test worksheet: |
|---|--|-------------------|---|--|
| Tree Stratum (Plot size:) | % Cover | Species? | Status | Number of Dominant Species |
| 1 | | | | That Are OBL, FACW, or FAC: (A) |
| 2 | - | | | Total Number of Dominant |
| 3. | | | | Total Number of Dominant Species Across All Strata: (B) |
| 4 | | | | (-) |
| 5. | • ——— | | | Percent of Dominant Species |
| | Name of the last o | | | That Are OBL, FACW, or FAC:(A/B) |
| 6 | | | | Prevalence Index worksheet: |
| 7 | | | | Total % Cover of:Multiply by: |
| 8 | | | | |
| | | = Total Cov | er | |
| Sapling/Shrub Stratum (Plot size:) | | | | |
| 1 | - | | | FAC species x3 = 51 |
| 2 | | | | FACU species x 4 = |
| 3 | | | | UPL species x 5 = |
| 4. | | | | Column Totals: 109 (A) 225 (B) |
| 5 | | | | , , |
| 6 | | | | Prevalence Index = B/A = 2.0(@ |
| 6 | | | | Hydrophytic Vegetation Indicators: |
| 7 | • | | | 1 - Rapid Test for Hydrophytic Vegetation |
| 8 | | | | ∠ 2 - Dominance Test is >50% |
| 9 | - | | | ∠ 3 - Prevalence Index is ≤3.0¹ |
| 10 | | | | 4 - Morphological Adaptations¹ (Provide supporting |
| | | = Total Cov | er | |
| Herb Stratum (Plot size:) | | , , | - | data in Remarks or on a separate sheet) |
| 1. Junas EFFUSUS | 45 | | GACW | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 2. Scirpus ATROVIRENS | 30 | <u> </u> | FACW | |
| 3. CAREX YULPINOIDEA | 10 | | OBL | ¹ Indicators of hydric soil and wetland hydrology must |
| 4. JUNCUS TENUIS | | | FAC | be present, unless disturbed or problematic. |
| 5. SOLIDAGIO Sp. | | | | Definitions of Four Vegetation Strata: |
| 6. EUPATORIUM PURPUREUM | | | PAC | Tree Meady plants avaluation vince 2 in (7.6 cm) |
| 1 | | | | Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of |
| 7. LUDWIGHA ALTERNIFOLIA | | | FACW | height. |
| 8. Symphyptrichum puniceum | | • | FACW | 0 11 /0 1 11 1 1 1 1 1 1 |
| 9 | | | | Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 |
| 10 | | | | m) tall. |
| 11 | | | | |
| 12. | | | | Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. |
| | 109 | = Total Cov | er | or size, and woody plants less than 3.20 it tall. |
| Woody Vine Stratum (Plot size:) | | | • | Woody vine - All woody vines greater than 3.28 ft in |
| 1. | والمراجع والمراجع والمراجعة | and a straight of | | height. |
| 2. | | | | |
| 3. | | | | |
| 4 | | | • | |
| | | - | | Hydrophytic |
| 5. | | | | Vegetation |
| 6 | <u></u> | | | Present? Yes No |
| | | = Total Cov | er er | |
| Remarks: (Include photo numbers here or on a separate | sheet.) | | | |
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SOIL

Sampling Point: W-MBT-1552412-07

| Profile Description | on: (Describe to the dep | th needed to document the indicator or confirn | n the absence of indicators.) |
|---------------------|--------------------------|--|--|
| Depth | Matrix | Redox Features | |
| (inches) (| Color (moist) % | Color (moist) % Type ¹ Loc ² | Texture Remarks |
| X 50 | F BEZOW | ¥ | |
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| 1Tyma: C=Canaai | ntrotion D-Donlotion PM: | - Paduaad Matrix MS-Macked Sand Grains | ² Location: PL=Pore Lining, M=Matrix. |
| * . | | Reduced Matrix, MS=Masked Sand Grains. | Indicators for Problematic Hydric Soils ³ : |
| Hydric Soil Indic | | Ded. Co.fe. (27) | - |
| Histosol (A1) | | Dark Surface (S7) | 2 cm Muck (A10) (MLRA 147) |
| Histic Epiped | | Polyvalue Below Surface (S8) (MLRA 147, | |
| Black Histic (| | Thin Dark Surface (S9) (MLRA 147, 148) | (MLRA 147, 148) |
| Hydrogen Su | | Loamy Gleyed Matrix (F2) | Piedmont Floodplain Soils (F19) |
| Stratified Lay | | Depleted Matrix (F3) | (MLRA 136, 147) |
| 2 cm Muck (A | | Redox Dark Surface (F6) Depleted Dark Surface (F7) | Very Shallow Dark Surface (TF12) |
| | ow Dark Surface (A11) | , | Other (Explain in Remarks) |
| Thick Dark S | Mineral (S1) (LRR N, | Redox Depressions (F8) | |
| | | Iron-Manganese Masses (F12) (LRR N, | |
| MLRA 147 | | MLRA 136) | 3Indicators of hydrophytic vagatation and |
| Sandy Gleye | | Umbric Surface (F13) (MLRA 136, 122) | ³ Indicators of hydrophytic vegetation and |
| Sandy Redox | | Piedmont Floodplain Soils (F19) (MLRA 14 | |
| Stripped Mate | | Red Parent Material (F21) (MLRA 127, 14 | 7) unless disturbed or problematic. |
| Restrictive Laye | | | |
| | Drock | | |
| Depth (inches) |): 4-6" | | Hydric Soil Present? Yes X No |
| Remarks: | | | |
| | | | |
| | | | |
| | | | |
| N < | Solls Wir | 11/1/11/11/20 | |
| A 2 | o nother | HIGHLY PISTURISED WIT | H VARINGE. |
| / | IND BONDO | n. a.a. | COLORS |
| , | 12601200 | HIGHLY DISTURBED WITH | 1-le " |
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| _ | THE VARIOUS | MOTTLING & UNSORT | to GARAVER ALLUVION WITH |
| | The villeters | | |
| | | | - Wasse DETINO |
| | FRACTURED B | EDROCK APPEAR DUE | TO HISTORIC PISTURBANCE |
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Wetland 9
WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

| Project/Site: AEP Big Sandy Pand Clasure City/Co | ounty: Louisa, Lawrence Sampling Date: 06/05/1 |
|--|---|
| | |
| * *, | n, Township, Range: |
| Landform (hillslope, terrace, etc.): Wase of rock face Local relie | ef (concave, convex, none): Slope (%): |
| Subregion (LRR or MLRA): Lat: 38.\85936 | 5 Long: <u>- 82 , 635 </u> |
| Soil Map Unit Name: Dm Va + 2 | NWI classification: \(\sqrt{1} \) |
| Are climatic / hydrologic conditions on the site typical for this time of year? Ye | |
| Are Vegetation <u>Mo</u> , Soil <u>Mo</u> , or Hydrology <u>Mo</u> significantly disturb | |
| | |
| Are Vegetation <u>Wo</u> , Soil <u>Wo</u> , or Hydrology <u>WO</u> naturally problema SUMMARY OF FINDINGS – Attach site map showing sam | |
| | , |
| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Yes No Yes No | Is the Sampled Area within a Wetland? Yes No |
| | of and and for Doning of |
| Remarks: PEM/PSS wetland at base disturbed from pond construc | ton. |
| HYDROLOGY | |
| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
| Primary Indicators (minimum of one is required; check all that apply) | Surface Soil Cracks (B6) |
| Surface Water (A1) True Aquatic Plants (E | |
| High Water Table (A2) — Hydrogen Sulfide Odo | • |
| ✓ Saturation (A3) Oxidized Rhizosphere Presence of Reduced Presence of Reduced | · · · · · · · · · · · · · · · · · · · |
| Water Marks (B1) Presence of Reduced ∠ Sediment Deposits (B2) Recent Iron Reduction | |
| Drift Deposits (B3) Thin Muck Surface (C | |
| Algal Mat or Crust (B4) Other (Explain in Rem | |
| Iron Deposits (B5) | Geomorphic Position (D2) |
| Inundation Visible on Aerial Imagery (B7) | Shallow Aquitard (D3) |
| Water-Stained Leaves (B9) | ∕ Microtopographic Relief (D4) |
| Aquatic Fauna (B13) | X FAC-Neutral Test (D5) |
| Field Observations: | |
| Surface Water Present? Yes No Depth (inches): | |
| Water Table Present? Yes No Depth (inches): | |
| Saturation Present? Yes No _< Depth (inches): | Wetland Hydrology Present? Yes No No |
| (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, prev | vious inspections), if available: |
| ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |
| Remarks: | ./ |
| We fland receives hydrology from to Sheet flow off the hillsides to | so streams to the west and |
| Sheet flow off the hillsides to | to the north. |
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wetland 9

| /EGETATION (Five Strata) – Use scientific na | ames of p | olants. | | Sampling Point: |
|--|-----------|---------------------|-------|--|
| To a Charles (Distains) | | Dominant | | Dominance Test worksheet: |
| Tree Stratum (Plot size:) | | Species? | | Number of Dominant Species |
| 1. (None) 2. | | | | That Are OBL, FACW, or FAC:(A) |
| | | | | Total Number of Dominant |
| 3 | | | | Species Across All Strata:(B) |
| 4. 5. | | | | Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B) |
| 6 | | | | That Are OBL, FACW, or FAC:(A/B) |
| 7 | | | | Prevalence Index worksheet: |
| | | = Total Cov | er | Total % Cover of: Multiply by: |
| Sapling Stratum (Plot size:) | | | 0. | OBL species 130 x1 = 130 |
| 1. (None) | | | | FACW species 70 x 2 = 140 |
| 2. | | | | FAC species x 3 = |
| 3 | | | | FACU species x 4 = |
| 4 | | | | UPL species x 5 = |
| 5 | | | | Column Totals: 200 (A) 270 (B) |
| 6 | | | | Prevalence Index = B/A = 1.35 |
| 7 | | | | Hydrophytic Vegetation Indicators: |
| Shrub Stratum (Plot size:) | | = Total Cov | er er | 1 - Rapid Test for Hydrophytic Vegetation |
| 1. <u>Solix migra</u> | 30 | 125 | DBL | 2 - Dominance Test is >50% |
| 2. Sycamore | 10 | 101 | FACIN | X 3 - Prevalence Index is ≤3.0¹ |
| 3 | | | | 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) |
| 4 | | | | Problematic Hydrophytic Vegetation¹ (Explain) |
| 5 | | | | |
| 6 | | | | ¹ Indicators of hydric soil and wetland hydrology must |
| 7 | 110 | | | be present, unless disturbed or problematic. |
| Herb Stratum (Plot size:) | 45 a/ | = Total Cov ここ・5 | er er | Definitions of Five Vegetation Strata: |
| 1. Juneus offusus | 40 | | DACW | Tree – Woody plants, excluding woody vines. |
| 2. Typha angustion | 50 | yes | DBL | approximately 20 ft (6 m) or more in height and 3 in. |
| 3. In sedar - C. vullingicla | 20 | No | OBC | (7.6 cm) or larger in diameter at breast height (DBH). |
| 4. Tapertiporush - J. accuminatus | 30 | No | OBL | Sapling – Woody plants, excluding woody vines, |
| 5.CoSquarroso | 15 | _No | FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. |
| 6 | | | | |
| 7 | | | | Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. |
| 8 | | | | |
| 9 | | | | Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody |
| 10 | | | | plants, except woody vines, less than approximately |
| 11 | | | | 3 ft (1 m) in height. |
| 12 | 10- | | | Woody vine - All woody vines, regardless of height. |
| Mandu Vine Stratum (Diet eize: | | = Total Cov | er er | |
| Woody Vine Stratum (Plot size:) 1. \(\lambda \to \to \tau \lambda \) | | 77.5 | | |
| | | | | |
| 3 | | | | |
| 4 | | | | Hydrophytic |
| 5 | | | | Vegetation Present? Yes No |
| 5 | | = Total Cov | | resent? resNo |
| Remarks: (Include photo numbers here or on a separate s | | 1 3 1 1 0 0 1 | | |
| nemains. (include prioto numbers here of on a separate s | 1100t.) | | | |
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wetland 9
Sampling Point:

SOIL

| Profile Desc | ription: (Describe t | o the depth | needed to docum | ent the in | ndicator | or confirm | the absence | of indicators.) | |
|-------------------------|--|-------------|------------------------|----------------|--------------------|------------|---------------|---|----------------|
| Dep t h | Matrix (moiat) | | Redox Color (moist) | Features | | _Loc² | Toytura | Domosil | |
| (inches) D-8" | Color (moist) | 70 - | LOYR4/6 | <u>%</u> 30 | Type ¹ | ΛΛ | Sandy Clay | Remark VPS+x=c+:v=e | |
| <u> </u> | 10/12/2 | | 1012 1/4 | | | 101 | <u> Ciciy</u> | layer | Sans frock |
| | - | | | | | | | (| |
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| | | | | | | | | | |
| ¹ Type: C=Co | oncentration, D=Deple | etion, RM=R | educed Matrix, MS | =Masked | Sand Gr | ains. | | L=Pore Lining, M=Mate ators for Problematic | |
| Histosol | | | Dark Surface | (\$7) | | | | cm Muck (A10) (MLRA | - |
| | ipedon (A2) | | Polyvalue Bel | | ce (S8) (I | /ILRA 147, | | Coast Prairie Redox (A1 | |
| Black His | | | Thin Dark Sur | | | | , <u> </u> | (MLRA 147, 148) | , |
| | n Sulfide (A4) | | Loamy Gleyer | | F2) | | F | Piedmont Floodplain So | ils (F19) |
| | Layers (A5) ck (A10) (LRR N) | | | | 6) | | r | (MLRA 136, 147) Red Parent Material (TF | :0) |
| | Below Dark Surface | (A11) | Depleted Dark | | | | | ery Shallow Dark Surfa | |
| | rk Surface (A12) | , , | Redox Depres | | | | | Other (Explain in Remar | |
| | lucky Mineral (S1) (LI | RR N, | Iron-Mangane | | es (F12) | LRR N, | | | |
| | 14 7, 148) leyed Matrix (S4) | | MLRA 136 | | MI DA 1 | RE 122\ | 3lnc | dicators of hydrophytic | rogotation and |
| | edox (S5) | | Piedmont Flor | | | | | vetland hydrology must | - |
| | Matrix (S6) | | | | | | | ınless disturbed or prob | |
| Restrictive I | ayer (if observed): | | | | | | | | |
| Type: | P) 11 | | <u> </u> | | | | | () | , |
| Depth (ind | ches): | | | | | | Hydric Soi | Present? Yes X | No |
| Remarks: | | | | | | | | | |
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W-pr 6/t/2012-1 Welland 10

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

| Project/Site: AEP Big Sandy Pard Closure Projectity/C | ounty Lawise / awelike Sampling Date: 66/62/12 |
|---|---|
| Applicant/Owner: AFO 0 | State: VV Sampling Point: Of |
| Application with the property of the property | |
| Investigator(s): MOT, PR Section | on, Township, Range: |
| Landform (hillslope, terrace, etc.): Along and out-fell Local reli Subregion (LRR or MLRA): Lat: 38.18799 | ef (concave, convex, none): Slope (%): |
| Subregion (LRR or MLRA): Lat: Lat:Lat: | <u> 5 Long: 一分2、6.335 と名</u> Datum: |
| Soil Map Unit Name: Va F2 | NWI classification: \(\sum / 9 \) |
| Are climatic / hydrologic conditions on the site typical for this time of year? Y | es No (If no, explain in Remarks.) |
| Are Vegetation <u>Mo</u> , Soil <u>465</u> , or Hydrology <u>Mo</u> significantly disturb | bed? Are "Normal Circumstances" present? Yes No |
| Are Vegetation , Soil , or Hydrology \(\frac{1}{2} \) naturally problems | |
| SUMMARY OF FINDINGS – Attach site map showing sam | |
| Hydrophytic Vegetation Present? Yes ✓ No | |
| Hydric Soil Present? Yes V No | Is the Sampled Area |
| Wetland Hydrology Present? | within a Wetland? YesX No |
| Wetland Hydrology Present? Yes X No | Ignafil nuttell Partie of |
| Contract of the positions | all soutett. I allow of |
| weekens extends up stope as a | et (. |
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| HYDROLOGY | |
| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
| Primary Indicators (minimum of one is required; check all that apply) | Surface Soil Cracks (B6) |
| Surface Water (A1) True Aquatic Plants (| . , |
| High Water Table (A2) Hydrogen Sulfide Od | |
| Saturation (A3) Oxidized Rhizosphere | |
| Water Marks (B1) Presence of Reduced | d Iron (C4) Dry-Season Water Table (C2) |
| Sediment Deposits (B2) Recent Iron Reduction | on in Tilled Soils (C6) Crayfish Burrows (C8) |
| Drift Deposits (B3) Thin Muck Surface (C | |
| Algal Mat or Crust (B4) Other (Explain in Rer | |
| Iron Deposits (B5) | Geomorphic Position (D2) |
| Inundation Visible on Aerial Imagery (B7) | Shallow Aquitard (D3) |
| Water-Stained Leaves (B9) | Microtopographic Relief (D4) FAC-Neutral Test (D5) |
| Aquatic Fauna (B13) Field Observations: | |
| Surface Water Present? Yes No Depth (inches): | |
| Water Table Present? Yes No Depth (inches): | |
| Saturation Present? Yes Yo Depth (inches): | Wetland Hydrology Present? Yes No |
| (includes capillary fringe) | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre | vious inspections), if available: |
| Davida | |
| Remarks: | |
| welland abots landfill outfall. | |
| | , in the second |
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W-Pr 6/+/ 2012-1 Wetland 10

| /EGETATION (Five Strata) – Use scientifi | c names of plar | nts. | Sampli | ing Point: |
|---|-----------------|------------------|---|------------------------------------|
| Turn Charles (District) | | minant Indicator | Dominance Test worksheet: | |
| <u>Tree Stratum</u> (Plot size:) 1 | | ecies? Status | Number of Dominant Species That Are OBL, FACW, or FAC: | (A) |
| 2 | | | Total Number of Dominant | |
| 3 | | | Species Across All Strata: | (B) |
| 4 | | | Percent of Dominant Species | |
| 5 | | | That Are OBL, FACW, or FAC: | (OO(A/B) |
| 6 | | | Dravelenes lade | |
| 7 | | | Prevalence Index worksheet: | Madeline |
| Sapling Stratum (Plot size:) | = To | tal Cover | OBL species x 1 | |
| | | | FACW species x 2 | |
| 12. | | | FAC species x 3 | |
| 3 | | | FACU species x 4 | |
| 4 | | | UPL species x 5 | |
| 5 | | | Column Totals: (A) | 115 (B) |
| 6 | | | | |
| 7 | | | Prevalence Index = B/A = | |
| | = To | | Hydrophytic Vegetation Indicat | |
| Shrub Stratum (Plot size:) | | | 1 - Rapid Test for Hydrophyti | c Vegetation |
| 1 | | | 2 - Dominance Test is >50% | |
| 2 | | | X3 - Prevalence Index is ≤3.0¹ | |
| 3 | | | 4 - Morphological Adaptation | s ¹ (Provide supporting |
| 4 | | | data in Remarks or on a s Problematic Hydrophytic Veg | • |
| 5 | | | Problematic Hydrophytic Veg | etation (Explain) |
| 6 | | | ¹ Indicators of hydric soil and wetla | and budgalage. |
| 7 | | | be present, unless disturbed or pr | oblematic. |
| Herb Stratum (Plot size:) | = To | tal Cover | Definitions of Five Vegetation S | Strata: |
| | 70 4 | es OBI | Tree – Woody plants, excluding v | uoody win = = |
| 2. Typha argustifolia | 30 1 | | approximately 20 ft (6 m) or more | in height and 3 in. |
| 3. Fox redage | 15 % | | (7.6 cm) or larger in diameter at b | reast height (DBH). |
| 4. | | | Sapling - Woody plants, excluding | ng woody vines. |
| 5. | | | approximately 20 ft (6 m) or more than 3 in. (7.6 cm) DBH. | in height and less |
| 6. | | | man 3 m. (7.0 dh) DBH. | |
| 7 | | | Shrub – Woody plants, excluding approximately 3 to 20 ft (1 to 6 m) | woody vines, |
| 8 | | | | |
| 9 | | | Herb – All herbaceous (non-wood | ly) plants, including |
| 10 | | | herbaceous vines, regardless of s plants, except woody vines, less t | han approximately |
| 11 | | | 3 ft (1 m) in height. | 1, |
| 12. | | | Woody vine - All woody vines, re | agardless of height |
| | 115 = Tot | al Cover | | |
| Woody Vine Stratum (Plot size:) | 23/57. | 5 | - | |
| 1. | | | | |
| 2 | | | | |
| 3 | | | Hydrophytic | |
| 4 | | | Vegetation | |
| 5 | | | Present? Yes | No |
| | = Tot | aı Cover | | |
| Remarks: (Include photo numbers here or on a separa | ite sheet.) | - | | |
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w- pr b/ +/2012-1 wetlanz 10

| OIL | | | | | | | | | イムへと (〇 sampling Point: | |
|---|-----------------------|-------------|----------------------|------------------|-------------------|-----------------------|---------------------------|-------------|----------------------------|--------------|
| | windless (Daniell | to the -! | th nooded to de- | man 4 41 1 | adicat- | ov o = = £! | a tha chas | | | |
| | ription: (Describe | to the dep | | | | or confirm | tne absence c | or indicate | ors.) | |
| epth | Matrix Color (moist) | | Red Color (moist) | ox Features % | | Loc² | Texture | | Damedia | |
| nches) | Color (moist) | <u> </u> | | | Type ¹ | | | | Remarks | |
| D-9" | 10xR6/2 | 10 | 10484/6 | 30 | | M | silty chy | | | |
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| | | | | | | | | | | |
| vne: C=Cc | ncentration, D=Dep | letion RM: | =Reduced Matrix N | 1S=Masked | Sand Gra | ains | ² Location: PL | ≃Pore Lini | ing M=Matrix | |
| | ndicators: | | | | 344 011 | | Indicat | ors for P | roblematic Hyd | dric Soile3. |
| _ Histosol | | | Dark Surfac | e (S7) | | | | | A10) (MLRA 1 4 | |
| | ipedon (A2) | | Polyvalue B | | n (SS) (N | 11 RA 147 | | | Redox (A16) | 1) |
| _ Histic Ep _ Black His | | | Thin Dark S | | | | | (MLRA 14 | | |
| | n Sulfide (A4) | | Loamy Gley | | | -1, 1 4 0) | | | oodplain Soils (l | F1Q\ |
| | Layers (A5) | | Depleted M | - | -, | | | (MLRA 13 | | 1 10) |
| | ck (A10) (LRR N) | | Redox Dark | | 6) | | | - | Material (TF2) | |
| | Below Dark Surfac | e (A11) | Depleted D | | | | | | v Dark Surface | (TF12) |
| | rk Surface (A12) | · (, , | Redox Dep | | | | | | in in Remarks) | (11.12) |
| | lucky Mineral (S1) (I | RR N. | Iron-Manga | | | LRR N. | | | | |
| | 147, 148) | - , | MLRA 1 | | | | | | | |
| | leyed Matrix (S4) | | Umbric Sur | - | MLRA 13 | 6, 122) | ³ Indic | cators of h | ydrophytic vege | etation and |
| | edox (S5) | | Piedmont F | | | | | | rology must be | |
| | Matrix (S6) | | | | , , | • | | | bed or problem | |
| | ayer (if observed): | | | | | | | | | |
| | | | | | | | | | | |
| • | | | | | | | Hydric Soil F | Procent? | Yes_ | No |
| ···· | ches): | | | | | | nyuric Soil i | -resent? | res | NO |
| emarks: | | | | | | | | | | |
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w-pr 6/7/2012-2 wetland 11

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

| Project/Site: AEP Big Sonly Po | nd Clasure Project City/C | County: Louisa Cau | State: // Sampling Point: 02 |
|--|---------------------------------|---------------------------------------|---|
| Applicant/Owner: AFP | V | | State: KY Sampling Point: |
| Investigator(s): MDT , PR | | | |
| • | | | ne): Slope (%): |
| · · · · · · · · · · · · · · · · · · · | | | 52. 632687 Datum: |
| | | | |
| | | | NWI classification: \(\sum_{\alpha} \) |
| Are climatic / hydrologic conditions on the site t | ypical for this time of year? \ | | |
| Are Vegetation <u>NO</u> , Soil <u>465</u> , or Hydrold | ogy significantly distur | | Circumstances" present? Yes No |
| Are Vegetation, or Hydrold | ogy <u>NO</u> naturally problem | atic? (If needed, e | explain any answers in Remarks.) |
| SUMMARY OF FINDINGS – Attach | site map showing san | npling point location | ons, transects, important features, etc. |
| Hydric Soil Present? Yes | | Is the Sampled Area within a Wetland? | Yes No |
| Remarks: PEM wetland | | | |
| HYDROLOGY | | | |
| Wetland Hydrology Indicators: | | | Secondary Indicators (minimum of two required) |
| Primary Indicators (minimum of one is require | d; check all that apply) | | Surface Soil Cracks (B6) |
| _X Surface Water (A1) | True Aquatic Plants | | Sparsely Vegetated Concave Surface (B8) |
| High Water Table (A2) | Hydrogen Sulfide Oc | · · | ∑ Drainage Patterns (B10) |
| XSaturation (A3) | | res on Living Roots (C3) | X Moss Trim Lines (B16) |
| ∕ Water Marks (B1) | Presence of Reduce | | Dry-Season Water Table (C2) |
| Sediment Deposits (B2) | Recent Iron Reduction | on in Tilled Soils (C6) | Crayfish Burrows (C8) |
| Drift Deposits (B3) Algal Mat or Crust (B4) | Other (Explain in Re | * | Saturation Visible on Aerial Imagery (C9) Stunted or Stressed Plants (D1) |
| Iron Deposits (B5) | Outer (Explain in re | marks) | Geomorphic Position (D2) |
| Inundation Visible on Aerial Imagery (B7) | | | Shallow Aquitard (D3) |
| Water-Stained Leaves (B9) | | | Microtopographic Relief (D4) |
| Aquatic Fauna (B13) | | | X FAC-Neutral Test (D5) |
| Field Observations: | | | |
| Surface Water Present? YesX No. | o Depth (inches): | | |
| Water Table Present? Yes No | o _>_ Depth (inches): | | \checkmark |
| | o Depth (inches): | 4 Wetland I | Hydrology Present? Yes No |
| (includes capillary fringe) Describe Recorded Data (stream gauge, mon | itoring well aerial photos pre | evious inspections) if ava | ailahle: |
| Begoinge (Coolade Bala (Gream gauge, men | noming won, donar priotoc, pri | oviede inspections), il die | |
| Remarks: | | | |
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W-Pr6/7/2012-2 Wetland 11 Sampling Point:

| | | ninant Indicator | Dominance Test worksheet: |
|---|-----------|------------------|---|
| Tree Stratum (Plot size:) | | ecies? Status | Number of Dominant Species |
| 1 | | | That Are OBL, FACW, or FAC: (A) |
| 2 | | | Total Number of Dominant |
| 3 | | | Species Across All Strata: (B) |
| 4 | | | Percent of Dominant Species /05 |
| 5 | | | That Are OBL, FACW, or FAC: (A/B) |
| 6. | | | Prevalence Index worksheet: |
| 7 | | | Total % Cover of: Multiply by: |
| Carling Chatum (Diet size: | = Tot | al Cover | OBL species $\frac{100}{}$ x 1 = $\frac{100}{}$ |
| Sapling Stratum (Plot size:) | | | FACW species x 2 = |
| 1 | | | FAC species x 3 = |
| 2 | | | FACU species x 4 = |
| 3 | | | UPL species x 5 = |
| 4 | | | .000 |
| 5 | | | Column Totals: $\underline{/UU}$ (A) $\underline{/UU}$ (B) |
| 6 | | | Prevalence Index = B/A =/ |
| 7 | | | Hydrophytic Vegetation Indicators: |
| Shrub Stratum (Plot size:) | = Tot | aı Cover | X 1 - Rapid Test for Hydrophytic Vegetation |
| 1 | | | X 2 - Dominance Test is >50% |
| 2. | | | ∕_ 3 - Prevalence Index is ≤3.0¹ |
| 3. | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 4 | | | data in Remarks or on a separate sheet) |
| 5 | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 6 | | | |
| 7 | | | ¹ Indicators of hydric soil and wetland hydrology must |
| | = Tot | al Cover | be present, unless disturbed or problematic. |
| Herb Stratum (Plot size:) | | | Definitions of Five Vegetation Strata: |
| 1. Typha latitolia | | Yes OBL | Tree – Woody plants, excluding woody vines, |
| 2. Carex vulpinoidea | 151 | U. OBL | approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). |
| 3. Typha angustifolia | | N OBL | |
| 4 | | | Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less |
| 5 | | | than 3 in. (7.6 cm) DBH. |
| 6 | | | Observation 1981 |
| 7 | | | Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. |
| 8. | | | , , , , , , , , , , , , , , , , , , , |
| 9. | | | Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody |
| 10. | | | plants, except woody vines, less than approximately |
| 11 | | | 3 ft (1 m) in height. |
| 12. | | | Woody vine – All woody vines, regardless of height. |
| | = Tot | al Cover 20 | , and a second of the grit. |
| Woody Vine Stratum (Plot size:) | | _ | |
| 1. | | | |
| 2 | | | |
| 3 | | | Undesubodia |
| 4 | | | Hydrophytic Vegetation |
| 5 | | | Present? Yes No |
| | = Tot | al Cover | |
| Remarks: (Include photo numbers here or on a separate | e sheet.) | | |
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SOIL

Wetland 11
Sampling Point:

| Profile Descript | tion: (Describe t | o the dept | h needed to docu | ment the in | ndicator | or confirm | the absence of indica | ators.) |
|---------------------------|----------------------|---|----------------------------|-------------|---|--------------------|----------------------------------|--|
| Depth | Matrix | | Red | ox Features | | 1052 | Tavetura | Domoulus |
| | Color (moist) | % | Color (moist) | | Type ¹ | _Loc² | Texture | Remarks |
| 0-9 | 104R 6/2 | 10 | 104R 4/6 | | | M | silty day | |
| | | | | | | | | |
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| | | | | | | | 2 | |
| | | etion, RM≃ | Reduced Matrix, M | 1S=Masked | Sand Gra | ains. | ² Location: PL=Pore L | |
| Hydric Soil Indi | | | David Court | - (07) | | | | Problematic Hydric Soils ³ : |
| Histosol (A1 | | | Dark Surfac Polyvalue B | | e (SS) (M | II DA 1 <i>1</i> 7 | | (A10) (MLRA 14 7) rie Redox (A16) |
| Histic Epipe Black Histic | | | Polyvalue B | | | | | 147, 148) |
| Hydrogen S | | | Loamy Gley | | | , 1:10) | | Floodplain Soils (F19) |
| Stratified La | | | ✓ Depleted Ma | | , | | | 136, 147) |
| | (A10) (LRR N) | | Redox Dark | • | | | | nt Material (TF2) |
| | elow Dark Surface | : (A11) | Depleted Da | | | | _ | ow Dark Surface (TF12) |
| | Surface (A12) | | Redox Depr | | | | Other (Exp | olain in Remarks) |
| | ky Mineral (S1) (L | KK N, | Iron-Mangai | | es (F12) (| LRR N, | | |
| MLRA 14 | ed Matrix (S4) | | Umbric Surf | | MIRA 13 | 6 122) | ³ Indicators o | f hydrophytic vegetation and |
| Sandy Redo | | | Piedmont Fl | | | | | /drology must be present, |
| Stripped Ma | | | | | | | | turbed or problematic. |
| Restrictive Laye | er (if observed): | *************************************** | | | , | | | |
| Type: | | | | | | | | , |
| Depth (inches | s): | | | | | | Hydric Soil Present | ? Yes <u>X</u> No |
| Remarks: | | | | <u> </u> | | | | |
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W-Pr6/7/2012-3 Wetlanz 12

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

| Project/Site: AEL Rig Sandy Pond Closure Project City/County: Low | isa /awwelnce Sampling Date: 06/07/12 |
|--|---|
| Project/Site: AEL Big Sandy Rond Closure Project City/County: Low Applicant/Owner: AEO | State: V Y Sampling Point: 03 |
| Investigator(s): ADT PR Section, Township | |
| Landform (hillslope, terrace, etc.): Local relief (concave, | |
| Subregion (LRR or MLRA): Lat: Lat: | |
| *************************************** | |
| Soil Map Unit Name: | NWI classification: \(\sum / \alpha \) |
| Are climatic / hydrologic conditions on the site typical for this time of year? Yes I | · · |
| Are Vegetation <u>\(\lambda \circ \ci</u> | Are "Normal Circumstances" present? Yes No |
| Are Vegetation <u>Mo</u> , Soil <u>Mo</u> , or Hydrology <u>Mo</u> naturally problematic? | (If needed, explain any answers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing sampling poi | nt locations, transects, important features, etc. |
| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Yes No No within a W | /etland? Yes No |
| Remarks: PEM wetland to cated in former | landfill outfall. |
| HYDROLOGY | |
| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
| Primary Indicators (minimum of one is required; check all that apply) | X Surface Soil Cracks (B6) |
| Surface Water (A1) True Aquatic Plants (B14) | Sparsely Vegetated Concave Surface (B8) |
| High Water Table (A2) Hydrogen Sulfide Odor (C1) | Drainage Patterns (B10) |
| Saturation (A3) Oxidized Rhizospheres on Living | |
| Water Marks (B1) Presence of Reduced Iron (C4) Sediment Deposits (B2) Recent Iron Reduction in Tilled So | Dry-Season Water Table (C2) oils (C6) Crayfish Burrows (C8) |
| Sediment Deposits (B2) Necesti from Needclich in Filied St Thin Muck Surface (C7) | Saturation Visible on Aerial Imagery (C9) |
| ✓ Algal Mat or Crust (B4) ✓ Other (Explain in Remarks) | Stunted or Stressed Plants (D1) |
| Iron Deposits (B5) | Geomorphic Position (D2) |
| Inundation Visible on Aerial Imagery (B7) | Shallow Aquitard (D3) |
| Water-Stained Leaves (B9) | Microtopographic Relief (D4) |
| Aquatic Fauna (B13) | ∠ FAC-Neutral Test (D5) |
| Field Observations: | |
| Surface Water Present? Yes NoX Depth (inches): | |
| Water Table Present? Yes NoX_ Depth (inches): | |
| Saturation Present? Yes NoX Depth (inches): (includes capillary fringe) | Wetland Hydrology Present? Yes No No |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspec | ctions), if available: |
| Remarks: | |
| Remarks: Algol most and Surface Crocens | noted. |
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| EGETATION (Five Strata) – Use scientific | names of | plants. | Sampling Point: |
|---|-------------------|---------------------------------------|---|
| From Stratum /Plot size: | Absolute | Dominant Indicator Species? Status | Dominance Test worksheet: |
| ree Stratum (Plot size:) | | | Number of Dominant Species That Are OBL, FACW, or FAC: (A) |
| | | | |
| • | | | Total Number of Dominant Species Across All Strata: (B) |
| • | | | (0) |
| • | | | Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B) |
| • | | | mat Ale OBL, FACW, OF FAC. (A/B) |
| • | | | Prevalence Index worksheet: |
| | | = Total Cover | Total % Cover of: Multiply by: |
| Sapling Stratum (Plot size:) | | | OBL species $\frac{2}{1/2}$ x1 = $\frac{2}{1/2}$ |
| • | | | FACW species $\frac{43}{3}$ x 2 = $\frac{86}{3}$ |
| • | | | FAC species x 3 = 3 |
| • | | | FACU species x 4 = |
| • | | | UPL species x 5 = |
| • | | | Column Totals: (a) (B) |
| | | | Prevalence Index = B/A = 1.69 |
| | | | Hydrophytic Vegetation Indicators: |
| hrub Stratum (Plot size:) | | = Total Cover | 1 - Rapid Test for Hydrophytic Vegetation |
| . Salix nigra | | Yes OBL | 2 - Dominance Test is >50% |
| · | | | _X 3 - Prevalence Index is ≤3.0¹ |
| • | | | 4 - Morphological Adaptations (Provide supporting |
| | | | data in Remarks or on a separate sheet) |
| | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| | | | ¹ Indicators of hydric soil and wetland hydrology must |
| • | | | be present, unless disturbed or problematic. |
| lerb Stratum (Plot size:) | | = Total Cover | Definitions of Five Vegetation Strata: |
| | _ 5 | no OBL | Tree – Woody plants, excluding woody vines, |
| Corex vulpinoidea | - - 15 | VE DBC | approximately 20 ft (6 m) or more in height and 3 in. |
| Moneywort - L numulacia | | | (7.6 cm) or larger in diameter at breast height (DBH). |
| Puner COSONC | | no FAC | Sapling - Woody plants, excluding woody vines, |
| Boneset - E. perfolicitum | 3 | no FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. |
| • | | | |
| | | | Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. |
| | | | |
| • | | | Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody |
| 0 | | | plants, except woody vines, less than approximately |
| 1 | | | 3 ft (1 m) in height. |
| 2 | | | Woody vine – All woody vines, regardless of height. |
| | | = Total Cover | |
| Voody Vine Stratum (Plot size:) | 15.0 | 132 | |
| • | | | |
| • | | | |
| • | | | Hydrophytic |
| • | | | Vegetation |
| • | | = Total Cover | Present? Yes No |
| Demandra, (Inchinde alpha asserbase bessel asserb | | - Total Gover | |
| temarks: (Include photo numbers here or on a separate | e sneet.) | | |
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SOIL

w- Pr 6/7/2012-3 wetland 12 Sampling Point:

| Profile Desc | ription: (Describe t | o the depti | needed to do | cument the | indicator or confire | n the ab | sence of indicators.) |
|--------------|-----------------------------|---------------|-----------------|--------------|---------------------------|--------------------|--|
| Depth | Matrix | _ | Color (moist) | edox Feature | | Tow | hura Domonto |
| (inches) | Color (moist) | | | | 74 | | ture Remarks |
| 0-10 | 104R 6/1 | 70 | 10412 4/6 | 30 | C Msilly c | C14 <u>4</u> | |
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| 1Type: C=C(| oncentration, D=Deple | etion RM=F | Reduced Matrix | MS=Maske | d Sand Grains | ² l oca | tion: PL=Pore Lining, M=Matrix. |
| Hydric Soil | | Cuon, ruivi i | teddoca Matrix, | WO WILDRO | a dana dramo. | 2000 | Indicators for Problematic Hydric Soils ³ : |
| Histosol | | | Dark Surfa | ace (S7) | | | 2 cm Muck (A10) (MLRA 147) |
| | pipedon (A2) | | | ` ' | ace (S8) (MLRA 147 | '. 148) | Coast Prairie Redox (A16) |
| Black Hi | | | | |) (MLRA 147, 148) | ,, | (MLRA 147, 148) |
| | n Sulfide (A4) | | | eyed Matrix | | | Piedmont Floodplain Soils (F19) |
| | Layers (A5) | | Depleted | | ` , | | (MLRA 136, 147) |
| | ick (A10) (LRR N) | | | rk Surface (| F6) | | Red Parent Material (TF2) |
| | d Below Dark Surface | (A11) | Depleted | Dark Surface | e (F7) | | Very Shallow Dark Surface (TF12) |
| Thick Da | ark Surface (A12) | | | pressions (F | | | Other (Explain in Remarks) |
| Sandy M | lucky Mineral (S1) (L | RR N, | | | ses (F12) (LRR N, | | |
| | \ 147 , 14 8) | | MLRA | | | | |
| | Sleyed Matrix (S4) | | | | (MLRA 136, 122) | | ³ Indicators of hydrophytic vegetation and |
| | edox (S5) | | Piedmont | Floodplain S | Soils (F19) (MLRA 1 | 48) | wetland hydrology must be present, |
| | Matrix (S6) | | | | | | unless disturbed or problematic. |
| | _ayer (if observed): | | | | | 1 | k |
| | | | | | | | × |
| | ches): | | | | | Hydi | ric Soil Present? Yes No |
| Remarks: | | | | | | | |
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W-Pr6/7/2012-4 Wetland 13

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

| Project/Site: AEP Bic Sandy Pord Closura City | //County: Louisa, Lauvence Sampling Date: 06/07/1. |
|---|--|
| Applicant/Owner: AF | State: KV Sampling Point: D4/ |
| | ction, Township, Range: |
| Landform (hillslope, terrace, etc.):Local r | |
| Subregion (LRR or MLRA): Lat: 38.184 &L | eller (concave, convex, note) |
| 7 | |
| Soil Map Unit Name: | NWI classification: N/a |
| Are climatic / hydrologic conditions on the site typical for this time of year? | · · · · · · · · · · · · · · · · · · · |
| Are Vegetation <u>MO</u> , Soil <u>MO</u> , or Hydrology <u>MO</u> significantly dist | turbed? Are "Normal Circumstances" present? Yes No |
| Are Vegetation $\sqrt[M]{Q}$, Soil $\sqrt[M]{Q}$, or Hydrology $\sqrt[M]{Q}$ naturally problem | matic? (If needed, explain any answers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing sa | ampling point locations, transects, important features, etc. |
| Hydrophytic Vegetation Present? YesX No Hydric Soil Present? YesX No Wetland Hydrology Present? YesX No | Is the Sampled Area within a Wetland? Yes No |
| Remarks: PEM Wetland provided w | with water from seeps in Jam. |
| HYDROLOGY | |
| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
| Primary Indicators (minimum of one is required; check all that apply) | Surface Soil Cracks (B6) |
| Surface Water (A1) True Aquatic Plants | s (B14) Sparsely Vegetated Concave Surface (B8) |
| High Water Table (A2) Hydrogen Sulfide C | |
| | neres on Living Roots (C3) Moss Trim Lines (B16) |
| X Water Marks (B1) Presence of Reduction Process (B2) Resent Iran Reduction Process (B2) Presence of Reduction Process (B2) No. 1 | · · · · · · · · · · · · · · · · · · · |
| Sediment Deposits (B2) Recent Iron Reduc Drift Deposits (B3) Thin Muck Surface | ction in Tilled Soils (C6) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) |
| Algal Mat or Crust (B4) Other (Explain in R | |
| Iron Deposits (B5) | X Geomorphic Position (D2) |
| Inundation Visible on Aerial Imagery (B7) | Shallow Aquitard (D3) |
| Water-Stained Leaves (B9) | Microtopographic Relief (D4) |
| Aquatic Fauna (B13) | _X FAC-Neutral Test (D5) |
| Field Observations: | |
| Surface Water Present? Yes X No Depth (inches): | |
| Water Table Present? Yes No Depth (inches): | |
| Saturation Present? Yes No Depth (inches): (includes capillary fringe) | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, p | previous inspections), if available: |
| Remarks: | |
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W-Pr 6/7/2012-4 Wetland 13

| /EGETATION (Five Strata) – Use scientific | names of | plants. | | Sampling Point: | | | |
|---|-------------|------------|----------|---|--|--|--|
| T 01 (7) (7) (7) | | Dominant | | Dominance Test worksheet: | | | |
| Tree Stratum (Plot size:) 1 | | Species? | | Number of Dominant Species That Are OBL, FACW, or FAC: (A) | | | |
| 2 | | | | Total Number of Dominant | | | |
| 3 | | | | Species Across All Strata: 2 (B) | | | |
| 45 | | | | Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B) | | | |
| 6 | | | | v · | | | |
| 7 | | | | Prevalence Index worksheet: | | | |
| | | = Total Co | ver | Total % Cover of: Multiply by: | | | |
| Sapling Stratum (Plot size:) | | | | OBL species 0 $x1 = 60$ | | | |
| 1 | | | | FACW species x2 = 1(0 | | | |
| 2. | | | | FAC species | | | |
| 3 | | | | FACU species 5 x 4 = 20 | | | |
| 4 | | | | UPL species $x 5 = $ Column Totals: $x 5 = $ (A) $y = $ (B) | | | |
| 56 | | | | | | | |
| 7 | | | | Prevalence Index = B/A = | | | |
| | | = Total Co | ver | Hydrophytic Vegetation Indicators: | | | |
| Shrub Stratum (Plot size:) | | | | 1 - Rapid Test for Hydrophytic Vegetation | | | |
| 1. | | | | ∠ 2 - Dominance Test is >50% | | | |
| 2 | | | | 3 - Prevalence Index is ≤3.0¹ 4 - Morphological Adaptations¹ (Provide supporting | | | |
| 3 4 | | | | data in Remarks or on a separate sheet) | | | |
| 5 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) | | | |
| 6 | | | | | | | |
| 7 | | | | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. | | | |
| Harb Stratum (Diet aire) | | = Total Co | ver | Definitions of Five Vegetation Strata: | | | |
| Herb Stratum (Plot size:) 1. Carex (upulina | 30 | (100 | OBL | Tree – Woody plants, excluding woody vines, | | | |
| 2. Cawaa goldencod | | no | FACU | approximately 20 ft (6 m) or more in height and 3 in | | | |
| 3. Euperforium maculatum | | No. | FACW | (7.6 cm) or larger in diameter at breast height (DBH). | | | |
| 4. Elebraris acionlaris | | No. | €08L | Sapling - Woody plants, excluding woody vines, | | | |
| 5. Typha angrustifolia | Ö | No | <u> </u> | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. | | | |
| 5. Taportip rush Junius accumin | atu) 20 | 405 | DBC | Shrub Woody planta avaluding was to | | | |
| 7. Carex scoparia | | 10 | FACU | Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. | | | |
| 8 | | | | Herb – All herbaceous (non-woody) plants, including | | | |
| 9 | | | | herbaceous vines, regardless of size, and woody | | | |
| 10 | | | | plants, except woody vines, less than approximately 3 ft (1 m) in height. | | | |
| 11 | | | | | | | |
| 12 | 73 | = Total Co | | Woody vine - All woody vines, regardless of height. | | | |
| Woody Vine Stratum (Plot size:) | 146 | = 10tal Co | vei | | | | |
| 1. | | 7,90 | | | | | |
| 2. | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | Hydrophytic Vegetation | | | |
| 5 | | | | Present? Yes No | | | |
| | | = Total Co | ver | | | | |
| Remarks: (Include photo numbers here or on a separate | e sheet.) | | | | | | |
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u pr 6/7/2012-7 uetland 13 Sampling Point:_____

SOIL

| Profile Desc Depth | cription: (Describe t Matrix | to the depth ne | | nent the in x Features | | | the abse | nce of indicat | tors.) | |
|-----------------------|----------------------------------|-----------------|---|---------------------------|-------------------|---------------------------------------|-------------|---|-------------------------------------|--------------|
| (inches) | Color (moist) | | olor (moist) | % | Type ¹ | Loc ² | Texture | - | Remarks | |
| 0-8 | 109K 6/2 | 70 10 | 7/R 4/6 | 30 | | M | Silty | clay | | |
| | , | | | | | | | | | |
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| | oncentration, D=Depl | etion, RM=Red | uced Matrix, MS | S=Masked | Sand Gr | ains. | | | ning, M=Matrix. | |
| Hydric Soil | Indicators: | | | | | | ln | dicators for F | Problematic Hyd | dric Soils³: |
| Histosol | | | _ Dark Surface | | | | _ | | (A10) (MLRA 1 4 | 7) |
| | pipedon (A2) | | _ Polyvalue Be | | | | 148) | | ie Redox (A16) | |
| Black Hi | | - | _ Thin Dark Su _ Loamy Gleye | | | 147, 148) | | (MLRA 1 | 47, 148) Ioodplain Soils (I | E40) |
| | en Sulfide (A4) d Layers (A5) | _ | _ Loainy Gleye ∠Depleted Ma | | 4) | | _ | _ Pledifionit F MLRA 1) | | F19) |
| | ick (A10) (LRR N) | 7 | _ Redox Dark | | 3) | | | | Material (TF2) | |
| | d Below Dark Surface | : (A11) | _ _ Depleted Dar | | | | | | w Dark Surface | (TF12) |
| | ark Surface (A12) | | _ Redox Depre | ssions (F8 | 3) | | | | ain in Remarks) | |
| | lucky Mineral (S1) (L | RR N, | _ Iron-Mangan | | s (F12) (| LRR N, | | | | |
| | 1 147, 148) | | MLRA 13 | | | | | 3 | | |
| | Gleyed Matrix (S4) | | Umbric SurfaPiedmont Flo | | | | | | hydrophytic vege drology must be | |
| | Redox (S5) I Matrix (S6) | | _ Fledinonti id | ouplain Sc |) (F 19) | (INLINA 14 | 10) | | irbed or problem | |
| | Layer (if observed): | | | | | · · · · · · · · · · · · · · · · · · · | | 4 | | |
| Type: | - | | | | | | | | V | |
| • • • | ches): | | | | | | Hydric | Soil Present? | Yes | No |
| Remarks: | | | | | | | | ······································ | | |
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WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

| 4 0 0 0 0 | Tuesday included and production |
|---|---|
| Project/Site: $AFPBIFSANDYPONDCIOSURE$ City/C Applicant/Owner: AFP Investigator(s): BAO WDT Section | ounty: LOUSA, VAUNCENCE Sampling Date: 19/15/12 |
| Applicant/Owner: | State: // Sampling Point: |
| | |
| Landform (hillslope, terrace, etc.): Tor or super Local reli | |
| Subregion (LRR or MLRA): Lat: Lat: | Long: \$2, 605342 Datum: |
| Soil Map Unit Name: DM, ShF | NWI classification: NA |
| Are climatic / hydrologic conditions on the site typical for this time of year? Y | es No (If no, explain in Remarks.) |
| Are Vegetation | bed? Are "Normal Circumstances" present? Yes No _X |
| Are Vegetation N , Soil N , or Hydrology N naturally problems | atic? (If needed, explain any answers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing sam | ppling point locations, transects, important features, etc. |
| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks: Yes No Yes No No No Remarks: | Is the Sampled Area within a Wetland? Yes No |
| PEM/PSS WETLAND LACATED AT TOE-O OUTFALL PROVIDENT ADDITIONAL HYDROLO | ry |
| * NETLAND SOILS OBSERVED IMPACTED BY | AMO |
| HYDROLOGY | |
| Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Aquatic Fauna (B13) Presence of Reduced Recent Iron Reductio Other (Explain in Ren Water-Stained Leaves (B9) Aquatic Fauna (B13) | or (C1) |
| Saturation Present? Yes \angle No Depth (inches): 5ν | 1 |
| (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre Remarks: | |
| WETLAND IS LOCATED AT TOE OF SLE EPHEMENAL STREAM FLOWS INTO. DAM OUT FALL ALSO PROVIDES ADD | DETLAND |
| | |

| 4 | 10,210,00 |
|---|-----------------|
| | Sampling Point: |

| To a Observery (Distriction) | | Dominant | | Dominance Test worksheet: | | | |
|--|--|-------------|---|--|--|--|--|
| Tree Stratum (Plot size:) | | Species? | | Number of Dominant Species | | | |
| 1. SALIX NIGRA | | _X_ | 086 | That Are OBL, FACW, or FAC: (A) | | | |
| 2 | | | | Total Number of Dominant | | | |
| 3 | | | | Species Across All Strata:(B) | | | |
| 4 | | | | Demonto (De 1) | | | |
| 5 | | | | Percent of Dominant Species That Are OBL, FACW, or FAC:/OO (A/B) | | | |
| 6. | | | | (A/B) | | | |
| 7 | | | | Prevalence Index worksheet: | | | |
| | | = Total Cov | | Total % Cover of: Multiply by: | | | |
| Sapling Stratum (Plot size:) | -/- | - Total Cov | <i>/</i> CI | OBL species <u>54</u> x1 = <u>54</u> | | | |
| 1. SALLY NIGHA | 10 | L | OBL | FACW species | | | |
| 2. ERRXINUS OCCIDENTALIS | | | FACW | FAC species 25 x3 = 75 | | | |
| | | | | FACU species x 4 = | | | |
| 3. | | | | I | | | |
| 4. | | | | UPL species x 5 = | | | |
| 5 | | | | Column Totals: M8 (A) 267 (B) | | | |
| 6 | | | | Prevalence Index = B/A =/. & | | | |
| 7. | | | | Hydrophytic Vegetation Indicators: | | | |
| | 20 | = Total Cov | /er | | | | |
| Shrub Stratum (Plot size:) | IMA. | | | 1 - Rapid Test for Hydrophytic Vegetation | | | |
| 1. Resa palustris | | | | 2 - Dominance Test is >50% | | | |
| 2 | | | | 3 - Prevalence Index is ≤3.0¹ | | | |
| 3 | | | | 4 - Morphological Adaptations ¹ (Provide supporting | | | |
| 4 | | | | data in Remarks or on a separate sheet) | | | |
| 5 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) | | | |
| 6. | | | | | | | |
| 7 | | | | ¹ Indicators of hydric soil and wetland hydrology must | | | |
| | 40 | = Total Cov | ——— | be present, unless disturbed or problematic. | | | |
| Herb Stratum (Plot size:) | | - 10121 001 | | Definitions of Five Vegetation Strata: | | | |
| 1. SISPET FLAT - Acons calamus | 20 | × | OBL | Tree – Woody plants, excluding woody vines, | | | |
| 2. Furtieren - Chelone glabra | | | FACW | approximately 20 ft (6 m) or more in height and 3 in. | | | |
| 3. Stedios - Lindingia alternifolia | | | FROW | (7.6 cm) or larger in diameter at breast height (DBH). | | | |
| | | | | Sapling – Woody plants, excluding woody vines, | | | |
| 4 DER table To De Controllian Clarette | 10 | | (-B | approximately 20 ft (6 m) or more in height and large | | | |
| 4. DER TONAUE - Decembelian clares none | 10 | | | approximately 20 ft (6 m) or more in height and less | | | |
| 5. EALSE NATTIE - Buelmona cylindrica | <u> 10 </u> | | FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. | | | |
| 5. EARSE NITTLE - BURLIMPIA CYLINERS 6. Schipus Cyperinus | <u> 10 </u> | | FACW FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines. | | | |
| 5. LAKSE NETTIE - BURLAMENTA CYLINDRICA 6. SCHEPUS CYPERINUS 7. TYPHA AMENOMEOLIA | 5 | | FACW FACW OBL | approximately 20 ft (6 m) or more in height and less | | | |
| 5. Enese Nettle - Buelmeria cylindrica 6. Schiepus cyperinus 7. Typien Ambrestifolia 8. Impotiens capensis | 5 | | FACW OBL FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. | | | |
| 5. EARSE NETTIE - BURLMARIA CYLINDRA 6. SCHOOL CYPERINOS 7. Typha Americala 8. Important Capensis 9. Carex Spp. | 5 2 5 5 | | FACW FACW OBL | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including | | | |
| 5. Enese Nettle - Buelmeria cylindrica 6. Schiepus cyperinus 7. Typien Ambrestifolia 8. Impotiens capensis | 5 2 5 5 | | FACW FACW FACW FAC | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately | | | |
| 5. EARSE NETTIE - BURLMANG CYLINERS 6. SCIRPUS CYPERINUS 7. TYPHA AMENORISOLA 8. Importans capensis 9. Carex Spp. 10. Naparise STILL CHASS M. Vimineum 11. BIDENS SPP. | 5 2 5 5 | | FACW FACW FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody | | | |
| 5. LARGE NETTIE - BURLMANG CYLINDRA 6. SCIRPUS CYPERINUS 7. Typhen Americalia 8. Important capensis 9. Carex Spp. 10. Naparist Stut CIRBSS M. Vimineum | 5 2 5 5 | | FACW FACW FACW FAC | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. | | | |
| 5. LAKSE NETTIE - Buchmeria cylindrica 6. Schrous cyperinus 7. Typhia Amenopricalia 8. Importions capensis 9. Carex Spp. 10. Naparise still chass M. Vimineum 11. Bidens Spp. 12. Sousitaltean - Onoclea Censibilis | 5 5 5 5 | | FACW FACW PACW FACW PAC PAC PAC FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately | | | |
| 5. LARGE NETTIE - BURLMARIA CYLINDRA 6. SCHIPUS CYPERINUS 7. TYPHA AMENOTICOLA 8. Importans capensis 9. Carex Spp. 10. Naparise Still CHASS M. Vimineum 11. BIDENS Spp. | 5 5 5 5 8 | | FACW FACW FACW FACW FACW FACW FACW FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. | | | |
| 5. LAKSE NETTIE - Buchmeria cylindrica 6. Schrous cyperinus 7. Typhia Amenopricalia 8. Importions capensis 9. Carex Spp. 10. Naparise still chass M. Vimineum 11. Bidens Spp. 12. Sousitaltean - Onoclea Censibilis | 5 5 5 5 | | FACW FACW FACW FACW FACW FACW FACW FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. | | | |
| 5. LARGE NETTIE - BURLMANG CYLINDRA 6. SCHANS CYPERINOS 7. TYPHA AMENORADIA 8. TIMPATIENS CAPENSIS 9. CAREX SPP. 10. NAPARISE STILL PIRASS M. VIMINEUM 11. BIDENS SPP. 12. SONSITHEFORM - Onocles Censibies Woody Vine Stratum (Plot size:) | 5 5 5 5 | | FACW FACW FACW FACW FACW FACW FACW FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. | | | |
| 5. LARGE NETTIE - BURLMANG CYLINDRA 6. SCIRPUS CYPERINUS 7. TYPHA AMENORATIONA 8. Importants capensis 9. Carex Spp. 10. Naparist STILL CHASS M. Vimineum 11. BIDENS Spp. 12. SOUSITHETERN - Onoclea Censisius Woody Vine Stratum (Plot size:) 1. | 5 5 5 5 | | FACW FACW FACW FACW FACW FACW FACW FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. | | | |
| 5. LAKSE NETTIE - BURLMANG CYLINDRA 6. SCINANS CYPERINOS 7. TYPHA AMENOPIFOLIA 8. TIMPATIENS CAPENSIS 9. CATEX SPP. 10. NAPARIST STILT CHASS M. Vimineum 11. BIDENS SPP. 12. SONSITHEFOLIA - Onoclea Censibius Woody Vine Stratum (Plot size:) 1. 2. 3. | 5 2 2 5 5 5 5 2 /// | = Total Cov | FACW FACW FACW FACW FACW FACW FACW FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic | | | |
| 5. LARGE NETTIE - BURLMANG CYLINDRA 6. SCIMPUS CYPERINUS 7. TYPHA AMENORATIONA 8. Importung capensis 9. Carex Spp. 10. Naparise Still CHASS M. Vimineum 11. BIDENS Spp. 12. SONSITHE FROM - Onoclea Censisius Woody Vine Stratum (Plot size:) 1. 2. 3. | 5 2 2 5 5 5 5 2 ///(0 | = Total Cov | FACW FACW FACW FACW FACW FACW FACW FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation | | | |
| 5. LAKSE NETTIE - BURLMANG CYLINDRA 6. SCHENS CYPERINOS 7. TYPHA AMENOTIFOLA 8. TIMPATIENS CAPENSIS 9. CATEX SPP. 10. NAPARISE STUT CHASS M. Vimineum 11. BIDENS SPP. 12. SONSITHE CAM - DNOCLEG CASILIUS Woody Vine Stratum (Plot size:) 1. 2. 3. | 5 2 2 5 5 5 5 8 /((0 | = Total Cov | FACW FACW FACW FACW FACW FACW FACW FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic | | | |
| 5. LAKSE NETTIE - BURLMARIA CYLINDRA 6. SCHENS CYPCHINUS 7. TYPHA AMENOTIFOLA 8. TIMPATIENS CAPENSIS 9. CAREX SPP. 10. NAPARISE STUT CHASS M. Vimineum 11. BIDENS SPP. 12. SONSITHEFORM - Onoclea Censibius Woody Vine Stratum (Plot size:) 1. 2. 3. 4. 5. | 10 5 2 2 5 5 5 5 8 //// | = Total Cov | FACW FACW FACW FACW FACW FACW FACW FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation | | | |
| 5. LARGE NETTIE - BURLMARIA CYLINDRA 6. SCHARUS CYPERINUS 7. TYPHA AMENORATIONA 8. Importuns capensis 9. Carex Spp. 10. Naparise Still Chass M. Vimineum 11. BIDENS Spp. 12. SOUSITHE FROM - Onociec Censisius Woody Vine Stratum (Plot size:) 1. 2. 3. 4. | 10 5 2 2 5 5 5 5 8 //// | = Total Cov | FACW FACW FACW FACW FACW FACW FACW FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation | | | |
| 5. LAKSE NETTIE - BURLMANG CYLINDRA 6. SCINANS CYPCHINUS 7. TYPHA AMENORIFOLA 8. TIMPATIENS CAPENSIS 9. CARLEX SPP. 10. NAPANIST STILL CHASS M. Vimineum 11. BIDENS SPP. 12. SONSITHE FORM - Onocles Censibius Woody Vine Stratum (Plot size:) 1. 2. 3. 4. 5. | 10 5 2 2 5 5 5 5 8 //// | = Total Cov | FACW FACW FACW FACW FACW FACW FACW FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation | | | |
| 5. LAKSE NETTIE - BURLMANG CYLINDRA 6. SCINANS CYPCHINUS 7. TYPHA AMENORIFOLA 8. TIMPATIENS CAPENSIS 9. CARLEX SPP. 10. NAPANIST STILL CHASS M. Vimineum 11. BIDENS SPP. 12. SONSITHE FORM - Onocles Censibius Woody Vine Stratum (Plot size:) 1. 2. 3. 4. 5. | 10 5 2 2 5 5 5 5 8 //// | = Total Cov | FACW FACW FACW FACW FACW FACW FACW FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation | | | |
| 5. LAKSE NETTIE - BURLMANG CYLINDRA 6. SCINANS CYPCHINUS 7. TYPHA AMENORIFOLA 8. TIMPATIENS CAPENSIS 9. CARLEX SPP. 10. NAPANIST STILL CHASS M. Vimineum 11. BIDENS SPP. 12. SONSITHE FORM - Onocles Censibius Woody Vine Stratum (Plot size:) 1. 2. 3. 4. 5. | 10 5 2 2 5 5 5 5 8 //// | = Total Cov | FACW FACW FACW FACW FACW FACW FACW FACW | approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation | | | |

Sampling Point:

| Depth inches) | Matrix Color (moist) | % | Redo Color (moist) | ox Features % | Type ¹ | Loc ² | Texture | Remarks |
|------------------|-------------------------------|-------------|-----------------------|------------------|-------------------|------------------|------------------|--|
| | | - Po | IDUR 5/6 | 10 | | | | Remarks |
| -10 | 2.5y 5/1 | | roya spe | | RM | | SILTYCLAY_ | |
| | * | | | | | | | |
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| | **** | | | | | | 2 | |
| | oncentration, D=Dep | letion, RM= | Reduced Matrix, M | S=Masked | Sand Gra | ins. | | e Lining, M=Matrix. |
| | Indicators: | | | | | | | for Problematic Hydric Soils ³ |
| Histosol | | | Dark Surface | | (00) (14 | U DA 447 | | luck (A10) (MLRA 147) |
| | pipedon (A2) | | Polyvalue Be | | | | | Prairie Redox (A16) |
| | istic (A3) en Sulfide (A4) | | Loamy Gley | | | 41, 140) | | RA 147, 148) ont Floodplain Soils (F19) |
| | d Layers (A5) | | Depleted Ma | | 1 4) | | | RA 136, 147) |
| _ | uck (A10) (LRR N) | | Redox Dark | | 6) | | | arent Material (TF2) |
| | d Below Dark Surfac | e (A11) | Depleted Da | | | | | hallow Dark Surface (TF12) |
| _ Thick Da | ark Surface (A12) | | Redox Depr | essions (F | 8) | | Other (| Explain in Remarks) |
| | /lucky Mineral (S1) (I | LRR N, | Iron-Mangar | | es (F12) (l | LRR N, | | |
| | 4 147, 148) | | MLRA 13 | - | | | 3 | . |
| | Sleyed Matrix (S4) | | Umbric Surf | | | | | s of hydrophytic vegetation and |
| | Redox (S5) I Matrix (S6) | | Piedmont FI | ooapiain S | oiis (F19) | (MLRA 1 | | d hydrology must be present, disturbed or problematic. |
| | Layer (if observed): | | | | | | uniess | disturbed of problematic. |
| Type: | - | • | | | | | | |
| | _ | | | | | | Hudria Sail Bros | ent? Yes <u>∠</u> No |
| marks: | ches): | | | | | | nyunc son Fies | entr res No |
| OB | Served A | ceas. | of much | | 0165 | inf | pactes) B(| JAMD. |
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WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

| Project/Site: AtP B16 SANDY POND CLOSURE City/C | county: Louis A. LAWRENCE Sampling Date: 10/15/12 |
|--|--|
| Project/Site: AtP B16 SANDY POND CLOSURE City/C Applicant/Owner: AtP | State: 44 Sampling Point: 52 |
| Investigator(s): BAO, NOT Section | on, Township, Range: |
| Landform (hillslope, terrace, etc.): Toror Scope Local reli | |
| Subregion (LRR or MLRA): Lat: | |
| Subjegion (LRR of MLRA). | Long Bayas 117 Datum: |
| Soil Map Unit Name: | NWI classification: NA |
| Are climatic / hydrologic conditions on the site typical for this time of year? Y | * |
| Are Vegetation, Soil, or Hydrology significantly disturb | |
| Are Vegetation, Soil, or Hydrology naturally problems | atic? (If needed, explain any answers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing sam | pling point locations, transects, important features, etc. |
| Hydrophytic Vegetation Present? Yes X No | Is the Sampled Area within a Wetland? Yes No |
| Remarks: Remark | To DAM outface STREAM & |
| HYDROLOGY | |
| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
| Primary Indicators (minimum of one is required; check all that apply) | Surface Soil Cracks (B6) |
| Surface Water (A1) True Aquatic Plants (| |
| High Water Table (A2) Hydrogen Sulfide Odd | · , |
| Saturation (A3) Oxidized Rhizosphere | es on Living Roots (C3) Moss Trim Lines (B16) |
| Water Marks (B1) Presence of Reduced | |
| Sediment Deposits (B2) Recent Iron Reductio | |
| Drift Deposits (B3) Thin Muck Surface (C | |
| Algal Mat or Crust (B4) Other (Explain in Ren Iron Deposits (B5) | marks) Stunted or Stressed Plants (D1) × Geomorphic Position (D2) |
| Inundation Visible on Aerial Imagery (B7) | Shallow Aquitard (D3) |
| Water-Stained Leaves (B9) | Microtopographic Relief (D4) |
| Aquatic Fauna (B13) | FAC-Neutral Test (D5) |
| Field Observations: | |
| Surface Water Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches): | <u> </u> |
| Water Table Present? Yes No Depth (inches): | |
| Saturation Present? Yes <u>X</u> No Depth (inches): <u>Saturation Present?</u> | No No |
| (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre | evious inspections), if available: |
| Booding (1000) and Contain garage, memoring want at present pre- | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |
| Remarks: | |
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VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point:

| | | Dominant | | Dominance Test worksheet: |
|--|-------------|-------------|------------|---|
| Tree Stratum (Plot size:) | % Cover | Species? | Status | Number of Dominant Species |
| 1 | | | | That Are OBL, FACW, or FAC:(A) |
| 2 | | | | Total Number of Dominant |
| 3 | | | | Species Across All Strata: (B) |
| 4. | | | | Percent of Dominant Species |
| 5 | | | | That Are OBL, FACW, or FAC:/©-O (A/B) |
| 6. | | | | Prevalence Index worksheet: |
| 7 | | | | Total % Cover of: Multiply by: |
| Sapling Stratum (Plot size:) | | = Total Cov | er | OBL species x 1 =/O |
| | | | | FACW species x2 = 50 |
| 1 | | | | FAC species x3 =/5 |
| 2 | | | | FACU species x 4 = |
| 2. 3. 4. 5. | | | | UPL species x 5 = |
| 4. | | | | I |
| s | | | | Column Totals: |
| 7. | | | | Prevalence Index = B/A =/. 45 |
| | | = Total Cov | er | Hydrophytic Vegetation Indicators: |
| Shrub Stratum (Plot size:) | · | | | 1 - Rapid Test for Hydrophytic Vegetation |
| 1 | | | | 2 - Dominance Test is >50% |
| 2 | | | | 3 - Prevalence Index is ≤3.0¹ |
| 3. | | | | 4 - Morphological Adaptations (Provide supporting |
| 4. | | | N | data in Remarks or on a separate sheet) |
| 5. | | | | Problematic Hydrophytic Vegetation¹ (Explain) |
| 6. | | | | 1 |
| 7 | | | | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| | = | = Total Cov | er er | Definitions of Five Vegetation Strata: |
| Herb Stratum (Plot size:) | Δ | _ | | |
| 1. Tupha angusticolia | <u> 40 </u> | | OBL | Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. |
| 2. REDROOT FLATSOMET CYPETUS CRYTHROCHIZES 3. SCRIPS CYPETINUS | 20 | | FACW | (7.6 cm) or larger in diameter at breast height (DBH). |
| 3. Sirches Cypening | | | FACE | |
| 4. NHEAR SAME FOUNDER - FLEDCHAVIS OCICULARIS | 20 | | <u>OBL</u> | Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less |
| 5. BIDENS Spp. | 2 | | FAC | than 3 in. (7.6 cm) DBH. |
| 6 | | | | Shrub – Woody plants, excluding woody vines, |
| 7 | | | | approximately 3 to 20 ft (1 to 6 m) in height. |
| 8 | | | | Herb – All herbaceous (non-woody) plants, including |
| 9 | | | | herbaceous vines, regardless of size, and woody |
| 10 | | | | plants, except woody vines, less than approximately |
| 11 | | | **** | 3 ft (1 m) in height. |
| 12 | | | | Woody vine - All woody vines, regardless of height. |
| | 190 : | = Total Cov | er er | |
| Woody Vine Stratum (Plot size:) | | | | |
| 1. | | | | |
| 2. | | | | |
| 3. | | | | Hydrophytic |
| 4 | | | | Venetation |
| 5 | | | | Present? Yes No |
| | = | = Total Cov | er | |
| Remarks: (Include photo numbers here or on a separate sh | neet.) | | | |
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| ldes" | MIDI | _ | 10 | 151 | 0 | ^ | Ó | KINE. |
|----------|--------|---|----|-----|---|---|---|-------|
| Sampling | Point: | _ | | | | _ | | |

| Profile Desc | ription: (Describ | to the dept | h needed to do | ocument the in | ndicator or confirm | the abse | nce of indicators.) |
|------------------------|---------------------------------------|-----------------|----------------|-----------------|---------------------------------------|-------------|--|
| Depth | Matrix Color (moist) | . | Color (moist | edox Features | Type ¹ Loc ² | Texture | Domostro |
| (inches) | H SEE | - 70 | COIDI (MOISI | | ASSUME | | e Remarks |
| | | | and the second | 20160 | <u>843701100</u> 1 | J | |
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| | | | | | | | |
| | ncentration, D=De | pletion, RM= | Reduced Matrix | k, MS=Masked | Sand Grains. | | n: PL=Pore Lining, M=Matrix. |
| lydric Soil I | | | | | | ir | adicators for Problematic Hydric Soils ³ : |
| Histosol | ` ' | | Dark Sur | | 00 (CO) (MI DA 147 | 140\ | _ 2 cm Muck (A10) (MLRA 147) |
| Histic Ep Black His | ipedon (A2) | | | | ce (S8) (MLRA 147, (MLRA 147, 148) | 146) _ | Coast Prairie Redox (A16) (MLRA 147, 148) |
| | n Sulfide (A4) | | | Bleyed Matrix (| | _ | _ Piedmont Floodplain Soils (F19) |
| | Layers (A5) | | Depleted | | | | (MLRA 136, 147) |
| | ck (A10) (LRR N) | | | ark Surface (F | • | _ | _ Red Parent Material (TF2) |
| | Below Dark Surfa | ce (A11) | • | Dark Surface | | _ | Very Shallow Dark Surface (TF12) |
| | rk Surface (A12) ucky Mineral (S1) | /I RR N | | epressions (F8 | es (F12) (LRR N, | Ş | Other (Explain in Remarks) |
| | 147, 148) | (LICITIE) | | 4 136) | 50 (1 12) (ERREIN , | | |
| | leyed Matrix (S4) | | | | MLRA 136, 122) | | ³ Indicators of hydrophytic vegetation and |
| | edox (S5) | | Piedmor | t Floodplain S | oils (F19) (MLRA 1 4 | 8) | wetland hydrology must be present, |
| | Matrix (S6) | N - | | | | | unless disturbed or problematic. |
| | ayer (if observed | | | | | | |
| Type: | | | | | | Hudria | Soil Present? Yes No |
| Depth (inc | nes). | | | | · | nyunc | Soft Fresent? Fes No |
| Remarks: | | | | | | | |
| | | , a | | | 6 | | |
| 46 | 1 501 | LS K | 455UM | GO Y | typric - | AS | THEY ARE & |
| | _ | | | | l. | | A The state of the |
| | SEV | HRILL | 1 DIST | MBED | BY AV | UD. | & INUNDATED |
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| | THE | DAFE | SKALLE E | C AIRA | n motos | -00 | OVERLYING |
| | 1110 | , ,,, | chu c | I ATOM | Drimeri | acs | OVERLYINA |
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| | | | | | | | |
| | MATE | RIAL | SOIL L | -4965 | SIGNIFICE | of T | 0.77 |
| | | ı | | | 1019 | rr I | OTHANIC MATTER |
| | | | | | | | |
| | /N (| ibber 1 | AYERS. | 2016 | JATURATE | OA | - Surface- |
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WETLAND KO

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

| Project/Site: ALP BIG SANDU POWD CLOSURE CITYO | County: Louis A. Lhonerce Sampling Date: 10/15/12 |
|---|---|
| A | State: / Sampling Point: 03 |
| Investigator(s): BAD, MAT Section | |
| | ief (concave, convex, none): |
| · · · · · · · · · · · · · · · · · · · | Long: — 8 2. 6 2 4 8 25 |
| | - |
| Are climatic / hydrologic conditions on the site typical for this time of year? Y | NWI classification: NA |
| Are Vegetation, Soil, or Hydrology significantly disturb | |
| Are Vegetation, Soil, or Hydrology significantly disturb Are Vegetation, Soil, or Hydrology naturally problems | |
| SUMMARY OF FINDINGS – Attach site map showing sam | |
| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks: Yes No Yes No | Is the Sampled Area within a Wetland? Yes No |
| DEM/PSS WETLAND LUCATED AT TOE-O DISTURBED AREA | F-SUPE & WITHIN FORMARY |
| HYDROLOGY | |
| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
| Primary Indicators (minimum of one is required; check all that apply) | Surface Soil Cracks (B6) |
| Surface Water (A1) True Aquatic Plants (| |
| High Water Table (A2) Hydrogen Sulfide Od | |
| | res on Living Roots (C3) Moss Trim Lines (B16) |
| Water Marks (B1) Presence of Reduced Sediment Deposits (B2) Recent Iron Reduction | |
| Sediment Deposits (B2) Recent Iron Reduction Drift Deposits (B3) Thin Muck Surface (0 | |
| Algal Mat or Crust (B4) Other (Explain in Rer | |
| Iron Deposits (B5) | Geomorphic Position (D2) |
| Inundation Visible on Aerial Imagery (B7) | Shallow Aquitard (D3) |
| Water-Stained Leaves (B9) | Microtopographic Relief (D4) |
| Aquatic Fauna (B13) | XFAC-Neutral Test (D5) |
| Field Observations: | |
| Surface Water Present? Yes No Depth (inches): | |
| Water Table Present? Yes No Depth (inches): | Wetland Hydrology Present? Yes K No |
| Saturation Present? Yes No Depth (inches): 5: | wetland Hydrology Present? Yes No |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre | evious inspections), if available: |
| Remarks: | |
| Remarks. | |
| | |
| SATURATION PRESENT IN AREAS O. | F WETCHNO |
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| | | | Dominance Test worksheet: |
|-------------|--------------|--|---|
| | | | Number of Dominant Species That Are OBL, FACW, or FAC: (A) |
| | | | Total Number of Dominant |
| | | | Species Across All Strata:(B) |
| | | | |
| | | | Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B) |
| | | | |
| | | | Prevalence Index worksheet: |
| | = Total Cov | /er | Total % Cover of: Multiply by: |
| | | Δ | OBL species x 1 = |
| | _ <u>X</u> _ | UBL. | FACW species <u>(£5</u> x 2 = <u>/30</u> |
| | | (FACIO) | FAC species <u>20</u> x 3 = <u>40</u> |
| | | | FACU species x 4 = |
| | | | UPL species x 5 = |
| | | | Column Totals: <u>195</u> (A) <u>300</u> (B) |
| | | | Draudanaa Indox - D/A - 15/ |
| | | | Prevalence Index = B/A = |
| 45 | = Total Cov | /er | Hydrophytic Vegetation Indicators: |
| , | | | 1 - Rapid Test for Hydrophytic Vegetation |
| | | | ✓ 2 - Dominance Test is >50% ✓ 2 - Dominance Test is >50% |
| | | | ≾ 3 - Prevalence Index is ≤3.0¹ |
| | | | 4 - Morphological Adaptations¹ (Provide supportino data in Remarks or on a separate sheet) |
| | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| | | | |
| | | | ¹ Indicators of hydric soil and wetland hydrology must |
| | | | be present, unless disturbed or problematic. |
| | = Total Co | /er | Definitions of Five Vegetation Strata: |
| 20 | | NBL | Tree – Woody plants, excluding woody vines, |
| | | | approximately 20 ft (6 m) or more in height and 3 in. |
| | · | 7/ | (7.6 cm) or larger in diameter at breast height (DBH). |
| 40 | | | Sapling – Woody plants, excluding woody vines, |
| | | | approximately 20 ft (6 m) or more in height and less |
| | | E ^{ti} | than 3 in. (7.6 cm) DBH. |
| | | J-MO_ | Shrub – Woody plants, excluding woody vines, |
| | | | approximately 3 to 20 ft (1 to 6 m) in height. |
| | | | Herb - All herbaceous (non-woody) plants, including |
| | | | herbaceous vines, regardless of size, and woody |
| | | | plants, except woody vines, less than approximately 3 ft (1 m) in height. |
| | | | |
| | | | Woody vine – All woody vines, regardless of height. |
| 120 | = Total Co | ver | |
| | | | |
| | | | |
| | | | |
| | | | Hydrophytic |
| | | | Vegetation Present? Yes No |
| | = Total Car | | Liezenti Lez // NO |
| | - 10tal C0 | vei | |
| ate sheet.) | | | |
| | | | |
| | % Cover | # Cover Species? = Total Cover Species? = Total Cover Species? = Total Cover Species? = Total Cover Species? | = Total Cover Solution Solution |

| \sim | ^ | 1 | • |
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Sampling Point: _____

| Profile Desc | cription: (Describe | to the depth | needed to docu | ment the in | ndicator | or confirm | n the absence of indicators.) |
|-------------------|--|------------------|------------------------|------------------|-------------------|------------------|--|
| Depth (inches) | Matrix Color (moist) | ~~~ ~ | Redo Color (moist) | ox Features % | Type ¹ | Loc ² | Texture Remarks |
| (inches) | /DVV2 5/1 | | | - <u>70</u> | | | SULLICHAY GRAVEZ OBSENUED |
| 000 | 10 yr 5/1 | _ 11/ | OTHE UTO | | KM | _W | SCHICKLY SAKHVEC OBJENCES |
| | <u></u> | | | | | | |
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| | | | | | | | |
| ¹Type: C=C | oncentration, D=Dep | Netion RM=F | Reduced Matrix M | IS=Masked | Sand Gr | ains | ² Location: PL=Pore Lining, M=Matrix. |
| Hydric Soil | | ordiors, rain-1 | teddocd Matrix, W | io inacitoa | Odina On | unio. | Indicators for Problematic Hydric Soils ³ : |
| Histosol | | | Dark Surfac | e (S7) | | | 2 cm Muck (A10) (MLRA 147) |
| | oipedon (A2) | | Polyvalue B | | ce (S8) (N | ILRA 147 | |
| Black Hi | stic (A3) | | Thin Dark S | urface (S9) | (MLRA 1 | 47, 148) | (MLRA 147, 148) |
| | en Sulfide (A4) | | Loamy Gley | | F2) | | Piedmont Floodplain Soils (F19) |
| . — | Layers (A5) | | Depleted Ma | | | | (MLRA 136, 147) |
| | ick (A10) (LRR N) | o (A11) | Redox Dark Depleted Da | | • | | Red Parent Material (TF2) Very Shallow Dark Surface (TF12) |
| | d Below Dark Surfac ark Surface (A12) | æ (ATT) | Redox Depr | | | | Other (Explain in Remarks) |
| 1 — | lucky Mineral (S1) (| LRR N, | Iron-Mangai | | | LRR N, | Guller (Explain in Francisco) |
| | A 147, 148) | | MLRA 1 | | . , , | | |
| | Gleyed Matrix (S4) | | Umbric Surf | | | | ³ Indicators of hydrophytic vegetation and |
| | Redox (S5) | | Piedmont Fl | oodplain S | oils (F19) | (MLRA 1 | |
| | Matrix (S6) | | | | | | unless disturbed or problematic. |
| l | Layer (if observed) | • | | | | | |
| Type: | at a a V | | | | | | Hydric Soil Present? Yes No |
| | ches): | | | | | | Hydric Soil Present? Yes No |
| Remarks: | | | | | | | |
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WETLAND 17

W-MDT-101512-04

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

| Project/Site: MF1 DG 34-DC/ City/C | ounty: <u>LOVISA, VALUENCE</u> Sampling Date: 15, OCT. 20 |
|---|---|
| M () | State: Ky Sampling Point: |
| Investigator(s): B. 0770 M. 7HONNYER, URS Section | on, Township, Range: |
| Landform (hillslope, terrace, etc.): FLOOD PLAIN Local reli- | · |
| Subregion (LRR or MLRA): Lat: | Long: Datum: |
| Soil Map Unit Name: | |
| Are climatic / hydrologic conditions on the site typical for this time of year? You | |
| Are Vegetation, Soil, or Hydrology significantly disturt | |
| Are Vegetation, Soil, or Hydrology naturally problema | tic? (If needed, explain any encurers in Remarks) |
| SUMMARY OF FINDINGS – Attach site map showing sam | |
| Comment of Findings Account the map showing sum | philip point locations, transcots, important leatures, etc. |
| Hydrophytic Vegetation Present? Yes No | Is the Sampled Area |
| Hydric Soil Present? Yes X No | within a Wetland? Yes No |
| Wetland Hydrology Present? Yes No | |
| Remarks: | |
| PFO WETLAND LOCATED ALONG STREAD SOILS WELL NOTED AS WITH A SANDY LOAM | ' |
| , | (• |
| HYDROLOGY | |
| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
| Primary Indicators (minimum of one is required; check all that apply) | Surface Soil Cracks (B6) |
| Surface Water (A1) True Aquatic Plants (I | · · · · · · · · · · · · · · · · · · · |
| High Water Table (A2) Hydrogen Sulfide Odd | . , , , , , , , , , , , , , , , , , , , |
| | es on Living Roots (C3) Moss Trim Lines (B16) |
| Water Marks (B1) Presence of Reduced | _ , _ , _ , |
| Sediment Deposits (B2) Recent Iron Reduction | . , , |
| Drift Deposits (B3) Thin Muck Surface (C Algal Mat or Crust (B4) Other (Explain in Rem | |
| Algal Mat of Ordst (B4) Other (Explain in Net) | Geomorphic Position (D2) |
| Inundation Visible on Aerial Imagery (B7) | Shallow Aquitard (D3) |
| Water-Stained Leaves (B9) Water-Stained Leaves (B9) | Microtopographic Relief (D4) |
| Aquatic Fauna (B13) | FAC-Neutral Test (D5) |
| Field Observations: | |
| Surface Water Present? Yes No Depth (inches): | |
| Surface Water Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches): | |
| Saturation Present? Yes No Depth (inches): So | Wetland Hydrology Present? Yes No |
| (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, prev | |
| | |
| Remarks: | |
| WETLAND IS LOCATED ABUTTING S | TREAM H. |

WETHIND 17

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

Sampling Point: ω-ΜοΤ- 101512-04

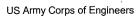
| | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|---|----------|-------------|---|--|
| Tree Stratum (Plot size:) | | Species? | Status | Number of Dominant Species |
| 1. RIVER BIRCH - BETULA nigra | 25 | × | FACW | That Are OBL, FACW, or FAC: (A) |
| 2. SHUFELMAPLE ACES GOECHASIUM | | | FACIN | , , , |
| 3. Sycamore - Plant's occidentalis | | ~ | FACW | Total Number of Dominant Species Across All Strate: (B) |
| | | | | Species Across All Strata: (B) |
| 4. Am. EIM - Ulmus AMERICANO | | | FACW | Percent of Dominant Species |
| 5. Ga. ASH - ENARINUS DEMOSILUMANCUM | _5_ | | FACW | That Are OBL, FACW, or FAC: |
| 6. BLIL WHERE - SALIX NIGRA | _5 | | OBL | |
| 7 | | | | Prevalence Index worksheet: |
| 8. | | | | Total % Cover of: Multiply by: |
| | 95 | = Total Cov | | OBL species x1 = 5 |
| Sapling/Shrub Stratum (Plot size:) | | = Total Cov | er | FACW species 210 x 2 = 420 |
| 1. Spice BUSH - LINDERA BENZON | 20 | ✓ | Ean | FAC species UT x3= /4/ |
| | | | T PT Cod | |
| 2 | | | | FACU species x 4 = |
| 3 | | | | UPL species x 5 = |
| 4 | | | | Column Totals: 202 (A) 506 (B) |
| 5 | | | | |
| 6 | | | *************************************** | Prevalence Index = B/A = 2./6 |
| | | | | Hydrophytic Vegetation Indicators: |
| 7 | | | | 1 - Rapid Test for Hydrophytic Vegetation |
| 8 | | | | ∠ 2 - Dominance Test is >50% |
| 9 | | | | 1 ' - |
| 10 | | | | × 3 - Prevalence Index is ≤3.0¹ |
| | 20 | = Total Cov | er | 4 - Morphological Adaptations ¹ (Provide supporting |
| Herb Stratum (Plot size:) | | 10101 001 | 01 | data in Remarks or on a separate sheet) |
| 1. WHITE GRASS. Leessia Virginica | 70 | ×_ | FACID | Problematic Hydrophytic Vegetation¹ (Explain) |
| 2. POLYHONSIN PENNSYlvaneium | 110 | | FACW | |
| | , | | CAC | ¹ Indicators of hydric soil and wetland hydrology must |
| 3. BIDENS SPP | | | 1 | be present, unless disturbed or problematic. |
| 4. FALSE NETTLE - BOEHMERIA CYLINDRICA | | | FACW | |
| 5. SENSITIVE FERN - Onoclea Sensibilis | _5 | | FACW | Definitions of Four Vegetation Strata: |
| 6. Posson wy - Toxicohadran Foodiens | /0 | | FAC | Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or |
| 7. Duez Tonthur - Dischanthelium Clarelestonum | . 2 | | FAC | more in diameter at breast height (DBH), regardless of |
| 8. Società 310 | | | | height. |
| | | | | Sapling/Shrub – Woody plants, excluding vines, less |
| 9 | | | | than 3 in. DBH and greater than or equal to 3.28 ft (1 |
| 10 | | | | m) tall. |
| 11 | | | | |
| 12. | | | | Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. |
| | 147 | = Total Cov | er | of size, and woody plants less than 5.20 it tall. |
| Woody Vine Stratum (Plot size:) | | 10101 001 | O. | Woody vine - All woody vines greater than 3.28 ft in |
| 1. | | | | height. |
| | | | • | |
| 2 | | | | |
| 3 | | | *************************************** | |
| 4 | | | | |
| 5 | | | | Hydrophytic Vegetation |
| 6 | | | | Present? Yes X No |
| | | = Total Cov | er | |
| | | | | |
| Remarks: (Include photo numbers here or on a separate s | пеет.) | | | |
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WETLAND 17

SOIL

Sampling Point: 4- MAT-101512 - 04

| Profile Des | cription: (Describe t | to the dept | | | | r confirm | n the absence | of indicators.) | |
|-------------|--|---------------|---------------------------------------|------------------|----------------------|------------------|--------------------------|---------------------------------|---------------------------|
| Depth | Matrix | | Redo | x Features | | 12 | T4 | D 1 | |
| (inches) | Color (moist) | <u>%</u> _ | Color (moist) | - <u>%</u> 30 | Type ¹ | Loc ² | Calaba | Remarks | |
| 0-9 | 104K 3/2 | 90 - | 10 yr 76 | | EM . | M | SANDY | | |
| 4-12 | 10 yk 5/1 | 00 | 104R 416 | 20 | RN | M | SANDY | Lonin | |
| | | | · · · · · · · · · · · · · · · · · · · | - | | | | | |
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| | | | | | | | | | |
| ¹Type: C=C | oncentration, D=Depl | etion RM=I | Reduced Matrix M | S=Masked | Sand Grai | ne | ² Location: P | L=Pore Lining, M=Matrix. | |
| Hydric Soil | | Guori, Mili-i | reduced Matrix, Mi | o-iviaskeu | Janu Grai | 113. | | ators for Problematic Hy | dric Soils ³ : |
| Histosol | | | Dark Surface | e (S7) | | | | 2 cm Muck (A10) (MLRA 1 | 1 |
| | pipedon (A2) | | Polyvalue Be | | e (S8) (ML | RA 147, | | Coast Prairie Redox (A16) | |
| 1 | istic (A3) | | Thin Dark Su | | | | | (MLRA 147, 148) | |
| Hydroge | en Sulfide (A4) | | Loam y Gleye | ed Matrix (F | | | F | Piedmont Floodplain Soils | (F19) |
| | d Layers (A5) | | Depleted Ma | | | | | (MLRA 136, 147) | |
| | uck (A10) (LRR N) | | Redox Dark | | | | | /ery Shallow Dark Surface | |
| | d Below Dark Surface | e (A11) | Depleted Da | | | | — (| Other (Explain in Remarks |) |
| | ark Surface (A12) Mucky Mineral (S1) (L | RR N | Redox Depre Iron-Mangan | | | RRN | | | |
| 1 | A 147, 148) | , | MLRA 13 | | .5 (1 12) (L | 1414, | | | |
| | Gleyed Matrix (S4) | | Umbric Surfa | | MLRA 136 | , 122) | ³ Inc | dicators of hydrophytic veg | etation and |
| | Redox (S5) | | Piedmont Flo | | | | | etland hydrology must be i | |
| | l Matrix (S6) | | Red Parent I | Material (F2 | 21) (MLRA | 127, 147 | 7) ur | nless disturbed or problem | atic. |
| Restrictive | Layer (if observed): | | | | | | | | |
| Type: | | | | | | | | | |
| Depth (in | ches): | | | | | | Hydric Soi | l Present? Yes <u>×</u> | . No |
| Remarks: | | | | | | | | | |
| | | | | | | | | | |
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APPENDIX B OHIO EPA WETLAND ORAM FORMS



| ORAM v. 5.0 Field Form Quantitative Rating | w-bao 5/23/12-1 |
|--|--|
| Site: AFP BE SANDY POND CLOSURE Rater(s): M. THOMPYER B. OTTO | 10-bao 5/23/12-1 Date: 5/23/12 |
| Metric 1. Wetland Area (size). Select one size class and assign score. >50 acres (>20.2ha) (6 pts) 25 to <50 acres (10.1 to <20.2ha) (5 pts) 10 to <25 acres (4 to <10.1ha) (4 pts) 3 to <10 acres (1.2 to <4ha) (3 pts) 0.3 to <3 acres (0.12 to <1.2ha) (2pts) 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt) <0.1 acres (0.04ha) (0 pts) | |
| Metric 2. Upland buffers and surrounding land use. | |
| max 14 pts. subtotal 2a. Calculate average buffer width. Select only one and assign score. Do not double check. WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7) MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4) NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1) VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0) 2b. Intensity of surrounding land use. Select one or double check and average. VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7) LOW. Old field (>10 years), shrub land, young second growth forest. (5) MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow the first of the f | ow field. (3) |
| Metric 3. Hydrology. | |
| Precipitation (1) Seasonal/Intermittent surface water (3) Perennial surface water (lake or stream) (5) 3c. Maximum water depth. Select only one and assign score. >0.7 (27.6in) (3) 0.4 to 0.7m (15.7 to 27.6in) (2) | ain (1) lake and other human use (1) pland (e.g. forest), complex (1) r upland corridor (1) curation. Score one or dbl check. ently inundated/saturated (4) ited/saturated (3) dated (2) ated in upper 30cm (12in) (1) |
| weir dredging other. Metric 4. Habitat Alteration and Development. | |
| max 20 pts. subtotal 4a. Substrate disturbance. Score one or double check and average. None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select only one and assign score. Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) | |
| 4c. Habitat alteration. Score one or double check and average. None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1) Recent or no recovery (1) Recovering (3) Recovering (4) Re | atic bed removal |

| WE | 124 | ND 1 | | |
|--|--------|--|--|--|
| RAM v. 5.0 Field | d Form | Quantitative Rating | | w bao 5/23/12-1 |
| Site: | | Rater(| s): | Date: |
| 20 subtotal fir | | letric 5. Special Wetlan | ds. | |
| 0 20 | | • | | |
| ax 10 pts. subto | tal Ch | eck all that apply and score as indicated. Bog (10) Fen (10) Old growth forest (10) Mature forested wetland (5) Lake Erie coastal/tributary wetland-re Lake Plain Sand Prairies (Oak Openi Relict Wet Prairies (10) Known occurrence state/federal three Significant migratory songbird/water | estricted hydro ings) (10) atened or enda fowl habitat or | angered species (10) usage (10) |
| | | Category 1 Wetland. See Question | | |
| 3 2 | , IV | letric 6. Plant communi | ties, int | erspersion, microtopography. |
| | | Mattend Vegetation Communities | Vocatation | Community Cover Scale |
| x 20 pts. subto | | . Wetland Vegetation Communities. ore all present using 0 to 3 scale. | vegetation 0 | Community Cover Scale Absent or comprises <0.1ha (0.2471 acres) contiguous area |
| | 00 | Aquatic bed | 1 | Present and either comprises small part of wetland's |
| | | 2 Emergent | · | vegetation and is of moderate quality, or comprises a |
| | | Shrub | | significant part but is of low quality |
| | 2 | Forest | 2 | Present and either comprises significant part of wetland's |
| | | Mudflats | | vegetation and is of moderate quality or comprises a small |
| | | Open water | | part and is of high quality |
| | | Other | 3 | Present and comprises significant part, or more, of wetland's |
| | 6b. | horizontal (plan view) Interspersion. | | vegetation and is of high quality |
| | Se | lect only one. | | |
| | | High (5) | | escription of Vegetation Quality |
| | | Moderately high(4) | low | Low spp diversity and/or predominance of nonnative or |
| | | Moderate (3) | | disturbance tolerant native species |
| | | Moderately low (2) | mod | Native spp are dominant component of the vegetation, |
| | 0 | Low (1) | | although nonnative and/or disturbance tolerant native spp |
| | 6. | None (0) | | can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare |
| | | Coverage of invasive plants. Refer Table 1 ORAM long form for list. Add | | threatened or endangered spp |
| | | deduct points for coverage | high | A predominance of native species, with nonnative spp |
| | OI V | Extensive >75% cover (-5) | ı ngı ı | and/or disturbance tolerant native spp absent or virtually |
| | | Moderate 25-75% cover (-3) | | absent, and high spp diversity and often, but not always, |
| | | Sparse 5-25% cover (-1) | | the presence of rare, threatened, or endangered spp |
| | 0 | × Nearly absent <5% cover (0) | | |
| | | Absent (1) | Mudflat and | d Open Water Class Quality |
| | 6d. | Microtopography. | 0 | Absent <0.1ha (0.247 acres) |
| | | ore all present using 0 to 3 scale. | 1 | Low 0.1 to <1ha (0.247 to 2.47 acres) |
| | | Vegetated hummucks/tussucks | 2 | Moderate 1 to <4ha (2.47 to 9.88 acres) |
| | / | Coarse woody debris >15cm (6in) | 3 | High 4ha (9.88 acres) or more |
| | | O Standing dead >25cm (10in) dbh | | |
| | | Amphibian breeding pools | Microtopog | graphy Cover Scale |
| | | | 0 | Absent |
| | | | 1 | Present very small amounts or if more common |
| | | | | of marginal quality |
| | | | 2 | Present in moderate amounts, but not of highest |
| | | Catoonia | | quality or in small amounts of highest quality |
| William Company of the | | Category | 3 | Present in moderate or greater amounts |
| | | 1 | | and of highest quality |

| | | 中WDネ Form Quantitative Rating W-bao 5/23/12 | 7- <i>2</i> |
|-------------|---------------|--|-------------|
| Site: | AEP | Form Quantitative Rating W-bao 5/23/12 BK SANDY POND CLOSURE Rater(s): M.THONNYEN, B. OTTO UMS Date: 23 MAY. | 20/2 |
| max 6 pts. | subtotal | Metric 1. Wetland Area (size). | |
| 6 | 6 | Metric 2. Upland buffers and surrounding land use. | |
| max 14 pts. | subtota | 2a. Calculate average buffer width. Select only one and assign score. Do not double check. WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7) MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4) NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1) VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0) 2b. Intensity of surrounding land use. Select one or double check and average. VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7) LOW. Old field (>10 years), shrub land, young second growth forest. (5) MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3) HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1) | |
| 8 | 14 | Metric 3. Hydrology. | |
| max 30 pts. | subtotal | 3a. Sources of Water. Score all that apply. High pH groundwater (5) Other groundwater (3) Precipitation (1) Seasonal/Intermittent surface water (3) Perennial surface water (lake or stream) (5) 3c. Maximum water depth. Select only one and assign score. >0.7 (27.6in) (3) 0.4 to 0.7m (15.7 to 27.6in) (2) Seasonally in undated/saturated (3) Regularly inundated/saturated (3) Seasonally saturated in upper 30cm (12in) (1) 3e. Modifications to natural hydrologic regime. Score one or double check and average. None or none apparent (12) Recovered (7) Recovering (3) Recent or no recovery (1) A connectivity. Score all that apply. 100 year floodplain (1) Part of wetland/upland (e.g. forest), complex (Part of riparian or upland corridor (1) Part of riparian or upland corridor (1) Part of riparian or upland corridor (1) Part of wetland/upland (e.g. forest), complex (Part of vetland/upland (e.g. forest), complex (Part of vetland/ | (1) eck. |
| 6 | 20 | Metric 4. Habitat Alteration and Development. | |
| max 20 pts. | subtotal 20 | 4a. Substrate disturbance. Score one or double check and average. None or none apparent (4) Recovered (3) Recent or no recovery (1) 4b. Habitat development. Select only one and assign score. Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one or double check and average. None or none apparent (9) Recovered (6) Recovered (6) Recovered (7) Check all disturbances observed mowing mowing grazing Recent or no recovery (1) Recent or no recovery (1) Recent or no recovery (1) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one or double check and average. None or none apparent (9) Recovered (6) The second of the second or double check and average. Check all disturbances observed mowing grazing Herbaceous/aquatic bed removal sedimentation Y sedimentation Aredging farming nutrient enrichment | |
| | subtotal this | | |

| Site: | | Rater | (s): | | Date: |
|---------------|------------------------|---|--|---|--|
| | | 7 | | | <u> </u> |
| su | ZG Ibtotal first pa | 1 | | | |
| 0 | 20 | Metric 5. Special Wetlan | ids. | | |
| max 10 pts. | subtotal | Check all that apply and score as indicated. | | | |
| | | Bog (10) | | | |
| | | Fen (10) | | | |
| | | Old growth forest (10) Mature forested wetland (5) | | | |
| | | Lake Erie coastal/tributary wetland-u | unrestricted hyd | Irology (10) | |
| | | Lake Erie coastal/tributary wetland-r | | | |
| | | Lake Plain Sand Prairies (Oak Open | nings) (10) | | |
| | | Relict Wet Prairies (10) | | | |
| | | Known occurrence state/federal thre | | | |
| | | Significant migratory songbird/water Category 1 Wetland. See Question | | | |
| | <u> </u> | 1 <u></u> | | | |
| 3 | 23 | Metric 6. Plant commun | iues, inc | erspersion, inicroto | pograpny. |
| max 20 pts. | subtotal |] 6a. Wetland Vegetation Communities. | Vegetation | Community Cover Scale | |
| 11/2X 20 pts. | Jubiolai | Score all present using 0 to 3 scale. | 0 | Absent or comprises <0.1ha (0.24 | 171 acres) contiguous area |
| | | Aquatic bed | 1 | Present and either comprises sm | |
| | | Emergent | | vegetation and is of moderate of | uality, or comprises a |
| | | Shrub | | significant part but is of low qua | |
| | | Forest | 2 | Present and either comprises sign | |
| | | Mudflats Open water | | vegetation and is of moderate of | juality or comprises a small |
| | | Open water Other | 3 | part and is of high quality Present and comprises significan | t part or more of wetland's |
| | | 6b. horizontal (plan view) Interspersion. | · · | vegetation and is of high quality | |
| | | Select only one. | | | |
| | | High (5) | | escription of Vegetation Quality | |
| | | Moderately high(4) Moderate (3) | low | Low spp diversity and/or predomi disturbance tolerant native spec | |
| | | Moderately low (2) | mod | Native spp are dominant compon | |
| | | o Low (1) | | although nonnative and/or distu | |
| | | ✓ None (0) | | can also be present, and specie | es diversity moderate to |
| | | 6c. Coverage of invasive plants. Refer | | moderately high, but generally | w/o presence of rare |
| | | to Table 1 ORAM long form for list. Add | la i e la | threatened or endangered spp | |
| | | or deduct points for coverage Extensive >75% cover (-5) | high | A predominance of native species and/or disturbance tolerant nati | • • |
| | | Moderate 25-75% cover (-3) | | absent, and high spp diversity a | * * |
| | | Sparse 5-25% cover (-1) | | the presence of rare, threatene | |
| | | ○ Nearly absent <5% cover (0) | | | |
| | | Absent (1) | | Open Water Class Quality | ········· |
| | | 6d. Microtopography. Score all present using 0 to 3 scale. | <u>0</u> 1 | Absent <0.1ha (0.247 acres) Low 0.1 to <1ha (0.247 to 2.47 acres) | 2001 |
| | | Vegetated hummucks/tussucks | 2 | Moderate 1 to <4ha (2.47 to 9.88 | |
| | | Coarse woody debris >15cm (6in) | 3 | High 4ha (9.88 acres) or more | |
| | | Standing dead >25cm (10in) dbh | COLUMN TO THE PARTY OF THE PART | | |
| | | Amphibian breeding pools | | raphy Cover Scale | |
| | | | 0 | Absent | |
| | | | 1 | Present very small amounts or if of marginal quality | more common |
| | | | 2 | Present in moderate amounts, but quality or in small amounts of h | |
| | Ch | ×aru | 3 | Present in moderate or greater ar | |
| 27 | Cate | | | and of highest quality | ikana antananya and Professional Antonia and Antonia a |
| 23 | | J | | | |

| Site: Wwo | T-052412-01 | Rater(s): | BAO, MOT | Date: 20 | DO, MAYD |
|----------------------|--|---|--|--|--|
| (0) | Metric 1. Wetland A | rea (size) | • | | , , |
| max 6 pts. subtotal | Select one size class and assign sco >50 acres (>20.2ha) (6 pts 25 to <50 acres (10.1 to <2 10 to <25 acres (4 to <10.1 3 to <10 acres (1.2 to <4ha |) 20.2ha) (5 pts) Iha) (4 pts) a) (3 pts) | | | |
| | 0.3 to <3 acres (0.12 to <1 0.1 to <0.3 acres (0.04 to < <0.1 acres (0.04ha) (0 pts) | <0.12ha) (1 pt) | | | |
| 3 3 | Metric 2. Upland bເ | ıffers and | surrounding | g land use. | |
| max 14 pts. subtotal | HIGH. Urban, industrial, o | om (164ft) or more 25m to <50m (82 e 10m to <25m (32 e 10m to <25m (32 e 20 e | around wetland perime to <164ft) around wet 32ft to <82ft) around we 32ft) around wetland per ouble check and avera rie, savannah, wildlife ng second growth fores asture, park, conserva | eter (7) land perimeter (4) etland perimeter (1) erimeter (0) age. area, etc. (7) st. (5) ation tillage, new fallow field. (3) | |
| 10 13 | Metric 3. Hydrology | /. | | | |
| max 30 pts. subtotal | 3a. Sources of Water. Score all that High pH groundwater (5) Cother groundwater (3) Precipitation (1) Seasonal/Intermittent surfa Perennial surface water (la 3c. Maximum water depth. Select or >0.7 (27.6in) (3) | ace water (3) ke or stream) (5) | 3d. <u>Du</u> | nnectivity. Score all that apply. 100 year floodplain (1) Between stream/lake and other Part of wetland/upland (e.g. fore Part of riparian or upland corridoration inundation/saturation. Score Semi- to permanently inundated (Regularly inundated/saturated () | est), complex (1) or (1) one or dbl check l/saturated (4) |
| | 0.4 to 0.7m (15.7 to 27.6in | | | | |

| Site: | M D7- | 050412-01 | Rater(s): | BAO MOT | Date: 058418 |
|-------------|------------------|---|---|---|---|
| | aubtotal first p | Metric 5. Special | Wetlands. | | |
| max 10 pts, | subtofal | Check all that apply and score as Bog (10) Fen (10) Old growth forest (10) Mature forested wetland Lake Erie coastal/tributa Lake Plain Sand Prairies Relict Wet Prairies (10) Known occurrence state Significant migratory son Category 1 Wetland. Se | (5) ry wetland-unrestricted ry wetland-restricted hy s (Oak Openings) (10) /federal threatened or e ngbird/water fowl habital be Question 1 Qualitativ | ndangered species (10) or usage (10) e Rating (-10) | |
| 2 | 22 | Metric 6. Plant co | mmunities, ii | nterspersion, m | icrotopography. |
| max 20 pts. | subtotal | 6a. Wetland Vegetation Communi | ties. Vegetati | on Community Cover Scale | |
| | | Score all present using 0 to 3 scale | | | .1ha (0.2471 acres) contiguous area |
| | | Aquatic bed | 1 | Present and either com | prises small part of wetland's |
| | | / Emergent | | vegetation and is of m | oderate quality, or comprises a |
| | | Shrub | | significant part but is o | |
| | | Forest | 2 | 1 | prises significant part of wetland's |
| | | Mudflats | | • | oderate quality or comprises a small |
| | | Open water | | part and is of high qua | |
| | | Other | 3 | 1 | significant part, or more, of wetland's |
| | | 6b. horizontal (plan view) Interspe | rsion. | vegetation and is of hi | gh quality |
| | | Select only one. | | | |
| | | High (5) | | Description of Vegetation | |
| | | Moderately high(4) | low | 1 | r predominance of nonnative or |
| | | Moderate (3) | | disturbance tolerant n | |
| | | Moderately low (2) | mod | 1 | t component of the vegetation, |
| | | Low (1) | | · · | nd/or disturbance tolerant native spp |
| | | | - <i>-</i> | , | and species diversity moderate to |
| | | 6c. Coverage of invasive plants. I | | | generally w/o presence of rare |
| | | to Table 1 ORAM long form for list | *************************************** | threatened or endange | |
| | | or deduct points for coverage | high | 1 ' | ve species, with nonnative spp |
| | | Extensive >75% cover (- | | | erant native spp absent or virtually |
| | | Moderate 25-75% cover | • • | · · · · | diversity and often, but not always, |
| | | Sparse 5-25% cover (-1) | | the presence of rare, i | threatened, or endangered spp |
| | | Nearly absent <5% cove | | and Onen Water Class Ovel | 14 |
| | | Absent (1) | 0 | and Open Water Class Qual | ··········· |
| | | 6d. Microtopography. Score all present using 0 to 3 scale | | Absent <0.1ha (0.247 a | |
| | | Vegetated hummucks/tu | | Low 0.1 to <1ha (0.247 Moderate 1 to <4ha (2. | |
| | | Coarse woody debris >1 | | High 4ha (9.88 acres) o | ······································ |
| | | | | Inigh 4ha (9.66 acres) of | rmore |
| | | Standing dead >25cm (1 Amphibian breeding poo | | ography Cover Scale | |
| | | The International preeding poor | 0 | Absent | |
| | | | 1 | Present very small amo | unts or if more common |
| | | | ľ | of marginal quality | and an interest community |
| | | | | | nounts, but not of highest |
| | _ | | 2 | · · · · · · · · · · · · · · · · · · · | ounts of highest quality |
| | Coto | gory 1 | 3 | Present in moderate or | |
| | 1 | ゾフ ~ | Ü | and of highest quality | • · · · · · · · · · · · · · · · · · · · |

| Site: W-MD | 1-050412-02 | Rater(s): BAO, MOT | Date: গুচন্ট্রধ হি |
|-----------------------|---|---|---|
| | Metric 1. Wetland A | rea (size). | |
| max 6 pts. subtotal | 』 Select one size class and assign sco | re. | |
| • | >50 acres (>20.2ha) (6 pts | | |
| | 25 to <50 acres (10.1 to <2 | | |
| | 10 to <25 acres (4 to <10.1 | | |
| | 3 to <10 acres (1.2 to <4ha | | |
| | 0.3 to <3 acres (0.12 to <1 > 0.1 to <0.3 acres (0.04 to < | | |
| | <0.1 acres (0.04ha) (0 pts) | | |
| | Metric 2. Upland bu | | na land uso |
| 3 4 | Metric 2. Opiana bu | illers and surroundi | ng iana use. |
| | | | |
| max 14 pts. subtotal | 2a. Calculate average buffer width. | | |
| | | m (164ft) or more around wetland per 25 m to <50m (82 to <164ft) around v | |
| | | e 10m to <25m (32ft to <82ft) around | |
| | | average <10m (<32ft) around wetland | |
| | 2b. Intensity of surrounding land use | . Select one or double check and av | erage. |
| | | r older forest, prairie, savannah, wildl | |
| | |), shrub land, young second growth fo | |
| | | sidential, fenced pasture, park, conse pen pasture, row cropping, mining, co | |
| | 1 | · · · · · · · · · · · · · · · · · · · | ristraction. (1) |
| 1 11 15 | Metric 3. Hydrology | /. | |
| 11 15 | | | |
| max 30 pts. subtotal | 3a. Sources of Water. Score all that | apply. 3b. 0 | Connectivity. Score all that apply. |
| | High pH groundwater (5) | | 100 year floodplain (1) |
| | Other groundwater (3) Precipitation (1) | | Between stream/lake and other human use (1) Part of wetland/upland (e.g. forest), complex (1) |
| | Seasonal/Intermittent surfa | ce water (3) | Part of wettandrupland (e.g. forest), complex (1) |
| | Perennial surface water (la | | Duration inundation/saturation. Score one or dbl chec |
| | 3c. Maximum water depth. Select of | • • • | Semi- to permanently inundated/saturated (4) |
| | >0.7 (27.6in) (3) | | Regularly inundated/saturated (3) - Sp. moss |
| | 0.4 to 0.7m (15.7 to 27.6in | 3 (2) | Seasonally inundated (2) |
| | <0.4m (<15.7in) (1) 3a Madifications to natural hydrolog | ia ragima. Caera ana ar daubla abaal | Seasonally saturated in upper 30cm (12in) (1) |
| | 3e. Modifications to natural hydrolog | | Carlo average. |
| | Recovered (7) | Check all disturbances observed ditch | point source (nonstormwater) |
| | Recovering (3) | tile | |
| | Recent or no recovery (1) | dike | road bed/RR track |
| | | weir | dredging |
| | | stormwater input | ✓ other E×CAVATION |
| | Bactric A Hobitot Al | toration and Davala | nmané |
| 1 20 | Metric 4. Habitat Al | teration and Develo | hmenr |
| 1 00 | <u> </u> | | |
| max 20 pts. subtotal | 4a. Substrate disturbance. Score or None or none apparent (4) | | |
| | Recovered (3) | | |
| | Recovering (2) | | |
| | Recent or no recovery (1) | | |
| | 4b. Habitat development. Select onl | y one and assign score. | |
| | Excellent (7) | | |
| | Very good (6) | | |
| | Good (5) Moderately good (4) | | |
| | Fair (3) | | |
| | Poor to fair (2) | | |
| | Poor (1) | | |
| | 4c. Habitat alteration. Score one or | double check and average. | |
| | None or none apparent (9) | [| |
| | Recovered (6) | mowing | shrub/sapling removal |
| | Recovering (3) | grazing | herbaceous/aquatic bed removal |
| | Recent or no recovery (1) | clearcutting selective cutting | sedimentation dredging |
| 100 | | woody debris removal | farming |
| da | | toxic pollutants | nutrient enrichment |
| subtotal this pa | ge | | |
| last revised 1 Februa | y 2001 jjm | | |

WETLAND H

ORAM v. 5.0 Field Form Quantitative Rating

| Site: | W-ms | 14- 629412-09- | Rater(s): | BAE |), MDT | Date: 0534/2 |
|-------------|------------------------|--|---|---|---|---|
| 0 | 22 ubtotal first pr | Metric 5. Special V | | , , | | |
| max 10 pts. | Suploid | Check all that apply and score as in Bog (10) Fen (10) Old growth forest (10) Mature forested wetland (Lake Erie coastal/tributan Lake Erie coastal/tributan Lake Plain Sand Prairies Relict Wet Prairies (10) Known occurrence state/ff Significant migratory song Category 1 Wetland. See | 5) y wetland-unrestricted y wetland-restricted (Oak Openings) (1) ederal threatened of bird/water fowl hal | l hydrold 0) or endar oitat or u ative Ra | ngered species (10) Isage (10) Iting (-10) | |
| | 23 | Metric 6. Plant cor | nmunities | , inte | erspersion, microto | ppography. |
| max 20 pts. | subtotal | 6a. Wetland Vegetation Communiti | es. Vege | tation C | ommunity Cover Scale | |
| | | Score all present using 0 to 3 scale. | , | 0 | Absent or comprises <0.1ha (0.24 | 471 acres) contiguous area |
| | | Aquatic bed Emergent Shrub | | 1 | Present and either comprises sm vegetation and is of moderate of significant part but is of low qua | quality, or comprises a |
| | | Forest Mudflats Open water | | 2 | Present and either comprises sign vegetation and is of moderate of part and is of high quality | · · · · · · · · · · · · · · · · · · · |
| | | Other | | 3 | Present and comprises significan | t part, or more, of wetland's |
| | | 6b. horizontal (plan view) Interspers | sion. | | vegetation and is of high quality | |
| | | Select only one. High (5) | | itive De | scription of Vegetation Quality | |
| | | Moderately high(4) Moderate (3) | · · · · · · · · · · · · · · · · · · · | low | Low spp diversity and/or predomi disturbance tolerant native spec | |
| | | Moderately low (2) Low (1) ✓ None (0) | r | nod | Native spp are dominant compon although nonnative and/or distu can also be present, and specie | rbance tolerant native spp |
| | | 6c. Coverage of invasive plants. Roto Table 1 ORAM long form for list. | | | moderately high, but generally threatened or endangered spp | w/o presence of rare |
| | | or deduct points for coverage Extensive >75% cover (-5 Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) |) | nigh | A predominance of native species and/or disturbance tolerant nati absent, and high spp diversity a the presence of rare, threatene | ve spp absent or virtually and often, but not always, |
| | | Nearly absent <5% cover | | lat and | Open Water Class Quality | o, or other golden opp |
| | | 6d. Microtopography. | | 0 | Absent <0.1ha (0.247 acres) | |
| | | Score all present using 0 to 3 scale. | | 1 | Low 0.1 to <1ha (0.247 to 2.47 ac | cres) |
| | | Vegetated hummucks/tus | | 2 | Moderate 1 to <4ha (2.47 to 9.88 | |
| | | Coarse woody debris >15 Standing dead >25cm (10 | cm (6in) | 3 | High 4ha (9.88 acres) or more | |
| | | Amphibian breeding pools | | | aphy Cover Scale | |
| | | | | 1 | Absent Present very small amounts or if | more common |
| | | | | 2 | of marginal quality Present in moderate amounts, but quality or in small amounts of h | |
| | | 10x4 1 | | 3 | Present in moderate or greater a | |

End of Quantitative Rating. Complete Categorization Worksheets.

and of highest quality

| Site: U | J-MDT | 1-052412-03 Rater(s): BAD, MOT Dai | e. NOID, MAY 24 |
|--------------|----------|--|--|
| | l | Metric 1. Wetland Area (size). | |
| max 6 pts. | subtotal | Select one size class and assign score. >50 acres (>20.2ha) (6 pts) 25 to <50 acres (10.1 to <20.2ha) (5 pts) 10 to <25 acres (4 to <10.1ha) (4 pts) 3 to <10 acres (1.2 to <4ha) (3 pts) 0.3 to <3 acres (0.12 to <1.2ha) (2pts) | |
| 3 | 4 | Metric 2. Upland buffers and surrounding land use. | |
| max 14 pts. | subtotal | 2a. Calculate average buffer width. Select only one and assign score. Do not double check. WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7) MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4) NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1) VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0) 2b. Intensity of surrounding land use. Select one or double check and average. VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7) LOW. Old field (>10 years), shrub land, young second growth forest. (5) MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1) | d. (3) |
| | 15 | Metric 3. Hydrology. | |
| max 30 pts. | subtotal | 3a. Sources of Water. Score all that apply. 3b. Connectivity. Score all that a poly. High pH groundwater (5) Other groundwater (3) Percipitation (1) Seasonal/Intermittent surface water (3) Perennial surface water (lake or stream) (5) 3c. Maximum water depth. Select only one and assign score. New York of riparian or uplar part of riparian or uplar perennial surface water (lake or stream) (5) 3c. Maximum water depth. Select only one and assign score. New York of riparian or uplar part of riparian or uplar per to permanently in semi-to permanently in Regularly inundated/sa Seasonally inundated (seasonally inundated (seasonally saturated in Seasonally saturated in | nd other human use (1) (e.g. forest), complex (1) nd corridor (1) n. Score one or dbl chec nundated/saturated (4) turated (3) |
| | | None or none apparent (12) Recovered (7) Recovering (3) Recent or no recovery (1) Recent or no recovery (1) Check all disturbances observed ditch Dittel Silling/grading Froad bed/RR track dredging Stormwater input Stormwater input Stormwater input | |
| 7 | 22 | Metric 4. Habitat Alteration and Development. | |
| max 20 pts. | subtotal | 4a. Substrate disturbance. Score one or double check and average. None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) | |
| | | 4b. Habitat development. Select only one and assign score. Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) | |
| | | 4c. Habitat alteration. Score one or double check and average. | |
| | 22 | | |
| last revised | ı reprua | ry Zuut jini | |

| Site: | 1.2-MD | T- 052412-03 | Rater(s): | BAD | nor | Date: 2018, mmy 34 |
|-------------|-------------------|---|---|---|--|---|
| Oito. | 00 10.0 | - 600 100 | 1.10101(0)1 | <i>V</i> | | 1 |
| s | aubtotal first pa | Metric 5. Special \ | Wetlands. | | | |
| max 10 pts. | subtotal | Chock all that apply and ecore as in | ndicated | | | |
| max 10 pts. | subtotal | Check all that apply and score as in Bog (10) Fen (10) Old growth forest (10) Mature forested wetland Lake Erie coastal/tributar Lake Plain Sand Prairies Relict Wet Prairies (10) Known occurrence state/ Significant migratory son Category 1 Wetland. Se | (5) y wetland-unrestric y wetland-restricted (Oak Openings) (1 federal threatened gbird/water fowl ha | d hydrold 0) or endar bitat or u | ngered species (10) usage (10) | |
| S | 24 | Metric 6. Plant coi | | | | pography. |
| max 20 pts. | subtotal | 6a. Wetland Vegetation Communit | ····· | | Community Cover Scale | |
| | | Score all present using 0 to 3 scale Aquatic bed | · | <u>0</u> 1 | Absent or comprises <0.1ha (0.24) Present and either comprises small | |
| | | Emergent | | • | vegetation and is of moderate of | • |
| | | Shrub | | | significant part but is of low qua | |
| | | Forest | · | 2 | Present and either comprises sign | |
| | | Mudflats | | | vegetation and is of moderate q | |
| | | Open water | | | part and is of high quality | |
| | | Other | | 3 | Present and comprises significant | part, or more, of wetland's |
| | | 6b. horizontal (plan view) Intersper | sion. | | vegetation and is of high quality | |
| | | Select only one. | | | | |
| | | High (5) | Narra | ative De | scription of Vegetation Quality | |
| | | Moderately high(4) | | low | Low spp diversity and/or predomi | |
| | | Moderate (3) | | | disturbance tolerant native spec | |
| | | Moderately low (2) | ı | mod | Native spp are dominant component | |
| | | Low (1) | | | although nonnative and/or distu | • |
| | | None (0) |) of or | | can also be present, and specie | • |
| | | 6c. Coverage of invasive plants. F to Table 1 ORAM long form for list. | | | moderately high, but generally was threatened or endangered spp | wo presence of rare |
| | | or deduct points for coverage | | high | A predominance of native species | s with nonnative spp |
| | | Extensive >75% cover (- | | g.i | and/or disturbance tolerant nativ | |
| | | Moderate 25-75% cover | • | | absent, and high spp diversity a | * * |
| | | Sparse 5-25% cover (-1) | (-) | | the presence of rare, threatened | |
| | | Nearly absent <5% cover | r (0) | | | |
| | | Absent (1) | | flat and | Open Water Class Quality | |
| | | 6d. Microtopography. | | 0 | Absent <0.1ha (0.247 acres) | |
| | | Score all present using 0 to 3 scale | | 1 | Low 0.1 to <1ha (0.247 to 2.47 ac | cres) |
| | | Vegetated hummucks/tus | sucks | 2 | Moderate 1 to <4ha (2.47 to 9.88 | acres) |
| | | Coarse woody debris >1 | 5cm (6in) | 3 | High 4ha (9.88 acres) or more | |
| | | Standing dead >25cm (1 | | | | |
| | | Amphibian breeding pool | s <u>Micro</u> | | aphy Cover Scale | |
| | | | | 0 | Absent | |
| | | | | 1 | Present very small amounts or if r of marginal quality | nore common |
| | | | | 2 | Present in moderate amounts, bu | • |
| | Clan. | · 1 | | | quality or in small amounts of hi | *************************************** |
| - | Catego | ング | | 3 | Present in moderate or greater ar | nounts |

W-NOH 5/24/12-5

| Site: - | AEP E | lig Sandy | | Rater(s): M.T. | onere B. Mo | Date: 24 N | |
|--------------------|-----------------------|--|--|--|---|---|--|
| | | 7 | Wetland A | rea (size). | | | |
| 0 | 0 | INICCIO I. | AACTIONIO L | uca (3126). | | | |
| max 6 pts. | , subtotal | >50 aci 25 to < 10 to < 3 to <10 0.3 to < 0.1 to < | ass and assign sco es (>20.2ha) (6 pts 50 acres (10.1 to <2 25 acres (4 to <10.1) 0 acres (1.2 to <4ha 3 acres (0.12 to <1 0.3 acres (0.04 to <1 res (0.04ha) (0 pts) |) 20.2ha) (5 pts) Iha) (4 pts) a) (3 pts) .2ha) (2pts) 50.12ha) (1 pt) | | | |
| 9 | 9 | ٠ | , , , , , | ıffers and sur | rounding lan | d use. | |
| max 14 pts. | subtotal | WIDE. WERY VERY 2b. Intensity of st VERY LOW. MODEI | Buffers average 50M. Buffers average W. Buffers average VARROW. Buffers Irrounding land use LOW. 2nd growth of Old field (>10 years RATELY HIGH. Re | Select only one and assign (164ft) or more around 225m (82 to <16 to <25m (82 to <16 to <25m (32ft to <16 to <17 t | wetland perimeter (7) 4ft) around wetland per 82ft) around wetland per bund wetland perimeter sheck and average. vannah, wildlife area, etc and growth forest. (5) park, conservation tilla | imeter (4) erimeter (1) (0) c. (7) ge, new fallow field. (3) | |
| 14 | 72 | | Hydrology | | g,g, construction | () | |
| max 30 pts. | 23 subtotal | High ph Other g Precipit Season Perenn 3c. Maximum wa >0.7 (2' 0.4 to 0 X <0.4 m (| al/Intermittent surfa al surface water (la ter depth. Select o 7.6in) (3) .7m (15.7 to 27.6in <15.7in) (1) | ace water (3) ike or stream) (5) nly one and assign score | 100 y Betw Part | y. Score all that apply. year floodplain (1) een stream/lake and other hur of wetland/upland (e.g. forest), of riparian or upland corridor (* undation/saturation. Score one - to permanently inundated/sa ularly inundated/saturated (3) onally inundated (2) onally saturated in upper 30cn | , complex (1) 1) e or dbl check turated (4) |
| | | None o Recove Recove Recent | none apparent (12 red (7) ring (3) or no recovery (1) | Check all disturbance ditch tile dike weir stormwater inpu | s observed point filling road dredg other | source (nonstormwater) /grading bed/RR track ging | |
| 9 | 32 | Wetric 4. | Habitat Ai | teration and | Development | Į. | |
| max 20 pts. | subtotal | W None of Recover Recover Recent 4b. Habitat devel Exceller Very go Good (5) | r none apparent (4) red (3) ring (2) or no recovery (1) opment. Select on at (7) od (6) c) rely good (4) | ne or double check and a | verage. | | |
| | | | | double check and average | | | 1 |
| sı last revised | 32 ubtotal this pa | Recove Recove Recent | | Check all disturbance mowing grazing clearcutting selective cutting woody debris re toxic pollutants | | | |

| ORAM v. 5.0 Field Form Quantitative Rating | | W-14d+5/24/12-5 |
|--|--|---|
| Site: AEP Bis Sandy | Rater(s): | Date: |
| subtotal first page S2 Metric 5. Sp | ecial Wetlands. score as indicated. | |
| Lake Erie coa Lake Plain Sa Relict Wet Pra Known occurr Significant mid Category 1 W | ed wetland (5) stal/tributary wetland-unrestricted hydrolo stal/tributary wetland-restricted hydrolog and Prairies (Oak Openings) (10) siries (10) ence state/federal threatened or endang gratory songbird/water fowl habitat or usa etland. See Question 1 Qualitative Ratir | ered species (10) age (10) ng (-10) |
| 8 40 Wetric 6. Pla | int communities, inter | spersion, microtopography. |
| max 20 pts. subtotal 6a. Wetland Vegetation | | mmunity Cover Scale |
| Score all present using (Aquatic bed 3 Emergent | | Absent or comprises <0.1ha (0.2471 acres) contiguous area Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a |
| // Shrub Forest Mudflats Open water | | significant part but is of low quality Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality |
| Other | | Present and comprises significant part, or more, of wetland's |
| 6b. horizontal (plan view | v) Interspersion. | vegetation and is of high quality |
| Select only one. High (5) | Narrative Desc | cription of Vegetation Quality |
| Moderately him Moderate (3) | | Low spp diversity and/or predominance of nonnative or disturbance tolerant native species |
| Moderately ion / k Low (1) | v (2) mod 1 | Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp |
| None (0) 6c. Coverage of invasiv to Table 1 ORAM long fo | · . | can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp |
| or deduct points for cove Extensive >75 Moderate 25-7 Sparse 5-25% | % cover (-5) 75% cover (-3) | A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp |
| Nearly absent | <5% cover (0) | |
| Absent (1) 6d. Microtopography. | | pen Water Class Quality Absent <0.1ha (0.247 acres) |
| Score all present using (| | Low 0.1 to <1ha (0.247 to 2.47 acres) |
| 2 Vegetated hur | | Moderate 1 to <4ha (2.47 to 9.88 acres) |
| | | High 4ha (9.88 acres) or more |
| 3 ⊘ Standing dead ⊘ Amphibian bre | l >25cm (10in) dbh eding pools Microtopograp | ohy Cover Scale |
| **** | | Absent |
| | | Present very small amounts or if more common of marginal quality |
| Category 2 | | Present in moderate amounts, but not of highest quality or in small amounts of highest quality |
| <u></u> | 3 | Present in moderate or greater amounts and of highest quality |

| Site: | W-MDt | - 652412-66 Rater(s): B. OTTO, M. THOMPHE Date: (do 241) |
|-------------|-------------------|--|
| D | D | Metric 1. Wetland Area (size). |
| max 6 pts. | subtotal | Select one size class and assign score. >50 acres (>20.2ha) (6 pts) 25 to <50 acres (10.1 to <20.2ha) (5 pts) 10 to <25 acres (4 to <10.1ha) (4 pts) 3 to <10 acres (1.2 to <4ha) (3 pts) 0.3 to <3 acres (0.12 to <1.2ha) (2pts) 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt) <0.1 acres (0.04ha) (0 pts) |
| 7 | 7 | Metric 2. Upland buffers and surrounding land use. |
| max 14 pts | subtotal | 2a. Calculate average buffer width. Select only one and assign score. Do not double check. WDE. Buffers average 50m (164ft) or more around wetland perimeter (7) MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4) NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1) VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0) 2b. Intensity of surrounding land use. Select one or double check and average. VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7) LOW. Old field (>10 years), shrubland, young second growth forest. (5) MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3) HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1) |
| 12 | 19 | Metric 3. Hydrology. |
| max 30 pts. | subtotal | 3a. Sources of Water. Score all that apply. High pH groundwater (5) Other groundwater (3) Precipitation (1) Seasonal/Intermittent surface water (3) Perennial surface water (lake or stream) (5) 3c. Maximum water depth. Select only one and assign score. Semi- to permanently inundated/saturated (4) Regularly inundated/saturated (3) Seasonally inundated (2) Seasonally inundated (2) Seasonally saturated in upper 30cm (12in) (1) Recovered (7) Recovered (7) Recovered (7) Recovered (7) Recovered (7) Recovering (3) Recent or no recovery (1) About 100 year floodplain (1) Between stream/lake and other human use (1) Part of riparian or upland comidor (1) Part of ripar |
| 7.5 | 265 | Metric 4. Habitat Alteration and Development. |
| max 20 pts. | subtotal | 4a. Substrate disturbance. Score one or double check and average. None or none apparent (4) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select only one and assign score. Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor (1) 4c. Habitat alteration. Score one or double check and average. None or none apparent (9) Recovered (6) Recovering (3) Recovering (3) Recent or no recovery (1) Recent or no recovery (1) Recent or no recovery (1) |
| | aubtotal this pag | selective cutting dredging woody debris removal farming toxic pollutants nutrient enrichment |

WETZANDF

| 24.5 | | | | | Date: 24, MMy 3 |
|----------------------|------------|--|----------------------------|--|-----------------------------|
| sublotal trits par | | | | | |
| 0 24.5 | 1 | ric 5. Special We | etlands | | |
| max 10 pts. subtotal | -4 | III that apply and score as indicated. | | | |
| That to pis. | | Bog (10) | | | |
| | | Fen (10) | | | |
| | | Old growth forest (10) | | | |
| | | Mature forested wetland (5) | | | |
| | | Lake Erie coastal/tributary wetland | d-unrestricted hydrology | (10) | |
| | <u> </u> | Lake Erie coastal/tributary wetland | | | |
| | <u> </u> | Lake Plain Sand Prairies (Oak Op | enings) (10) | | |
| | <u> </u> | Relict Wet Praires (10) | | (40) | |
| | - | Known occurrence state/federal th | = | | |
| | - | Significant migratory songbird/wat Category 1 Wetland. See Question | · · | | |
| | 1 - | Category Wetland. See Questic | on I Quantative Itating (- | 10) | |
| 2 28.5 | Met | ric 6 Plant com | nunities, in | terspersion, micr | otopography |
| max 20 pts subtotal | 4 | lland Vegetation Communities. | Vegetation Commun | | otopogiapily. |
| max zo pas subblan | | I present using 0 to 3 scale. | 0 | Absent or comprises <0.1ha (0.24 | 171 acres) contiguous area |
| | | Aquatic bed | 1 | Present and either comprises sm | |
| | | Emergent | | vegetation and is of moderate of | juality, or comprises a |
| | م <u>_</u> | Shrub | | significant part but is of low qua | lity |
| | 2 | Forest | 2 | Present and either comprises sign | nificant part of wetland's |
| | <u> </u> | Mudflats | | vegetation and is of moderate of | uality or comprises a small |
| | <u> </u> | Open water | | part and is of high quality | |
| | | Other | 3 | Present and comprises significan | • |
| | Select o | zontal (plan view) Interspersion. | | vegetation and is of high quality | |
| | Selecto | High (5) | Narrative Descriptio | n of Vegetation Quality | |
| | F | Moderately high(4) | low | Low spp diversity and/or predomi | nance of nonnative or |
| | | Moderate (3) | | disturbance tolerant native spec | cies |
| | ' | Moderately low (2) | mod | Native spp are dominant compon | ent of the vegetation, |
| | \times | Low (1) | | although nonnative and/or distu | rbance tolerant native spp |
| | L | None (0) | | can also be present, and specie | |
| | | erage of invasive plants. Refer | | moderately high, but generallyy | √o presenœ of rare |
| | | 1 ORAM long form for list. Add | high | threatened or endangered spp A predominance of native species | s with poppative con |
| | or deduc | ct points for coverage Extensive >75% cover (-5) | ngn | and/or disturbance tolerant nati | • • • |
| | <u> </u> | Moderate 25-75% cover (-3) | | absent, and high spp diversity a | |
| | -1 🔀 | Sparse 5-25% cover (-1) | | the presence of rare, threatene | • |
| | | Nearly absent <5% cover (0) | | | |
| | | Absent (1) | Mudflat and Open W | later Class Quality | |
| | | rotopography. | 0 | Absent <0.1ha (0.247 acres) | |
| | Score a | Il present using 0 to 3 scale. | 11 | Low 0.1 to <1ha (0.247 to 2.47 ac | |
| | 0 | Vegetated hummucks/tussucks | 2 3 | Moderate 1 to <4ha (2.47 to 9.88 | s acres) |
| | | Coarse woody debris >15cm (6in) Standing dead >25cm (10in) dbh | <u> </u> | High 4ha (9.88 acres) or more | |
| | - | Amphibian breeding goots | Microtonography Co | over Scale | |
| | ٠ | | U | JAbseni | |
| | | | 1 | Present very small amounts or if | more common |
| | | | | of marginal quality | |
| | | | 2 | Present in moderate amounts, bu | it not of highest |
| | | | | quality or in small amounts of h | |
| -1 | | | 3 | Present in moderate or greater a | mounts |
| rat 1 | | | ğ | - | |
| catil | | | | and of highest quality | |

WETLAND 8

| Site: 🛵 | 9-MOT. | 0524/2-07 | Rater(s): B. OFTO | M. THOMAYOR | Date: 24 MAY 2012 |
|-------------|----------|--|--|--|--|
| 0 | | Metric 1. Wetland | Area (size) | | , , , |
| max 6 ρts. | sublotal | Select one size class and assign score. >50 acres (>20.2ha) (6 pts) 25 to <50 acres (10.1 to <20.1 10 to <25 acres (4 to <10.1ha 3 to <10 acres (1.2 to <4ha) (0.3 to <3 acres (0.12 to <1.2h 0.1 to <0.3 acres (0.04 to <0.1 <<0.1 acres (0.04ha) (0 pts) | 2ha) (5 pts) ı) (4 pts) 3 pts) ıa) (2pts) | | |
| 7 | 7 | Metric 2. Upland b | ouffers and su | ırrounding land ı | use. |
| max 14 pts. | subtotal | 2a. Calculate average buffer width. Se WIDE. Buffers average 50m MEDIUM. Buffers average 25 NARROW. Buffers average 1 VERY NARROW. Buffers average 1 VERY LOW. 2nd growth or o LOW. Old field (>10 years), s | elect only one and assign scc (164ft) or more around wetland form to <50m (82 to <164ft) ar 10m to <25m (32ft to <82ft) around v erage <10m (<32ft) around v Select one or double check lider forest, prairie, savannatishrubland, young second groential, fenced pasture, park, | ore. Do not double check. and perimeter (7) ound wetland perimeter (4) around wetland perimeter (1) vetland perimeter (0) and average. a, wildlife area, etc. (7) owth forest. (5) conservation tillage, new fallow fiel | |
| 10 | 17 | Metric 3. Hydrolog | 1\/ | | |
| max 30 pts. | subtotal | 3a. Sources of Water. Score all that an High pH groundwater (5) Other groundwater (3) Precipitation (1) Seasonal/Intermittent surface Perennial surface water (lake 3c. Maximum water depth. Select only >0.7 (27.6in) (3) 0.4 to 0.7m (15.7 to 27.6in) (2) <0.4m (<15.7in) (1) 3e. Modifications to natural hydrologic recovered (7) Recovered (7) Recovering (3) Recent or no recovery (1) | water (3) or stream) (5) one and assign score. | Part of wetland/upland Part of riparian or upla 3d. Duration inundation/satural Semi- to permanently Regularly inundated/s Seasonally inundated Seasonally saturated a check and average. | and other human use (1) d (e.g. forest), complex (1) and comdor (1) lion. Score one or dbl check inundated/saturated (4) aturated (3) (2) in upper 30cm (12in) (1) |
| -1 / | 215 |] | | | |
| max 20 pts | subtotal | 4a. Substrate disturbance. Score one of None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select only of Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) | or double check and average | | |
| | | 4c. Habitat alteration. Score one or do | uble check and average. | | |
| Si | 24.5 | None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1) | Check all disturbances ob mowing grazing clearcutting selective cutting woody debris remove toxic pollutants | shrub/sapling remova herbaceous/aquatic b sedimentation dredging | n |

| Site: | W-MOT | - 052412 - 07 | Rater(s): B. orre | D. M. THOMAYER | Date: 24, May 2 |
|--|------------------|--|---|--|---|
| | 24.5 |] | | | , |
| | subtotal this pa | ige ™ | | | |
| C-0 | | Matric E Consist | Matlanda | | |
| \bigcirc | 24.5 | ⊣ | | | |
| max 10 pts. | subtotal | Check all that apply and score as inc | dicated. | | |
| | | Bog (10) | | | |
| | | Fen (10) Old growth forest (10) | | | |
| | | Mature forested wetland (5 | ;) | | |
| | | ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` | wetland-unrestricted hydrology | (10) | |
| | | | wetland-restricted hydrology (5) | | |
| | | Lake Plain Sand Prairies (| Oak Openings) (10) | | |
| | | Relict Wet Praires (10) | | | |
| | | | deral threatened or endangered | | |
| | | * · · · · | oird/water fowl habitat or usage | • • | |
| ······································ | т — | Category I Wetland. See | Question 1 Qualitative Rating (- | -10) | |
| 3 | 27,5 | Metric 6. Plant co | ommunities in | terenersion mic | rotonography |
| | | 6a. Wetland Vegetation Communitie | | - | rotopograpity. |
| max 20 pts | subtotal | Score all present using 0 to 3 scale. | 0 | Absent or comprises <0.1ha (0 | 2471 acres) contiguous area |
| | | Aquatic bed | 1 | Present and either comprises s | |
| | | ∠ Emergent | | vegetation and is of moderate | |
| | | 2 Shrub | | significant part but is of low q | uality |
| | | Forest | 2 | Present and either comprises s | significant part of wetland's |
| | | Mudflats | | = | e quality or comprises a small |
| | | Open water | | part and is of high quality | |
| | | OtherOther | 3 | Present and comprises signification and is of high aug | • |
| | | 6b. horizontal (plan view) Interspersi Select only one. | 10(1. | vegetation and is of high qua | nty |
| | | High (5) | Narrative Description | on of Vegetation Quality | |
| | | Moderately high(4) | low | Low spp diversity and/or predo | minance of nonnative or |
| | | Moderate (3) | *************************************** | disturbance tolerant native sp | pecies |
| | | Moderately low (2) | mod | Native spp are dominant comp | - · · · · · · · · · · · · · · · · · · · |
| | | Low (1) | | although nonnative and/or dis | ••• |
| | | None (0) | f== | can also be present, and spe | • |
| | | 6c. Coverage of invasive plants. Re to Table 1 ORAM long form for list. A | | moderately high, but generall threatened or endangered sp | • |
| | | or deduct points for coverage | high | A predominance of native spec | I |
| | | Extensive >75% cover (-5) | • | and/or disturbance tolerant n | • • • |
| | | Moderate 25-75% cover (-3 | 3) | absent, and high spp diversit | y and often, but not always, |
| | | Sparse 5-25% cover (-1) | | the presence of rare, threater | ned, or endangered spp |
| | | Nearly absent <5% cover (| · | | |
| | | Absent (1) | Mudflat and Open V | | |
| | | 6d. Microtopography. Score all present using 0 to 3 scale. | 0 | Absent <0.1ha (0.247 acres) | acroc) |
| | | Vegetated hummucks/tuss | | Low 0.1 to <1ha (0.247 to 2.47 Moderate 1 to <4ha (2.47 to 9. | |
| | | Coarse woody debris >15c | ~ | High 4ha (9.88 acres) or more | .00 40103) |
| | | Standing dead >25cm (10in | | 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | |
| | | Amphibian bearding posts | *Floratanagraphy C | awar Canta | |
| | | | 0 | Absent | |
| | | | 1 | Present very small amounts or | if more common |
| | | | M-M-M-M-M-M-M-M-M-M-M-M-M-M-M-M-M-M-M- | of marginal quality | |
| | | | 2 | Present in moderate amounts, | • |
| | | | 3 | quality or in small amounts o Present in moderate or greater | |
| | | | J | and of highest quality | amounto |
| | - | | | 3 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - | |

27.5 GRAND TOTAL(max 100 pts)

W-Ndf 6/5/2012-1

| Site: | AEP | BUSANDY | Rater(s): M. THom ruge | a BOTTO | Date: 06/05/12 |
|-------------|-----------------|---|---|--|---|
| 0 | 0 | Metric 1. Wetland A | • | | • |
| max 6 pts. | subtotal | Select one size class and assign scc >50 acres (>20.2ha) (6 pts 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10. 3 to <10 acres (1.2 to <4h. 0.3 to <3 acres (0.12 to <10. 0.1 to <0.3 acres (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 to)) | s) 20.2ha) (5 pts) 1ha) (4 pts) a) (3 pts) .2ha) (2pts) <0.12ha) (1 pt)) | | |
| 3 | 3 | Metric 2. Upland bu | uffers and surroundi | ng land use | = |
| max 14 pts. | | WIDE. Buffers average 50 MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land use VERY LOW. 2nd growth of LOW. Old field (>10 years MODERATELY HIGH. Re | Select only one and assign score. Dom (164ft) or more around wetland per e 25m to <50m (82 to <164ft) around we ge 10m to <25m (32ft to <82ft) around wetland average <10m (<32ft) around wetland e. Select one or double check and avor older forest, prairie, savannah, wildlies), shrub land, young second growth for esidential, fenced pasture, park, consequen pasture, row cropping, mining, company to the select one or consequence. | rimeter (7) wetland perimeter (4) d wetland perimeter (1 d perimeter (0) perage. ife area, etc. (7) perst. (5) proverst. (5) | |
| 8 | 11 | Metric 3. Hydrology | y. | | |
| max 30 pts. | | None or none apparent (1 | ace water (3) ake or stream) (5) only one and assign score. a) (2) gic regime. Score one or double check 2) Check all disturbances observed | Part of wetland/ Part of riparian Duration inundation/sa Semi- to perma Regularly inund Seasonally inur Seasonally satu k and average. | plain (1) n/lake and other human use (1) /upland (e.g. forest), complex (1) or upland corridor (1) aturation. Score one or dbl check nently inundated/saturated (4) lated/saturated (3) idated (2) urated in upper 30cm (12in) (1) |
| | _ | Recovered (7) Recovering (3) Recent or no recovery (1) | ditch tile dike weir stormwater input | point source (no filling/grading road bed/RR tradredging other | |
| 6 | 17 | Metric 4. Habitat A | Iteration and Develo | pment. | |
| max 20 pts. | subtotal | 4a. Substrate disturbance. Score o None or none apparent (4 Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select or Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) |) | | |
| | | 4c. Habitat alteration. Score one or None or none apparent (9 | | | |
| | subtotal this p | Recovered (6) Recovering (3) Recent or no recovery (1) | mowing grazing clearcutting selective cutting woody debris removal toxic pollutants | shrub/sapling reherbaceous/aquesedimentation dredging farming nutrient enrichn | uatic bed removal |

10-moff6/5/12-1

| Site: | Rater(| s): | Date: | |
|----------------------|--|--|--|---|
| subtotal first pa | Metric 5. Special Wetlan | ds. | | |
| max 10 pts. subtotal | Check all that apply and score as indicated. Bog (10) Fen (10) Old growth forest (10) Mature forested wetland (5) Lake Erie coastal/tributary wetland-re Lake Erie coastal/tributary wetland-re Lake Plain Sand Prairies (Oak Openi Relict Wet Prairies (10) Known occurrence state/federal three Significant migratory songbird/water Category 1 Wetland. See Question | estricted hydro ings) (10) atened or enda fowl habitat or 1 Qualitative R | logy (5) angered species (10) usage (10) lating (-10) | |
| 7 24 | | | erspersion, microtopography. | |
| max 20 pts. subtótal | 6a. Wetland Vegetation Communities. | Vegetation | Community Cover Scale | |
| | Score all present using 0 to 3 scale. | 0 | Absent or comprises <0.1ha (0.2471 acres) contiguous area | |
| | Aquatic bed | 1 | Present and either comprises small part of wetland's | |
| | 3 Emergent | | vegetation and is of moderate quality, or comprises a | |
| | // Shrub | | significant part but is of low quality | |
| | Forest | 2 | Present and either comprises significant part of wetland's | |
| | Mudflats | | vegetation and is of moderate quality or comprises a small | |
| | Open water | | part and is of high quality | |
| | Other | 3 | Present and comprises significant part, or more, of wetland's | |
| | 6b. horizontal (plan view) Interspersion. | | vegetation and is of high quality | |
| | Select only one. | | | |
| | High (5) | Narrative D | escription of Vegetation Quality | |
| | Moderately high(4) | low | Low spp diversity and/or predominance of nonnative or | |
| | | IOW | | |
| | Moderate (3) | no o d | disturbance tolerant native species | |
| | Moderately low (2) | mod | Native spp are dominant component of the vegetation, | |
| | / <u>×</u> Low (1) | | although nonnative and/or disturbance tolerant native spp | |
| | None (0) | | can also be present, and species diversity moderate to | |
| | 6c. Coverage of invasive plants. Refer | | moderately high, but generally w/o presence of rare | |
| | to Table 1 ORAM long form for list. Add | Market Control of Cont | threatened or endangered spp | |
| | or deduct points for coverage | high | A predominance of native species, with nonnative spp | |
| | Extensive >75% cover (-5) | | and/or disturbance tolerant native spp absent or virtually | |
| | Moderate 25-75% cover (-3) | | absent, and high spp diversity and often, but not always, | |
| | Sparse 5-25% cover (-1) | | the presence of rare, threatened, or endangered spp | |
| | ∇ Nearly absent <5% cover (0) | | | _ |
| | Absent (1) | Mudflat and | d Open Water Class Quality | |
| | 6d. Microtopography. | 0 | Absent <0.1ha (0.247 acres) | |
| | Score all present using 0 to 3 scale. | 1 | Low 0.1 to <1ha (0.247 to 2.47 acres) | |
| | / Vegetated hummucks/tussucks | 2 | Moderate 1 to <4ha (2.47 to 9.88 acres) | |
| | Coarse woody debris >15cm (6in) | 3 | High 4ha (9.88 acres) or more | |
| | 2 Standing dead >25cm (10in) dbh | | Trigit the (0.00 dolog) of thore | |
| | / Amphibian breeding pools | Microtopoo | graphy Cover Scale | |
| | Amphibian bleeding pools | | Absent | |
| | | <u> </u> | | |
| | | ı | Present very small amounts or if more common of marginal quality | |
| | | 2 | Present in moderate amounts, but not of highest | |
| | | 2 | | |
| | | | quality or in small amounts of highest quality | |
| | The same | 3 | Present in moderate or greater amounts | |
| | , terory | | and of highest quality | |

24 Contegory 1

| Site: | WETCHND 10 Form Quantitative Rating | ater(s): | ω-pr 6/7/12-/ Date: |
|--------------------|--|--|--|
| oite. | | ater(3). | Date. |
| 00 | Metric 1. Wetland Are | a (size). | |
| max 6 pts. subtot | Select one size class and assign score. >50 acres (>20.2ha) (6 pts) 25 to <50 acres (10.1 to <20.2l 10 to <25 acres (4 to <10.1ha) 3 to <10 acres (1.2 to <4ha) (3 0.3 to <3 acres (0.12 to <1.2ha 0.1 to <0.3 acres (0.04 to <0.12 <0.1 acres (0.04ha) (0 pts) | (4 pts) pts)) (2pts) | |
| 1 / | Metric 2. Upland buffe | ers and surroundi | ng land use. |
| max 14 pts. subtot | WIDE. Buffers average 50m (MEDIUM. Buffers average 25m NARROW. Buffers average 10m VERY NARROW. Buffers average 10m VERY LOW. 2nd growth or old LOW. Old field (>10 years), sh MODERATELY HIGH. Reside | 164ft) or more around wetland pe in to <50m (82 to <164ft) around v om to <25m (32ft to <82ft) around rage <10m (<32ft) around wetland elect one or double check and av der forest, prairie, savannah, wildl arub land, young second growth fo ntial, fenced pasture, park, conse | rimeter (7) wetland perimeter (4) d wetland perimeter (1) d perimeter (0) verage. life area, etc. (7) prest. (5) ervation tillage, new fallow field. (3) |
| 16 17 | Metric 3. Hydrology. | | |
| max 30 pts. subtot | High pH groundwater (5) Other groundwater (3) Precipitation (1) Seasonal/Intermittent surface of the perennial surface water (lake of the surface water (lak | water (3) or stream) (5) one and assign score. egime. Score one or double check all disturbances observed ditch tile dike weir stormwater input | point source (nonstormwater) filling/grading road bed/RR track dredging other |
| 7 24 | Metric 4. Habitat Alte | ration and Develo | pment. |
| max 20 pts. subtot | 4a. Substrate disturbance. Score one of None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select only or Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one or dou | ne and assign score. | |
| 24 | None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1) | Check all disturbances observed mowing grazing clearcutting selective cutting woody debris removal toxic pollutants | shrub/sapling removal herbaceous/aquatic bed removal sedimentation dredging farming nutrient enrichment |

subtotal this page last revised 1 February 2001 jjm

Category]

End of Quantitative Rating. Complete Categorization Worksheets.

2

Present in moderate amounts, but not of highest

quality or in small amounts of highest quality Present in moderate or greater amounts

and of highest quality

toxic pollutants

farming

nutrient enrichment

last revised 1 February 2001 jjm

w-pr 6/7/12-2

| Site: | | Rater(| s): | | Date: |
|-------------|-----------------------|---|--|---|-----------------------------|
| SU | ZZ btotal first pa | 1 | | | |
| 0 | 22 | Metric 5. Special Wetland | ds. | | |
| max 10 pts. | subtotal | Check all that apply and score as indicated. Bog (10) Fen (10) Old growth forest (10) Mature forested wetland (5) Lake Erie coastal/tributary wetland-re Lake Erie coastal/tributary wetland-re Lake Plain Sand Prairies (Oak Openi Relict Wet Prairies (10) Known occurrence state/federal threa Significant migratory songbird/water in Category 1 Wetland. See Question 1 | estricted hydrol ngs) (10) atened or enda fowl habitat or I Qualitative Ra | ogy (5) Ingered species (10) Usage (10) ating (-10) | |
| / | 23 | Metric 6. Plant communi | ties, inte | erspersion, microto | pography. |
| max 20 pts. | subtotal | 6a. Wetland Vegetation Communities. | Vegetation | Community Cover Scale | |
| | | Score all present using 0 to 3 scale. | 0 | Absent or comprises <0.1ha (0.24 | 171 acres) contiguous area |
| | | Aquatic bed | 1 | Present and either comprises sma | all part of wetland's |
| | | 2 Emergent | | vegetation and is of moderate q | - · |
| | | Shrub | | significant part but is of low qua | |
| | | Forest | 2 | Present and either comprises sign | |
| | | ² Mudflats | | vegetation and is of moderate q | uality or comprises a small |
| | | Open water | | part and is of high quality | |
| | | Other | 3 | Present and comprises significant | part, or more, of wetland's |
| | | 6b. horizontal (plan view) Interspersion. | | vegetation and is of high quality | |
| | | Select only one. High (5) | Narrative Do | escription of Vegetation Quality | |
| | | Moderately high(4) | low | Low spp diversity and/or predomin | nance of nonnative or |
| | | Moderate (3) | | disturbance tolerant native spec | ies |
| | | Moderately low (2) | mod | Native spp are dominant component | ent of the vegetation, |
| | | o Low (1) | | although nonnative and/or distu | rbance tolerant native spp |
| | | ✓ None (0) | | can also be present, and specie | s diversity moderate to |
| | | 6c. Coverage of invasive plants. Refer | | moderately high, but generally v | v/o presence of rare |
| | | to Table 1 ORAM long form for list. Add | | threatened or endangered spp | |
| | | or deduct points for coverage | high | A predominance of native species | s, with nonnative spp |
| | | Extensive >75% cover (-5) | | and/or disturbance tolerant nativ | ve spp absent or virtually |
| | | | | absent, and high spp diversity a | ind often, but not always, |
| | | -3 Sparse 5-25% cover (-1) | | the presence of rare, threatened | • . |
| | | Nearly absent <5% cover (0) | | | |
| | | Absent (1) | Mudflat and | Open Water Class Quality | |
| | | 6d. Microtopography. | 0 | Absent <0.1ha (0.247 acres) | |
| | | Score all present using 0 to 3 scale. | 1 | Low 0.1 to <1ha (0.247 to 2.47 ac | eres) |
| | | Vegetated hummucks/tussucks | 2 | Moderate 1 to <4ha (2.47 to 9.88 | |
| | | (6in) | 3 | High 4ha (9.88 acres) or more | |
| | | 2 © Standing dead >25cm (10in) dbh | | | |
| | | Amphibian breeding pools | Microtopoa | raphy Cover Scale | |
| | | | 0 | Absent | |
| | | | 1 | Present very small amounts or if r | more common |
| | | | · | of marginal quality | |
| | | | 2 | Present in moderate amounts, bu | t not of highest |
| | | , | _ | quality or in small amounts of hi | = |
| | 1.4 | 907 1 | 3 | Present in moderate or greater ar | |
| | Co. | J ノ Ł | S | and of highest quality | nounta |

| | WETZAND 2 | | |
|----------------------|--|---|--|
| ORAM v. 5.0 Field F | orm Quantitative Rating | | W-pr 6/7/12-3 |
| Site: | | Rater(s): | Date: |
| 00 | Metric 1. Wetland Ar | rea (size). | |
| max 6 pts. subtotal | Select one size class and assign score | .2ha) (5 pts) a) (4 pts) (3 pts) ha) (2pts) .12ha) (1 pt) | |
| 3 3 | Metric 2. Upland but | fers and surroundi | ng land use. |
| max 14 pts. subtotal | MEDIUM. Buffers average 2 NARROW. Buffers average 2 VERY NARROW. Buffers average 2 2b. Intensity of surrounding land use. VERY LOW. 2nd growth or LOW. Old field (>10 years), MODERATELY HIGH. Resi | n (164ft) or more around wetland per 25m to <50m (82 to <164ft) around v 10m to <25m (32ft to <82ft) around verage <10m (<32ft) around wetland | rimeter (7) wetland perimeter (4) d wetland perimeter (1) d perimeter (0) verage. ife area, etc. (7) prest. (5) vervation tillage, new fallow field. (3) |
| 10 13 | Metric 3. Hydrology. | | |
| max 30 pts. subtotal | Recovered (7) Recovering (3) Recent or no recovery (1) | e water (3) e or stream) (5) 3d. y one and assign score. (2) regime. Score one or double chec Check all disturbances observed ditch tile dike weir stormwater input | point source (nonstormwater) filling/grading road bed/RR track dredging other |
| 7 20 | Metric 4. Habitat Alt | eration and Develo | pment. |
| max 20 pts. subtotal | 4a. Substrate disturbance. Score one None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select only Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one or development. | one and assign score. | π |
| 20 | None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1) | Check all disturbances observed mowing grazing clearcutting selective cutting woody debris removal toxic pollutants | shrub/sapling removal herbaceous/aquatic bed removal sedimentation dredging farming nutrient enrichment |

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Category

of marginal quality 2 Present in moderate amounts, but not of highest quality or in small amounts of highest quality Present in moderate or greater amounts

and of highest quality

grazing

clearcutting

selective cutting

toxic pollutants

woody debris removal

herbaceous/aquatic bed removal

sedimentation

nutrient enrichment

dredging

farming

last revised 1 February 2001 jjm

subtotal this page

Recovering (3)

Recent or no recovery (1)

wpr6/7/12-4

| Site: | F | Rater(s): | | Date: |
|--------------------------|---|--|--|--|
| subtotal first page | | | | |
| 0 25 M | etric 5. Special We | etlands. | | |
| | ck all that apply and score as indice Bog (10) Fen (10) Old growth forest (10) Mature forested wetland (5) Lake Erie coastal/tributary wetlake Erie coastal/tributary wetlake Plain Sand Prairies (Ook Relict Wet Prairies (10) Known occurrence state/fed Significant migratory songbi | vetland-unrestricted hydrological vetland-restricted hydrological (10) are all threatened or endal or divater fowl habitat or the strict of th | ngered species (10) usage (10) ating (-10) | |
| 4 29 Me | etric 6. Plant com | munities, inte | erspersion, microto | pography. |
| max 20 pts. subtotal 6a. | Wetland Vegetation Communities | . Vegetation 0 | Community Cover Scale | |
| Scor | e all present using 0 to 3 scale. | 0 | Absent or comprises <0.1ha (0.24 | 71 acres) contiguous area |
| | Aquatic bed | 1 | Present and either comprises sma | |
| | 2 Emergent | | vegetation and is of moderate qu | uality, or comprises a |
| | Shrub | | significant part but is of low quali | ity |
| | Forest | 2 | Present and either comprises sign | |
| 2 | Mudflats | | vegetation and is of moderate qu | |
| ľ | Open water | | part and is of high quality | and a simple section. |
| | Other | 3 | Present and comprises significant | part or more of wetland's |
| 6h | horizontal (plan view) Interspersio | • | vegetation and is of high quality | part, or more, or wettand's |
| | | (I. | vegetation and is of high quality | |
| Sele | ct only one. | Manus Cara Da | | |
| | High (5) | *************************************** | escription of Vegetation Quality | |
| | Moderately high(4) | low | Low spp diversity and/or predomin | |
| | Moderate (3) | *** | disturbance tolerant native speci | |
| | Moderately low (2) | mod | Native spp are dominant compone | ent of the vegetation, |
| Ð | Low (1) | | although nonnative and/or distur | bance tolerant native spp |
| | | | can also be present, and species | s diversity moderate to |
| 6c. | Coverage of invasive plants. Refe | er | moderately high, but generally w | //o presence of rare |
| to Ta | able 1 ORAM long form for list. A | dd | threatened or endangered spp | |
| or de | educt points for coverage | high | A predominance of native species | , with nonnative spp |
| | Extensive >75% cover (-5) | | and/or disturbance tolerant nativ | e spp absent or virtually |
| | Moderate 25-75% cover (-3) |) | absent, and high spp diversity ar | nd often, but not always. |
| , 1 | × Sparse 5-25% cover (-1) | | the presence of rare, threatened | |
| -1 | Nearly absent <5% cover (0 |) | | , |
| | Absent (1) | | Open Water Class Quality | |
| 6d | Microtopography. | 0 | Absent <0.1ha (0.247 acres) | |
| | e all present using 0 to 3 scale. | 1 | Low 0.1 to <1ha (0.247 to 2.47 acr | res) |
| 1 | / Vegetated hummucks/tussu | | Moderate 1 to <4ha (2.47 to 9.88 | |
| | O Coarse woody debris >15cn | | High 4ha (9.88 acres) or more | acres) |
| 3 | O Standing dead >25cm (10in | | Trigit 4112 (0.00 acres) of more | Windle Committee of the |
| ´ | 2 Amphibian breeding pools | | raphy Cover Scale | |
| 1 | | 0 | Absent | |
| | | 0 | Present very small amounts or if m | nore common |
| | | ı | of marginal quality | IOLE COLLINOLE |
| | | | | and of binbook |
| | | 2 | Present in moderate amounts, but | |
| | | | quality or in small amounts of hig | |
| ~ /~ | 2019 7 | 3 | Present in moderate or greater am | nounts |
| 2a Cate | アノ ノ | | and of highest quality | |

 ${\bf End\ of\ Quantitative\ Rating.\ \ Complete\ Categorization\ Worksheets.}$

| 1 |) | Metric 1. Wetland Area (size). | |
|-------------|----------|--|----------|
| max 6 pts. | subtotal | Select one size class and assign score. >50 acres (>20.2ha) (6 pts) 25 to <50 acres (10.1 to <20.2ha) (5 pts) 10 to <25 acres (4 to <10.1ha) (4 pts) 3 to <10 acres (1.2 to <4ha) (3 pts) 0.3 to <3 acres (0.12 to <1.2ha) (2pts) > | , 'A . ₹ |
| 7 | 4 | Metric 2. Upland buffers and surrounding land use. | |
| max 14 pts. | subtotal | 2a. Calculate average buffer width. Select only one and assign score. Do not double check. WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7) MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4) NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1) VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0) | |
| | | 2b. Intensity of surrounding land use. Select one or double check and average. VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7) LOW. Old field (>10 years), shrubland, young second growth forest. (5) MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3) HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1) | |
| 17 | 25 | Metric 3. Hydrology. | |
| max 30 pts. | subtotal | 3a. Sources of Water. Score all that apply. High pH groundwater (5) Other groundwater (3) Precipitation (1) Seasonal/Intermittent surface water (3) Perennial surface water (lake or stream) (5) 3d. Duration inundation/saturation. Score one or double check and average. None or none apparent (12) Check all disturbances observed 100 year floodplain (1) Between stream/lake and other human use (Part of wetland/upland (e.g. forest), complex Part of riparian or upland corridor (1) Seasonal/Intermittent surface water (3) Part of riparian or upland corridor (1) Semi- to permanently inundated/saturated (4) Regularly inundated/saturated (3) Seasonally saturated in upper 30cm (12in) (1) Check all disturbances observed | check. |
| | | Recovered (7) Recovering (3) Recent or no recovery (1) Recovering (3) Recovering (4) Recovering (4) Recovering (5) Recovering (5) Recovering (6) Recovering (6) Recovering (7) Recovering (7) Recovering (8) Reco | |
| 13 | .38 | Metric 4. Habitat Alteration and Development. | |
| max 20 pts. | subtotal | 4a. Substrate disturbance. Score one or double check and average. None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select only one and assign score. Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one or double check and average. | |
| _ | · | None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1) Check all disturbances observed mowing grazing herbaceous/aquatic bed removal sedimentation | |

selective cutting dredging --farming woody debris removal toxic pollutants nutrient enrichment

| Site: Æ | P BIG | SANOY | Rater(s): B. Oriz | M. THOMBYER | Date: 10/15/12 |
|-------------|---|---|---|---|--|
| max 10 pts. | 3% ubtotal this page 3% subtotal | Metric 5. Special V Check all that apply and score as indica Bog (10) Fen (10) | | | |
| q | 47 | Old growth forest (10) Mature forested wetland (5) Lake Erie coastal/tributary we Lake Erie coastal/tributary we Lake Plain Sand Prairies (Oal Relict Wet Praires (10) Known occurrence state/feder Significant migratory songbird Category 1 Wetland. See Qu | tland-restricted hydrology (5) c Openings) (10) ral threatened or endangered //water fowl habitat or usage estion 1 Qualitative Rating (- | d species (10) (10) -10) | otopography. |
| max 20 pts. | subtotal | 6a. Wetland Vegetation Communities. | Vegetation Commun | • | - 10 - 3 - 1 1 1 1 1 1 1 1 1 |
| max 20 pts. | Subtotal | Score all present using 0 to 3 scale. | 0 | Absent or comprises <0.1ha (0.2 | 471 acres) contiguous area |
| | | Aquatic bed 3 Emergent | 1 | Present and either comprises sm vegetation and is of moderate of | all part of wetland's |
| | | Shrub | | significant part but is of low qua | |
| | | Forest | 2 | Present and either comprises sig | nificant part of wetland's |
| | | Mudflats | | vegetation and is of moderate | quality or comprises a small |
| | | Open water | | part and is of high quality | |
| | | Other | 3 | Present and comprises significar | at part, or more, of wetland's |
| | | 6b. horizontal (plan view) Interspersion | | vegetation and is of high quality | v . |
| | | Select only one. | | | , |
| | | High (5) | Narrative Description | on of Vegetation Quality | |
| | | Moderately high(4) | low | Low spp diversity and/or predom | inance of poppative or |
| | | · · · · · · · · · · · · · · · · · · · | IOW | | |
| | | Moderate (3) | | disturbance tolerant native spe | |
| | | Widderatery low (2) | mod | Native spp are dominant compor | - |
| | | Low (1) | | although nonnative and/or distu | |
| | | None (0) | | can also be present, and speci- | |
| | | 6c. Coverage of invasive plants. Refer | | moderately high, but generally | w/o presence of rare |
| | | to Table 1 ORAM long form for list. Add | *************************************** | threatened or endangered spp | |
| | | or deduct points for coverage | high | A predominance of native specie | |
| | | Extensive >75% cover (-5) | | and/or disturbance tolerant nat | ive spp absent or virtually |
| | | Moderate 25-75% cover (-3) | | absent, and high spp diversity | and often, but not always, |
| | | ∠ Sparse 5-25% cover (-1) | | the presence of rare, threatene | d, or endangered spp |
| | | ` Nearly absent <5% cover (0) | | | |
| | | Absent (1) | Mudflat and Open W | Vater Class Quality | |
| | | 6d. Microtopography. | 0 | Absent <0.1ha (0.247 acres) | |
| | | Score all present using 0 to 3 scale. | 1 | Low 0.1 to <1ha (0.247 to 2.47 a | cres) |
| | | Vegetated hummucks/tussuck | (S 2 | Moderate 1 to <4ha (2.47 to 9.88 | |
| | | Coarse woody debris >15cm | | High 4ha (9.88 acres) or more | |
| | | Standing dead >25cm (10in) of | ` ' ——————————————————————————————————— | | |
| | | / Amphibian breeding pools | Microtopography Co | over Scale | |
| | | , anymolan processing pools | 0 | Absent | |
| | | | 1 | Present very small amounts or if | more common |
| | | | ı | | MOLE COMMON |
| | | | | of marginal quality | |
| X n | | | 2 | Present in moderate amounts, bu | _ |
| 12 | | | | quality or in small amounts of h | |
| ', " | | | 3 | Present in moderate or greater a | mounts |
| | | | | and of highest quality | |

111

GRAND TOTAL(max 100 pts)

toxic pollutants

nutrient enrichment

| Site: 🏄 | EP BK | SANDY | / F | Rater(s): אוניסול | M. Homayer | Date: 10/15/10 |
|-------------|----------|-----------------|--|--|---|--|
| s | 24.5 | 1 | | | | |
| 0 | 24.5 | ∣Metri o | c 5. Special We | etlands. | | |
| max 10 pts. | subtotal | Check all th | at apply and score as indicated og (10) en (10) ld growth forest (10) ature forested wetland (5) ake Erie coastal/tributary wetland ake Erie coastal/tributary wetland ake Plain Sand Prairies (Oak Opelict Wet Praires (10) nown occurrence state/federal trignificant migratory songbird/waategory 1 Wetland. See Questi | d-unrestricted hydrology d-restricted hydrology (5 benings) (10) hreatened or endangered ter fowl habitat or usage | d species (10) (10) | |
| 13 | 21.5 | Metric | c 6. Plant com | munities, in | terspersion, micr | otopography. |
| max 20 pts. | subtotal | 6a. Wetland | d Vegetation Communities. | Vegetation Commu | nity Cover Scale | |
| | | | esent using 0 to 3 scale. | 0 | Absent or comprises <0.1ha (0.2- | 471 acres) contiguous area |
| | | ∠ Er | quatic bed mergent hrub | 1 | Present and either comprises sm vegetation and is of moderate of significant part but is of low qua | quality, or comprises a |
| | | l Fo | orest | 2 | Present and either comprises sig | nificant part of wetland's |
| | | М | udflats | | vegetation and is of moderate of | quality or comprises a small |
| | | | pen water | | part and is of high quality | |
| | | | ther | 3 | Present and comprises significan | • |
| | | | tal (plan view) Interspersion. | | vegetation and is of high quality | |
| | | Select only | one. igh (5) | Narrative Description | on of Vegetation Quality | |
| | | | oderately high(4) | low | Low spp diversity and/or predomi | nance of nonnative or |
| | | М | oderate (3) | | disturbance tolerant native spec | |
| | | 6) <u> </u> | oderately low (2) | mod | Native spp are dominant compon | |
| | | | ow (1) | | although nonnative and/or distu | irbance tolerant native spp |
| | | X | one (0) | | can also be present, and specie | es diversity moderate to |
| | | 6c. Coverag | ge of invasive plants. Refer | | moderately high, but generallyv | v/o presence of rare |
| | | to Table 1 C | RAM long form for list. Add | *************************************** | threatened or endangered spp | |
| | | | oints for coverage | high | A predominance of native specie | s, with nonnative spp |
| | | . — | xtensive >75% cover (-5) | • | and/or disturbance tolerant nati | • • • |
| | | ,) | oderate 25-75% cover (-3) | | absent, and high spp diversity a | • • |
| | | ⊢ | parse 5-25% cover (-1) | | the presence of rare, threatene | d, or endangered spp |
| | | — | early absent <5% cover (0) | Modflet and Ones 18 | Notes Class Coulify | |
| | | 6d. Microto | bsent (1) | Mudflat and Open V | Absent <0.1ha (0.247 acres) | |
| | | | pography. esent using 0 to 3 scale. | 1 | Low 0.1 to <1ha (0.247 to 2.47 acres) | crae) |
| | | | egetated hummucks/tussucks | 2 | Moderate 1 to <4ha (2.47 to 9.88 | |
| | | | oarse woody debris >15cm (6in | | High 4ha (9.88 acres) or more | acres) |
| | | | anding dead >25cm (10in) dbh | , | Tright tha (e.ee acree) of more | <u></u> |
| | | , , | mphibian breeding pools | Microtopography Co | over Scale | |
| | | | , and present | 0 | Absent | A STATE OF THE STA |
| | | | | 1 | Present very small amounts or if | more common |
| | | | | | of marginal quality | |
| - A - | | | | 2 | Present in moderate amounts, bu | ut not of highest |
| 1 'V | | | | | quality or in small amounts of h | |
| V / | | | | 3 | Present in moderate or greater a | mounts |
| | | | | | and of highest quality | |

QL5 GRAND TOTAL(max 100 pts)

| was to the design of the second | WETCH | ND ICE. | | |
|---------------------------------|---|---|------------------------------|---|
| ORAM v. 5.0 Field Form C | Quantitative Rating | | | W-MDT 101512-03 Date: 10/15/12 |
| Site: AtP BUGS | BANDU | Rater(s): B. OTTO, I | U. THOMAHAR | Date: 10/15/13 |
| P | etric 1. Wetland A | , | 1. Moranje | |
| 00 | Ctilo I. abetidiid M | Ca (5120): | | |
| max 6 pts. subtotal Sele | ect one size class and assign score >50 acres (>20.2ha) (6 pts) | 2. | | |
| | 25 to <50 acres (10.1 to <20 10 to <25 acres (4 to <10.1) | | | |
| | 3 to <10 acres (1.2 to <4ha) | (3 pts) | | |
| | 0.3 to <3 acres (0.12 to <1.2 0.1 to <0.3 acres (0.04 to <0 | | | |
| I AA | <0.1 acres (0.04ha) (0 pts) | fore and currou | inding land use | |
| 7 7 | etric 2. Upland but | | - | ž. |
| max 14 pts. subtotal 2a. | | n (164ft) or more around wetla | and perimeter (7) | |
| 4 | | 25m to <50m (82 to <164ft) a 10m to <25m (32ft to <82ft) | | |
| 2h. | VERY NARROW. Buffers a Intensity of surrounding land use. | verage <10m (<32ft) around v Select one or double check | | |
| | | older forest, prairie, savannal | n, wildlife area, etc. (7) | |
| 3 | | dential, fenced pasture, park, | conservation tillage, new fa | allow field. (3) |
| Me Me | etric 3. Hydrology | | ing, conduction. (1) | |
| 11 18 | | | | |
| max 30 pts. subtotal 3a. | Sources of Water. Score all that a | apply. | 3b. Connectivity. Score a | |
| , | Other groundwater (3) Precipitation (1) | | | m/lake and other human use (1) d/upland (e.g. forest), complex (1) |
| (| Seasonal/Intermittent surface | , , | Part of riparian | or upland corridor (1) |
| 3c. | Perennial surface water (lak Maximum water depth. Select on | | Semi- to perma | saturation. Score one or dbl check. anently inundated/saturated (4) |
| 1 | >0.7 (27.6in) (3) 0.4 to 0.7m (15.7 to 27.6in) | (2) | Regularly inun- | dated/saturated (3) ndated (2) |
| 30 | <0.4m (<15.7in) (1) Modifications to natural hydrologic | regime. Scare one or double | Seasonally sat | urated in upper 30cm (12in) (1) |
| Je. | None or none apparent (12) | | | |
| 7 | Recovered (7) Recovering (3) | ditch tile | point source (n | onstormwater) |
| | Recent or no recovery (1) | dike | road bed/RR tr | ack |
| | | weir stormwater input | dredging other | |
| 10 - 20 - M | etric 4. Habitat Alt | eration and Dev | relopment. | |
| 10.5 00.5 | | | • | |
| max 20 pts. subtotal 4a. | Substrate disturbance. Score one None or none apparent (4) | or double check and average | e. | |
| 3 | Recovered (3) Recovering (2) | | | |
| 4h | Recent or no recovery (1) Habitat development. Select only | one and assign score | | |
| 40. | Excellent (7) | one and assign score. | | |
| | Very good (6) Good (5) | | | |
| 3 | Moderately good (4) Fair (3) | | | |
| | Poor to fair (2) | | | |
| 4c. | Poor (1) Habitat alteration. Score one or d | ouble check and average. | | 1 |
| . / | None or none apparent (9) Recovered (6) | Check all disturbances obs | erved shrub/sapling i | removal |
| 4.5 | Recovering (3) | grazing | herbaceous/ac | quatic bed removal |
| | Recent or no recovery (1) | clearcutting selective cutting | sedimentation dredging | |
| 28.5 | | woody debris remova | I farming nutrient enrich | ment |
| subtotal this page | 004 thu | | | |
| last revised 1 February 20 | no i jim | | | |

WETLAND KE

| Site: AEP BH SANDY | Rater(s): B. Olio | M. THOWAYER | Date: 10/15/12 |
|---|--|--|-----------------------------|
| subtotal first page O 29.5 Metric 5. Special V max 10 pts. subtotal Check all that apply and score as inc. Bog (10) | | | |
| Lake Erie coastal/tributary Lake Plain Sand Prairies Relict Wet Prairies (10) Known occurrence state/f Significant migratory song Category 1 Wetland. See | wetland-unrestricted hydrology wetland-restricted hydrology (Oak Openings) (10) ederal threatened or endarghird/water fowl habitat or use Question 1 Qualitative Ra | ogy (5) ngered species (10) usage (10) uting (-10) | |
| 4 32.5 Metric 6. Plant con | | | pograpny. |
| max 20 pts. subtotal 6a, Wetland Vegetation Communitie | | Community Cover Scale | 374 |
| Score all present using 0 to 3 scale. | 0 | Absent or comprises <0.1ha (0.24 | |
| Aquatic bed | 1 | Present and either comprises small | |
| Emergent | | vegetation and is of moderate of | |
| $\frac{\mathcal{L}}{2}$ Shrub | | significant part but is of low qua | |
| Forest | 2 | Present and either comprises sign | nificant part of wetland's |
| Mudflats | | vegetation and is of moderate of | uality or comprises a small |
| Open water | | part and is of high quality | |
| Other | 3 | Present and comprises significan | part, or more, of wetland's |
| 6b. horizontal (plan view) Interspers | | vegetation and is of high quality | |
| | | vegetation and to or riight quality | |
| Select only one. | | | |
| High (5) | Narrative De | escription of Vegetation Quality | |
| Moderately high(4) | low | Low spp diversity and/or predomi | |
| Moderate (3) | | disturbance tolerant native spec | cies |
| , Moderately low (2) | mod | Native spp are dominant compon | ent of the vegetation. |
| Low (1) | | although nonnative and/or distu | |
| None (0) | | can also be present, and specie | |
| 1 | afa | 1 | • |
| 6c. Coverage of invasive plants. R | | moderately high, but generally with restaured an angle state of the st | wo presence or rare |
| to Table 1 ORAM long form for list. | | threatened or endangered spp | |
| or deduct points for coverage | high | A predominance of native species | * * |
| Extensive >75% cover (-5 | 5) | and/or disturbance tolerant nati | ve spp absent or virtually |
| Moderate 25-75% cover (| -3) | absent, and high spp diversity a | and often, but not always, |
| Sparse 5-25% cover (-1) | | the presence of rare, threatened | d, or endangered spp |
| Nearly absent <5% cover | (0) | | |
| Absent (1) | • • | Open Water Class Quality | |
| 6d. Microtopography. | 0 | Absent <0.1ha (0.247 acres) | |
| Score all present using 0 to 3 scale. | | Low 0.1 to <1ha (0.247 to 2.47 ac | cree) |
| | | Moderate 1 to <4ha (2.47 to 9.88 | |
| Vegetated hummucks/tus | | | acres) |
| Coarse woody debris >15 | | High 4ha (9.88 acres) or more | |
| Standing dead >25cm (10 | | | |
| Amphibian breeding pools | <u>Microtopogi</u> | raphy Cover Scale | |
| | 0 | Absent | |
| | 1 | Present very small amounts or if | more common |
| | • | of marginal quality | - |
| | 2 | Present in moderate amounts, bu | t not of highest |
| H 2 | 2 | | |
| 11.0 | | quality or in small amounts of h | |
| | 3 | Present in moderate or greater a | nounts |
| | | and of highest quality | |
| | | | |

| | orm Quantitative Rating NEIVH | | C3-MOT-101513-04 |
|---|--|--|--|
| Site: HEP BU | SANOY | Rater(s): B.OTTO, M. THOMPYER | Date: /0/15/12 |
| 2 2 | Metric 1. Wetland | Area (size). | |
| max 6 pts. subtotal | Select one size class and assign so: >50 acres (>20.2ha) (6 pt: 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10. 3 to <10 acres (1.2 to <4h > 0.3 to <3 acres (0.12 to < 0.1 to <0.3 acres (0.04 to <0.1 acres (0.04ha) (0 pts) | s) 20.2ha) (5 pts) 1ha) (4 pts) a) (3 pts) I.2ha) (2pts) <0.12ha) (1 pt)) | |
| 7 9 | Metric 2. Upland bu | uffers and surrounding land us | e. |
| max 14 pts. subtotal | WIDE. Buffers average 5 MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers | Select only one and assign score. Do not double check. Om (164ft) or more around wetland perimeter (7) e 25m to <50m (82 to <164ft) around wetland perimeter (4 ge 10m to <25m (32ft to <82ft) around wetland perimeter average <10m (<32ft) around wetland perimeter (0) e. Select one or double check and average. | |
| | VERY LOW. 2nd growth LOW. Old field (>10 years MODERATELY HIGH. ReLEASE HIGH. Urban, industrial, of | or older forest, prairie, savannah, wildlife area, etc. (7) s), shrub land, young second growth forest. (5) esidential, fenced pasture, park, conservation tillage, new open pasture, row cropping, mining, construction. (1) | fallow field. (3) |
| # 23 | Metric 3. Hydrology | y. | |
| max 30 pts. subtotal | 3a. Sources of Water. Score all that High pH groundwater (5) Other groundwater (3) Precipitation (1) Seasonal/Intermittent surf. Perennial surface water (8 3c. Maximum water depth. Select of the sel | ace water (3) ake or stream) (5) anly one and assign score. ace water (3) alternation inundation in | dplain (1) am/lake and other human use (1) ad/upland (e.g. forest), complex (1) in or upland corridor (1) /saturation. Score one or dbl check. nanently inundated/saturated (4) ndated/saturated (3) |
| | None or none apparent (1) Recovered (7) Recovering (3) Recent or no recovery (1) | 2) Check all disturbances observed ditch | il . |
| 13 36 | Metric 4. Habitat A | Iteration and Development. | |
| | 4a. Substrate disturbance. Score of None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select on Excellent (7) Very good (6) Good (5) |) | |
| | Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one or None or none apparent (9) Recovered (6) Recovering (3) | Check all disturbances observed shrub/sapling shrub/sapling herbaceous/a | quatic bed removal |
| 3(e) subtotal this pag last revised 1 Februar | | clearcutting sedimentation selective cutting dredging woody debris removal toxic pollutants nutrient enrice | |

W-MDT/01512-04

| Site: | AEP B | SH SAN | Rate | r(s): <i>B</i> 4 | O, MOT | Date: /0/15/12 |
|-------------|------------------------|------------|--|---|--|---------------------------------|
| 0 | 34 subtotal first p | નેં | ic 5. Special Wetla | nds. | | |
| | |] | | | | |
| max 10 pts. | subtotal | Check a | It that apply and score as indicated. Bog (10) Fen (10) Old growth forest (10) Mature forested wetland (5) Lake Erie coastal/tributary wetland Lake Erie coastal/tributary wetland Lake Plain Sand Prairies (Oak Ope Relict Wet Prairies (10) Known occurrence state/federal th | l-restricted hydro enings) (10) | ology (5) | |
| | | | Significant migratory songbird/wate | | | |
| | | | Category 1 Wetland. See Questio | n 1 Qualitative R | lating (-10) | |
| 10 | 46 | Metr | ic 6. Plant commur | nities, int | erspersion, microt | opography. |
| max 20 pts. | subtotal | ີ່ 6a. Wet | land Vegetation Communities. | Vegetation | Community Cover Scale | |
| | | Score al | present using 0 to 3 scale. | 0 | Absent or comprises <0.1ha (0.2 | |
| | | | Aquatic bed | 1 | Present and either comprises sm | |
| | | <u> </u> | Emergent | | vegetation and is of moderate | • |
| | | 6 3 | Shrub | | significant part but is of low qua | |
| | | P 2 | Forest | 2 | Present and either comprises sig | - |
| | | <u></u> | Mudflats | | vegetation and is of moderate | quality or comprises a small |
| | | | Open water | | part and is of high quality | |
| | | a. L. | Other | 3 | Present and comprises significan | |
| | | | zontal (plan view) Interspersion. | | vegetation and is of high qualit | у |
| | | Select or | eq | Normative D | accription of Variation Quality | |
| | | | High (5) Moderately high(4) | | escription of Vegetation Quality | inance of populative or |
| | | 2 = | Moderately high(4) Moderate (3) | low | Low spp diversity and/or predom disturbance tolerant native spe | |
| | | 3 🔀 | Moderate (3) | mod | Native spp are dominant compor | |
| | | | Low (1) | mou | although nonnative and/or dist | g , |
| | | | None (0) | | can also be present, and speci | |
| | | 6c Cove | erage of invasive plants. Refer | | moderately high, but generally | • |
| | | | 1 ORAM long form for list. Add | | threatened or endangered spp | |
| | | | t points for coverage | high | A predominance of native specie | |
| | | | Extensive >75% cover (-5) | 5 | and/or disturbance tolerant nat | |
| | | | Moderate 25-75% cover (-3) | | absent, and high spp diversity | |
| | | , | Sparse 5-25% cover (-1) | | the presence of rare, threatene | • . |
| | | 1 | Nearly absent <5% cover (0) | | | |
| | | V | Absent (1) | Mudflat and | l Open Water Class Quality | |
| | | 6d. Micro | otopography. | 0 | Absent <0.1ha (0.247 acres) | |
| | | Score all | present using 0 to 3 scale. | 1 | Low 0.1 to <1ha (0.247 to 2.47 a | cres) |
| | | 0 | Vegetated hummucks/tussucks | 2 | Moderate 1 to <4ha (2.47 to 9.8 | 8 acres) |
| | | 0 0 | Coarse woody debris >15cm (6in) | 3 | High 4ha (9.88 acres) or more | |
| | | | Standing dead >25cm (10in) dbh Amphibian breeding pools | Microtopog | raphy Cover Scale | |
| | | ك | Amphibian breeding pools | 0 | Absent | |
| | | | | | Present very small amounts or if | more common |
| | | | | • | of marginal quality | oro commun |
| | | | | | Present in moderate amounts, but | ut not of highest |
| TO | | | | - | quality or in small amounts of h | |
| TQ | | | | 3 | Present in moderate or greater a | |
| | 1 | | | - | and of highest quality | · · · · · · · · · · · · · · · · |
| 11// | 1 | | | *************************************** | | |



APPENDIX C

USACE FUNCTIONAL ASSESSEMENT FOR HIGH-GRADIENT EPHEMERAL AND INTERMITTENT STREAM FORMS



| | High-G | radient l | Headwat | | | stern Ke et and C | _ | and wes | tern Wes | st Virgini | а | | |
|--------|----------------------|---|-----------------------------|----------------------------|----------------------------|----------------------|------------------------|---|------------------|--------------|---------|--|--|
| | Team: | M. Thomay | er B Otto | i ieiu L | Jala Sile | et and C | aicuiai | ار Latitude/UT | M Northina: | 38 179562 | | | |
| Pro | oject Name: | | | re Project | | | | Longitude/U | - | | 1 | | |
| 110 | ·= | | County, Ken | | m Hahitat A | \rea 1\ | • | - | _ | 15 October | | | |
| | | Lawrence | - | | | · | F | | | 10 October | 2012 | | |
| SA | AR Number: | | Reach | Length (ft): | 185 | Stream Ty | /pe: Eph | emeral Stream | 1 | | \sim | | |
| | Top Strata: | Tree | e/Sapling St | rata | (determine | d from perce | ent calcula | ted in V _{CCANO} | _{DPY}) | | | | |
| Site a | and Timing: | Project Site | - | | | • | Before Proj | ect | | | • | | |
| Sample | e Variables | | | | | | | | | | | | |
| 1 | V _{CCANOPY} | equidistant 20%, enter | | g the stream value betw | n. Measure reen 0 and 1 | only if tree/s | sapling cov | easure at no ver is at least choice.) | | | 95.5 % | | |
| | 100 | 90 | 90 | 100 | 95 | 100 | 100 | 95 | 90 | 95 | | | |
| | 100 | 90 | 90 | 100 | 90 | 100 | 100 | 95 | 90 | 95 | | | |
| 2 | V _{EMBED} | along the s | | | | | | | | | | | |
| | | according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983) | | | | | | | | | | | |
| | | Rating | | | | | | | | | | | |
| | | 5 | | | | | | fine sedimen | | k) | | | |
| | | 3 | | | | | | d by fine sedied by fine sed | | | | | |
| | | 2 | | | | | | ed by fine sec | | | | | |
| | | 1 | | | | | | / fine sedime | | ial surface) | | | |
| , | List the rati | ngs at each | point below | / : | | | | | | | | | |
| | 2 | 3 | 2 | 1 | 2 | 3 | 2 | 1 | 2 | 2 | | | |
| | 2 | 3 | 2 | 4 | 2 | 3 | 2 | 3 | 2 | 1 | | | |
| | 2 | 3 | 3 | 2 | 4 | 3 | 4 | 3 | 4 | 4 | | | |
| | | | | | | | | | | | | | |
| 3 | \/ | Madian atra | om channa | Laubatrata | oortiolo oizo | Mogauro | at no fouro | than 30 rou | ably oquidio | tant painta | | | |
| 3 | | along the s | tream; use t | he same po | oints and pa | rticles as us | ed in V _{EMB} | ED. | | | 0.08 in | | |
| | • | | ches to the 0.0 in, sand | | | • | w (bedrock | should be c | ounted as 9 | 9 in, | | | |
| | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.50 | 0.08 | 0.08 | 0.08 | 0.08 | | | |
| | 0.08 | 0.10 | 0.08 | 1.00 | 0.08 | 0.50 | 0.08 | 0.50 | 0.08 | 0.08 | | | |
| | 0.08 | 0.25 | 0.25 | 0.50 | 4.00 | 2.00 | 5.00 | 4.00 | 10.00 | 11.00 | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 4 | V_{BERO} | • | e total perce | | | | | er of feet of e oded, total e | | | 16 % | | |
| | | | Left Bank: | 15 | 5 ft | i | Right Bank | : 15 | 5 ft | | | | |

| Sampl | e Variable: | s 5-9 within t | the entire r | iparian/buf | fer zone ad | jacent to t | he stream cl | nannel (25 | feet from e | ach bank). | |
|----------|---|----------------|--------------|---------------|---|-------------|--------------------------------|--------------|----------------|--------------|----------------|
| 5 | V_{LWD} | stream read | ch. Enter th | | rom the enti | | eter and 36 ir buffer and w | | | | 3.2 |
| | | | | | | | oody stems: | | 6 | | |
| 6 | V_{TDBH} | | | | nly if V _{CCANOF} tree DBHs | | ing cover is a | t least 20% | 6). Trees ar | e at least 4 | 10.2 |
| | | | | nents of indi | vidual trees | (at least 4 | in) within the | buffer on e | each side of | | |
| | - | the stream | | | | ī | | D:l-+ O: -l- | | | l |
| | 8 | 10 | Left Side | 12 | 8 | 9 | 12 | Right Side | 8 | 6 | |
| | 14 | 5 | 9 | 11 | 12 | 7 | 16 | 6 | 10 | 11 | |
| | 12 | 16 | 11 | 10 | | 13 | 15 | | 1 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 7 | V_{SNAG} | Number of | snags (at le | east 4" dbh : | and 36" tall) | per 100 fe | et of stream. | Enter num | her of spag | s on each | |
| , | V SNAG | | | | nt per 100 fe | | | Linoi nan | ibor or orlag | o on odon | 0.5 |
| | | | Left Side: | | 1 | | Right Side: | | 0 | | |
| 8 | V_{SSD} | | | | | | hes dbh) per | | | | Niet I Ie e el |
| | | | | | per of sapiin e calculated. | | ubs on each | side of the | stream, and | I the | Not Used |
| | | | Left Side: | | | | Right Side: | | | · | |
| 9 | V_{SRICH} | | | | | | am reach. C | | | | |
| | | | | | | | sive species p from these c | | ali strata. Sp | ecies | 2.70 |
| | | | p 1 = 1.0 | | | <u> </u> | | | 2 (-1.0) | | |
| V | Acer rubri | | | Magnolia t | ripetala | | Ailanthus a | | | Lonicera ja | ponica |
| | Acer sacc | charum | | Nyssa sylv | vatica . | | Albizia julib | rissin | | Lonicera ta | tarica |
| | Aesculus | flava | | Oxydendrur | n arboreum | | Alliaria peti | olata | | Lotus corni | culatus |
| | Asimina ti | riloba | V | Prunus sei | rotina | | Alternanthe | ara | | Lythrum sa | licaria |
| | Betula alle | ghaniensis | ✓ | Quercus a | | | philoxeroid | | | Microstegiun | |
| | Betula ler | nta | | Quercus c | occinea | | Aster tatari | cus | | Paulownia | tomentosa |
| | Carya alb | a | | Quercus in | mbricaria | | Cerastium | fontanum | | Polygonum d | cuspidatum |
| | Carya gla | bra | | Quercus p | rinus | | Coronilla va | aria | | Pueraria m | ontana |
| | Carya ova | alis | | Quercus ru | ubra | | Elaeagnus u | mbellata | | Rosa multii | flora |
| ✓ | Carya ova | ata | | Quercus v | elutina | | Lespedeza | bicolor | | Sorghum h | alepense |
| V | Cornus flo | orida | Sassafras | albidum | | Lespedeza | cuneata | | Verbena br | asiliensis | |
| | Fagus gra | andifolia | | Tilia ameri | cana | | Ligustrum ob | otusifolium | | | |
| | Fraxinus | americana | | Tsuga can | adensis | | Ligustrum s | sinense | | | |
| | Liriodendron tulipifera Ulmus americana | | | | | | | | | | |
| | Magnolia | acuminata | | | | | | | | | |
| | 5 Species in Group 1 | | | | | | 0 | Species in | Group 2 | | |
| | | | | | | | | | | | |

| | | | | | 40" x 40", c | | | | | n 25 feet fro | m each |
|-----------------|---|--------------|--------------|--------------------|-------------------------------|-------------|--------------|--------------|-------------|---------------|------------|
| 10 | V _{DETRITUS} | | | | equidistant sticks, or oth | | | | | er and | |
| .0 | *DEIRIIUS | | | | ercent cove | | | | | or arra | 91.88 % |
| | | | Left | | | | Righ | t Side | | | |
| | | 80 | 100 | 95 | 85 | 100 | 95 | 90 | 85 | | |
| 11 | V_{HERB} | 100 | 100 | 90 over of herb | 95 aceous vege | 100 | 100 | 75 | 80 | o not | |
| • • • | ▼ HERB | | | | oh and 36" ta | | | | | | Not Used |
| | | | | s up through | n 200% are | accepted. E | Enter the pe | ercent cover | of ground v | egetation | Not Oseu |
| | | at each sub | Left | Side | | | Righ | t Side | | 1 | |
| | | | | | | | | | | 1 | |
| | | | | | | | | | | | |
| Sample | e Variable 1 | 2 within the | e entire cat | chment of | the stream. | | | | | | |
| 12 | V_{WLUSE} | Weighted A | Average of F | Runoff Score | e for watersh | ned: | | | | | 1.00 |
| | | | | | | | | | Runoff | % in | Running |
| | | | Land | Use (Choos | se From Dro | p List) | | | Score | Catch- | Percent |
| | Forest and native range (>75% ground cover) | | | | | | | | | ment | (not >100) |
| | rorest and n | auve range (| >75% ground | <u>~</u> | 1 | 100 | 100 | | | | |
| | | | | | | | | | | | |
| | ▼ | | | | | | | | | | |
| | ▼ | | | | | | | | | | |
| | _ | | | | | | | • | | | |
| | | | | | | | | _ | | | |
| | | | | | | | | _ | | | |
| | _ | | | | | | | _ | - | | |
| | Su | mmary | | | | | No | tes: | | | |
| Va | ariable | Value | VSI | | | | | | | | |
| Vcc | CANOPY | 96 % | 1.00 | | | | | | | | |
| VEN | MBED | 2.5 | 0.65 | | | | | | | | |
| V _{su} | JBSTRATE | 0.08 in | 0.04 | | | | | | | | |
| V _{BE} | ≣RO | 16 % | 0.99 | | | | | | | | |
| V_{LV} | VD | 3.2 | 0.41 | | | | | | | | |
| V _{TC} | овн | 10.2 | 1.00 | | | | | | | | |
| V _{SN} | NAG | 0.5 | 0.91 | | | | | | | | |
| Vss | SD | Not Used | Not Used | | | | | | | | |
| V _{SF} | RICH | 2.70 | 1.00 | | | | | | | | |
| V _{DE} | ETRITUS | 91.9 % | 1.00 | | | | | | | | |
| V_{HE} | ERB | Not Used | Not Used | | | | | | | | |

V_{WLUSE} 1 1.00

| | High-G | radient l | Headwat | | ms in ea Data She | | _ | and wes | tern Wes | st Virgini | а | | |
|--------|---|---------------------------|---|----------------------------|----------------------------|-------------------------------|--------------|--|----------------|-------------|---------|--|--|
| | Team: | M. Thomay | er, P. Renn | | outa Ono | ot and o | aioaiai | Latitude/UT | M Northina: | 38.182254 | | | |
| Pro | ject Name: | | | | | | | _ongitude/U | _ | | | | |
| | - | | County, Ken | | am Habitat A | rea 2) | | - | _ | 5 June 201 | 2 | | |
| SA | R Number: | | - | Length (ft): | 88 | Stream Ty | /De: Enh | emeral Stream | | | | | |
| | | _ | | | | • | | Control of the Contro | | | | | |
| | Top Strata: | Tree | e/Sapling St | rata | (determine | d from perce | ent calculat | ed in V _{CCANO} |)PY) | | | | |
| | and Timing: | Project Site | | | | ~ | Before Proje | ect | | | | | |
| Sample | Variables | | | | | | | | | | | | |
| 1 | | equidistant 20%, enter | | g the strean value betw | n. Measure reen 0 and 1 | only if tree/ 9 to trigger | sapling cov | easure at no ver is at least choice.) | | | 87.0 % | | |
| | 100 | 100 | 100 | 100 | 95 | 100 | 100 | 95 | 65 | 15 | | | |
| | 100 | 100 | 100 | 100 | 90 | 100 | 100 | 95 | 03 | 15 | | | |
| 2 | V _{EMBED} | along the s | verage embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points ong the stream. Select a particle from the bed. Before moving it, determine the percentage of the urface and area surrounding the particle that is covered by fine sediment, and enter the rating ecording to the following table. If the bed is an artificial surface, or composed of fine sediments, use a ting score of 1. If the bed is composed of bedrock, use a rating score of 5. | | | | | | | | | | |
| | according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a | | | | | | | | | | | | |
| | Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983) | | | | | | | | | | | | |
| | | Rating | Rating Des | cription | | | | | | | | | |
| | | 5 | | | | | | ine sedimen | | k) | | | |
| | | 3 | | | | | | by fine sedied by fine sed | | | | | |
| | | 2 | | | | | | ed by fine sec | | | | | |
| | | 1 | >75 percen | t of surface | covered, su | ırrounded, c | or buried by | fine sedime | nt (or artific | al surface) | | | |
| | List the rati | ngs at each | point below | / : | | | | _ | | | ı. | | |
| | 1 | 2 | 1 | 2 | 3 | 2 | 2 | 2 | 1 | 2 | | | |
| | 2 | 3 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | | | |
| | 2 | 2 | 3 | 1 | 1 | 2 | 3 | 3 | 2 | 3 | | | |
| | | | | | | | | | | | | | |
| 3 | V | Modian ctro | oom channo | Leubetrato | oartiele size | Monguro | at no fower | than 30 rou | ably oquidic | tant points | | | |
| 3 | V SUBSTRATE | | tream; use t | | | | | | grily equicis | iani points | 0.08 in | | |
| | | | ches to the 0.0 in, sand | | | | w (bedrock | should be c | ounted as 9 | 9 in, | | | |
| | 0.08 | 0.08 | 0.08 | 1.00 | 0.08 | 0.20 | 0.08 | 0.50 | 0.08 | 0.08 | | | |
| | 0.08 | 0.40 | 0.50 | 1.50 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.10 | | | |
| | 0.25 | 0.50 | 0.08 | 1.00 | 0.08 | 4.00 | 0.50 | 2.00 | 1.00 | 0.08 | | | |
| | 0.20 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 2.00 | 1.00 | 0.00 | | | |
| | | | | | | | | | | | | | |
| 4 | V_{BERO} | • | e total perce | | | | | r of feet of e oded, total e | | | 8 % | | |
| | | a, 20 ap | Left Bank: | 2 | ft | | Right Bank | 5 | ft | | | | |

| Sampl | e Variables | s 5-9 within t | he entire r | iparian/buf | fer zone ad | jacent to th | ne stream cl | nannel (25 | feet from e | ach bank). | |
|----------|---|--|--------------|---------------|---------------|---------------|--------------------------------|-------------|----------------|--------------|------------|
| 5 | V_{LWD} | stream rea | ch. Enter th | | rom the enti | | eter and 36 in buffer and w | | | | 3.4 |
| | | | | | | | oody stems: | | 3 | | |
| 6 | V_{TDBH} | | | | | | ng cover is a | t least 20% | 6). Trees ar | e at least 4 | 10.7 |
| | | , | • | neter. Enter | | | | . " | | | |
| | | the stream | | nents of Indi | vidual trees | (at least 4 | in) within the | buffer on 6 | each side of | | |
| | | the stream | Left Side | | | | | Right Side |) | | |
| | 10 | 11 | 8 | 12 | 9 | 15 | 12 | 9 | 13 | 11 | |
| | 12 | 6 | 4 | 19 | 6 | 14 | 9 | 8 | 7 | 12 | |
| | 11 | 7 | 13 | 14 | 21 | 18 | 13 | 9 | 7 | 11 | |
| | 7 | 5 | 10 | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 7 | V_{SNAG} | Number of | snags (at le | east 4" dbh a | and 36" tall) | per 100 fee | et of stream. | Enter num | ber of snag | s on each | |
| • | * SNAG | | | d the amoun | | | | Zinoi nan | .co. or onag | 0 011 00011 | 2.3 |
| | | | Left Side: | | 1 | | Right Side: | | 1 | | |
| 8 | V_{SSD} | | | | | | hes dbh) per | | | | |
| | | if tree cover is <20%). Enter number of samount per 100 ft of stream will be calcu | | | | | ubs on each | side of the | stream, and | I the | Not Used |
| | | amount per | | | e calculated. | | Right Side: | | | | |
| 9 | V_{SRICH} | Left Side: Riparian vegetation species richness per | | | | feet of strea | - | heck all sp | ecies preser | nt from | |
| | | | | | | | ive species p | | all strata. Sp | ecies | 6.82 |
| | | | p 1 = 1.0 | and the subi | ndex will be | calculated | from these of | | 2 (1 0) | | |
| V | Acer rubru | | p i = i.∪ | Magnolia ti | rinetala | | Ailanthus a | | 2 (-1.0) | Lonicera ja | nonica |
| | Acer sacc | | | _ | - | | | | | Lonicera ta | |
| | | | | Nyssa sylv | | | Albizia julib | | | | |
| | Aesculus | | | Oxydendrun | | | Alliaria peti | olata | | Lotus corni | |
| | Asimina ti | riloba | ✓ | Prunus sei | rotina | | Alternanthe | | | Lythrum sa | licaria |
| | Betula alle | ghaniensis | ✓ | Quercus a | lba | | philoxeroid | es | | Microstegiun | n vimineum |
| | Betula len | nta | | Quercus co | occinea | | Aster tatari | cus | | Paulownia | tomentosa |
| | Carya alb | а | | Quercus in | nbricaria | | Cerastium | fontanum | | Polygonum d | cuspidatum |
| | Carya gla | bra | | Quercus p | rinus | | Coronilla va | aria | | Pueraria m | ontana |
| | Carya ova | alis | ✓ | Quercus ru | ıbra | | Elaeagnus u | mbellata | | Rosa multit | flora |
| V | Carya ova | ata | | Quercus ve | elutina | | Lespedeza | bicolor | | Sorghum h | alepense |
| | Cornus flo | orida | | Sassafras | albidum | | Lespedeza | cuneata | | Verbena br | asiliensis |
| V | 🗸 Fagus grandifolia 🗌 Tilia americana | | | | | | Ligustrum ob | otusifolium | | | |
| | | | | | | | Ligustrum s | sinense | | | |
| | Liriodendron tulipifera Ulmus americana | | | | | | | | | | |
| | Magnolia | acuminata | | | | | | | | | |
| | 6 Species in Group 1 | | | | | | | 0 | Species in | Group 2 | |
| | | U | Species III | Cloub i | | | | U | Opcoles III | Cloup 2 | |

| _ | | | | | | - | _ | | zone within | n 25 feet fro | m each |
|-----------------|---|------------------------------------|--------------------|---------------------|------------------|--------------------|---------------------|------------------|-------------------|---------------|-----------|
| 10 | V _{DETRITUS} | b plots sho u Average pe | | | | | | | s <4" diamet | er and | |
| . • | DETRITUS | | | | ercent cove | | | | | _ | 84.38 % |
| | | | Left | | | | Righ | t Side | _ |] | |
| | | 100 | 80 | 75 | 100 | 100 | 95 | 90 | 100 | | |
| 11 | V_{HERB} | 50 Average pe | 75 Proentage of | 100 over of herb | 65 aceous veg | 65 etation (mea | 85 asure only if | 95 tree cover | 75 is <20%). D | o not | |
| • • • | ▼ HERB | include woo | ody stems a | t least 4" db | oh and 36" ta | all. Because | there may | be several l | layers of gro | ound cover | Not Used |
| | | vegetation at each sub | | s up through | n 200% are | accepted. E | Enter the pe | rcent cover | of ground v | egetation | Not Osed |
| | | at each suc | Left | Side | | | Righ | t Side | | 1 | |
| | | | | | | | J | | | 1 | |
| | | | | | | | | | | | |
| Sample | e Variable 1 | 2 within the | e entire cat | chment of | the stream. | | | | | | |
| 12 | V_{WLUSE} | Weighted A | Average of F | Runoff Score | e for watersl | ned: | | | | | 1.00 |
| | | | | | | | | | D:::- " | % in | Running |
| | | | Land | Use (Choos | e From Dro | p List) | | | Runoff Score | Catch- | Percent |
| | Forest and native range (>75% ground cover) | | | | | | | 1 | ment | (not >100) | |
| | | | | | | | | | | 100 | 100 |
| | _ | | | _ | | | | | | | |
| | | | | | | | | | | | |
| | ▼ | | | | | | | | | | |
| | _ | | | | | | | _ | | | |
| | | | | | | | | _ | | | |
| | | | | | | | | _ | | | |
| | | | | | | | | _ | | | |
| | Su | mmary | | | | | No | tes: | | | |
| Va | ariable | Value | VSI | Lower rea | ches of str | eams have | | | result of hi | storical wo | rk around |
| | CANOPY | 87 % | 0.99 | existing po | ond. | | | | | | |
| | MBED | 1.9 | 0.44 | | | | | | | | |
| | JBSTRATE | 0.08 in | 0.04 | | | | | | | | |
| V _{BE} | | 8 % | 1.00 | | | | | | | | |
| V _{LV} | | 3.4 | 0.43 | | | | | | | | |
| V _{TC} | овн | 10.7 | 1.00 | | | | | | | | |
| V _{SN} | NAG | 2.3 | 1.00 | | | | | | | | |
| Vss | SD | Not Used | Not Used | | | | | | | | |
| V _{SF} | RICH | 6.82 | 1.00 | | | | | | | | |
| V _{DE} | ETRITUS | 84.4 % | 1.00 | | | | | | | | |
| V_{HE} | ERB | Not Used | Not Used | | | | | | | | |

V_{WLUSE} 1 1.00

| | nign-G | radient i | Headwat | | ms in ea Data She | | | _ | | ern wes | t virgini | a | |
|--------|------------------------|-----------------------------|--|----------------------------|----------------------------|--------------------------------|-------------------|------------------|--------------------------|-----------------|-------------|---------|--|
| | Team: | M. Thomay | er, B. Otto | 1 10101 - | | | | | | M Northing: | 38.183078 | | |
| Pro | | | Pond Closu | re Project | | | | | | _ | -82.637348 | | |
| | ·= | | County, Ken | | am Habitat A | Area 3) | | | - | _ | 24 May 201 | | |
| 9.4 | R Number: | | - | | | Stream Ty | no: | Pales | | | | | |
| SA | ik Number. | | Reach | Length (ft): | 200 | Sueam ry | ype. | Epne | meral Stream | | | | |
| | Top Strata: | Tree | e/Sapling St | rata | (determine | d from perce | ent cal | culate | ed in V _{CCANO} | _{PY}) | | | |
| Site a | and Timing: | Project Site | | | | • | Before | Proje | ct | | | • | |
| Sample | Variables | 1-4 in strea | ım channel | | | | | | | | | | |
| 1 | V _{CCANOPY} | equidistant 20%, enter | ercent cover points along at least one measureme | g the strean value betw | n. Measure reen 0 and 1 | only if tree/ 9 to trigger | sapling | g cove | er is at least | | | 84.5 % | |
| | 100 | 95 | 85 | 100 | 95 | 100 | 10 | nn | 85 | 65 | 20 | | |
| | 100 | 90 | 0.0 | 100 | 90 | 100 | 10 | ,0 | 00 | 0.5 | 20 | | |
| 2 | V_{EMBED} | along the s | verage embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points ong the stream. Select a particle from the bed. Before moving it, determine the percentage of the urface and area surrounding the particle that is covered by fine sediment, and enter the rating coording to the following table. If the bed is an artificial surface, or composed of fine sediments, use a | | | | | | | | | | |
| | | according t rating score | o the followie of 1. If the | ng table. If bed is com | the bed is a posed of be | an artificial s edrock, use | urface a ratin | , or co g sco | omposed of re of 5. | fine sedime | ents, use a | | |
| | | Minshall 19 | Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983) | | | | | | | | | | |
| | | Rating | Rating Des | | | | | | | | | | |
| | | 5 | | | covered, sur | | | | | | k) | | |
| | | 3 | | | ace covered face covere | | | | | | | | |
| | | 2 | | | face covere | | | | | | | | |
| | | 1 | | | covered, su | | | | | | al surface) | | |
| | List the rati | ngs at each | point below | <i>l</i> : | | | | | | | , | | |
| | 1 | 2 | 1 | 2 | 1 | 2 | 2 | <u> </u> | 2 | 1 | 2 | | |
| | 2 | 3 | 1 | 2 | 1 | 2 | 2 | <u>)</u> | 2 | 1 | 2 | | |
| | 2 | 2 | 3 | 1 | 1 | 2 | 3 | 3 | 3 | 2 | 2 | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 3 | V _{SUBSTRATE} | | eam channe tream; use t | | | | | | | ghly equidis | tant points | 0.08 in | |
| | | | ches to the 0.0 in, sand | | | | w (bed | rock s | should be co | ounted as 9 | 9 in, | | |
| | 0.08 | 0.08 | | | | | | | | | | | |
| | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.0 |)8 | 0.08 | 0.08 | 0.10 | | |
| | 0.25 | 0.50 | 0.08 | 1.00 | 0.08 | 2.00 | 0.5 | 50 | 2.00 | 1.00 | 0.08 | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 4 | V_{BERO} | • | nt of eroded e total perce to 200%. | | | | | | | | | 14 % | |
| | | , ар | Left Bank: | 12 | 2 ft | I | Right E | Bank: | 15 | 5 ft | ı | | |

| Sampl | e Variables | s 5-9 within t | he entire r | iparian/buf | fer zone ad | jacent to th | ne stream ch | nannel (25 | feet from e | ach bank). | | |
|----------|--|---|--------------|---------------|---------------|----------------|-------------------------------|--------------|--------------|--------------|------------|--|
| 5 | V_{LWD} | stream read | ch. Enter th | | rom the enti | | ter and 36 in buffer and w | | | | 2.0 | |
| | | | | | | | oody stems: | | 4 | | | |
| 6 | V_{TDBH} | | | | | | ng cover is a | it least 20% | 6). Trees ar | e at least 4 | 8.5 | |
| | | • | , | neter. Enter | | | مطاع منظانی (من | button on | | | | |
| | | the stream | | nents of Indi | viduai trees | (at least 4 i | n) within the | butter on 6 | each side of | | | |
| | | tilo otroain | Left Side | | | | | Right Side | , | | | |
| | 10 | 11 | 8 | 12 | 9 | 9 | 12 | 9 | 13 | 11 | | |
| | 12 | 6 | 4 | 5 | 6 | 5 | 9 | 8 | 7 | 6 | | |
| | 9 | 7 | 13 | 8 | 6 | 5 | 6 | 9 | 7 | 11 | | |
| | 7 | 5 | | | | 10 | 13 | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 7 | V_{SNAG} | Number of | snags (at le | east 4" dbh a | and 36" tall) | per 100 fee | et of stream. | Enter num | ber of snag | s on each | | |
| | O.W.C | | | d the amoun | | | | | J | | 0.0 | |
| | | | Left Side: | | 0 | | Right Side: | | 0 | l l | | |
| 8 | V_{SSD} | Number of | | | - | up to 4 inc | hes dbh) per | | - | easure only | | |
| | if tree cover is <20%). Enter number of | | | | | | | | | | Not Used | |
| | | amount per | | | e calculated. | | Dialet Oide | | | | | |
| 9 | V _{SRICH} | amount per 100 ft of stream will be calcu Left Side: Riparian vegetation species richness per | | | | feet of strea | Right Side: | heck all sn | ecies nreser | nt from | | |
| | SRICH | | | | | | ive species p | | | | 2.85 | |
| | | | | and the subi | ndex will be | calculated | from these d | | | | | |
| | | | p 1 = 1.0 | | | Group 2 (-1.0) | | | | | | |
| ✓ | Acer rubru | ım | | Magnolia ti | ripetala | | Ailanthus a | ltissima | | Lonicera ja | ponica | |
| | Acer sacc | harum | | Nyssa sylv | atica | | Albizia julib | rissin | | Lonicera ta | tarica | |
| | Aesculus | flava | | Oxydendrun | n arboreum | | Alliaria peti | olata | | Lotus corni | culatus | |
| | Asimina tr | riloba | V | Prunus ser | otina | | Alternanthe | era | | Lythrum sa | licaria | |
| | Betula alle | ghaniensis | ✓ | Quercus al | lba | | philoxeroid | es | | Microstegiun | n vimineum | |
| | Betula len | ıta | | Quercus co | occinea | | Aster tatario | cus | | Paulownia | tomentosa | |
| | Carya alba | а | | Quercus in | nbricaria | | Cerastium | fontanum | | Polygonum d | cuspidatum | |
| | Carya gla | bra | | Quercus pi | rinus | | Coronilla va | aria | | Pueraria m | ontana | |
| | Carya ova | alis | ✓ | Quercus ru | ıbra | | Elaeagnus u | mbellata | √ | Rosa multit | flora | |
| ✓ | Carya ova | ata | | Quercus ve | elutina | | Lespedeza | bicolor | | Sorghum h | alepense | |
| | Cornus flo | orida | Sassafras | albidum | | Lespedeza | cuneata | | Verbena br | | | |
| ✓ | ☑ Fagus grandifolia ☐ Tilia americana | | | | | | Ligustrum ob | tusifolium | | | | |
| | | | | | | | Ligustrum s | | | | | |
| | Liriodendron tulipifera Ulmus americana | | | | | | ū | | | | | |
| | | acuminata | _ | | | | | | | | | |
| | - ' | | | | | | | | | | | |
| | | 7 | Species in | Group 1 | | | | 1 | Species in | Group 2 | | |

| _ | Variables The four sul | | | - | | - | _ | | | n 25 feet fro | m each |
|--|------------------------|---------------|---------------|----------------|------------------------------|----------------|------------|--------------|-----------|----------------|-----------------------|
| bank. The four subplots should be placed roughly equidistantly along each side of the stream. 10 V _{DETRITUS} Average percent cover of leaves, sticks, or other organic material. Woody debris <4" diameter and <36" long are include. Enter the percent cover of the detrital layer at each subplot. 88.44 | | | | | | | | | | 99 11 9/ | |
| | İ | <36" long a | | | ercent cove | r of the detri | - | | ot. | 1 | 00.44 // |
| | | 100 | Left 100 | 85 | 90 | 100 | 95 | Side 100 | 70 | ł | |
| | | 100 | 75 | 80 | 65 | 100 | 85 | 95 | 75 | | |
| 11 | V_{HERB} | | | | aceous vego oh and 36" ta | | | | | | |
| | | | | | n 200% are | | | | | | Not Used |
| | 1 | at each sub | plot. Left | Side | | | Pigh | t Side | | 1 | |
| | | | Leit | Side | | | Right | Jue | | ł | |
| | | | | | | | | | | | |
| Sample | e Variable 1 | 2 within the | e entire cat | chment of | the stream. | | | | | | |
| 12 | V_{WLUSE} | Weighted A | Average of F | Runoff Score | e for watersl | ned: | | | | | 0.60 |
| | | | | | | | | | Runoff | % in | Running |
| | | | Land | Use (Choos | se From Dro | p List) | | | Score | Catch- ment | Percent (not >100) |
| | Forest and n | ative range (| >75% ground | d cover) | | | | _ | 1 | 35 | 35 |
| | Forest and n | ative range (| 50% to 75% | ground cover | r) | | | - | 0.7 | 35 | 70 |
| | Newly grade | d areas (bare | soil, no vege | etation or pav | vement) | | | - | 0 | 30 | 100 |
| ▼ | | | | | | | | | | | |
| | | | | | | | | • | | | |
| | | | | | | | | • | | | |
| | | | | | | | | • | | | |
| | | | | | | | | • | | | |
| | Su | mmary | | | | | No | tes: | | | |
| Va | ariable | Value | VSI | | above strea | | ls has bee | n altered in | past. App | ears the a | rea was |
| Vc | CANOPY | 85 % | 0.95 | once used | d for borrov | <i>I</i> . | | | | | |
| VE | MBED | 1.8 | 0.40 | | | | | | | | |
| V _{sı} | JBSTRATE | 0.08 in | 0.04 | | | | | | | | |
| V _{BI} | ERO | 14 % | 1.00 | | | | | | | | |
| VLV | WD | 2.0 | 0.25 | | | | | | | | |
| V _{TI} | овн | 8.5 | 0.96 | | | | | | | | |
| Vsi | NAG | 0.0 | 0.10 | | | | | | | | |
| Vs | SD | Not Used | Not Used | | | | | | | | |
| Vsi | RICH | 2.85 | 1.00 | | | | | | | | |
| V _{DI} | ETRITUS | 88.4 % | 1.00 | | | | | | | | |
| V_{HI} | ERB | Not Used | Not Used | | | | | | | | |

Representative Field Sheet for Habitat Area 3

V_{WLUSE} 0.6 0.63

| | Hign-G | radient i | neadwat | | ms in ea Data She | | | _ | | tern wes | st virgini | a | | |
|--------|---------------|---|---|----------------------------|----------------------------|---------------|----------|---------|-----------------------------|--------------|--------------|---------|--|--|
| | Team: | M. Thomay | er, B. Otto | | | | | | | M Northing: | 38.184279 | | | |
| Pro | | | Pond Closu | re Project | | | | | | - | -82.644254 | | | |
| | - | | County, Ken | | am Habitat 4 | l) | | | - | - | 3 May 2012 | | | |
| SA | R Number: | | | Length (ft): | | Stream T | vpe: | Enhe | meral Stream | | | | | |
| | | T | | | | • | | | - To the Age of the Control | | | | | |
| | Top Strata: | Tre | e/Sapling St | гата | (determine) | a from perd | ent car | culate | ed in V _{CCANC} | PY) | | | | |
| Site a | and Timing: | Project Site | | | | • | Before | Projec | ct | | | - | | |
| Sample | | | am channel | | | | | | | | | | | |
| 1 | | equidistant 20%, enter | ercent cover points along at least one measureme | g the strean value betw | n. Measure veen 0 and 1 | only if tree. | /sapling | g cove | er is at least | | | 99.0 % | | |
| Ī | 100 | 100 | 95 | 100 | 100 | 100 | 10 | 00 | 100 | 100 | 95 | | | |
| | 100 | 100 00 100 100 100 100 100 | | | | | | | | | | | | |
| 2 | V_{EMBED} | along the s | | | | | | | | | | | | |
| | | according t rating score Embedded | according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983) | | | | | | | | | | | |
| | | Minshall 1983) | | | | | | | | | | | | |
| | | Rating | Rating Des | | | | | | | | | | | |
| | | 5 | | | covered, sur | | | | | | k) | | | |
| | | <u>4</u> 3 | | | ace covered face covere | | | | | | | | | |
| | | 2 | | | face covere | | | | | | | | | |
| | | 1 | | | covered, su | | | | | | ial surface) | | | |
| | List the rati | ngs at each | point below | | | | | | | | • | | | |
| | 2 | 3 | 2 | 1 | 2 | 3 | 2 | 2 | 1 | 2 | 2 | | | |
| | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 1 | | | |
| | 2 | 3 | 3 | 2 | 4 | 3 | 4 | 1 | 3 | 4 | 4 | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 3 | | | eam channe tream; use t | | | | | | | ghly equidis | tant points | 0.08 in | | |
| | | | ches to the 0.0 in, sand | | | | ow (bed | lrock s | should be c | ounted as 9 | 9 in, | | | |
| | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 1.00 | 0.0 | 08 | 0.08 | 0.08 | 0.08 | | | |
| | 0.08 | 0.10 | 0.08 | 1.00 | 0.08 | 0.50 | 0.0 | | 0.50 | 0.08 | 0.08 | | | |
| | 0.08 | 1.00 | 0.25 | 1.00 | 4.00 | 2.00 | 5.0 | | 4.00 | 6.00 | 10.00 | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 4 | V_{BERO} | • | ent of eroded e total perce to 200%. | | | | | | | | | 14 % | | |
| | | . ' | Left Bank: | 17 | 7 ft | | Right E | Bank: | 14 | l ft | | | | |

| Sampl | e Variable: | s 5-9 within t | the entire r | iparian/buf | fer zone ad | jacent to tl | he stream cl | nannel (25 | feet from e | ach bank). | |
|----------|----------------------|----------------|--------------|-----------------|---|---|--------------------------------|-------------|----------------|--------------|------------|
| 5 | V_{LWD} | stream rea | ch. Enter th | | rom the enti | | eter and 36 in buffer and w | | | | 2.7 |
| | | | | | | | oody stems: | | 6 | | |
| 6 | V_{TDBH} | | | | nly if V _{CCANOF} tree DBHs | | ing cover is a | t least 20% | 6). Trees ar | e at least 4 | 11.6 |
| | | | | nents of indi | vidual trees | (at least 4 | in) within the | buffer on e | each side of | | |
| | | the stream | | | | | | D: 1 / O: 1 | | | |
| | 0 | 10 | Left Side | 40 | 47 | 0 | 40 | Right Side | | | |
| | 8 14 | 10 5 | 12 9 | 12 11 | 17 12 | 9 | 12 16 | 9 | 13 10 | 6 14 | |
| | 12 | 16 | 11 | 10 | 14 | 13 | 15 | 10 | 18 | 14 | |
| | 13 | 10 | 11 | 10 | | 10 | 10 | 10 | 10 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | \/ | Niverie | | 4 4 11 - 11- 1- | 00 +-) | 400 f | | F | | | |
| 7 | V_{SNAG} | | | | and 36" tall) nt per 100 fe | | et of stream. alculated. | Enter num | iber of snag | s on eacn | 2.3 |
| | | | Left Side: | | 3 | | Right Side: | | 2 | , | |
| 8 | V_{SSD} | | | | | | hes dbh) per | | | | N |
| | | | | | per of sapiin e calculated. | | ubs on each | side of the | stream, and | tne | Not Used |
| | | | Left Side: | | | | Right Side: | | | | |
| 9 | V_{SRICH} | | | | | | am reach. C | | | | |
| | | | | | | | ive species p | | ali strata. Sp | ecies | 2.73 |
| | | | p 1 = 1.0 | | | e calculated from these data. Group 2 (-1.0) | | | | | |
| V | Acer rubri | | <u> </u> | Magnolia t | ripetala | | Ailanthus a | - | | Lonicera ja | ponica |
| | Acer sacc | charum | | Nyssa sylv | atica | | Albizia julib | rissin | | Lonicera ta | tarica |
| | Aesculus | flava | | Oxydendrur | n arboreum | | Alliaria peti | olata | | Lotus corni | culatus |
| | Asimina ti | riloba | V | Prunus sei | rotina | | Alternanthe | era | | Lythrum sa | licaria |
| | Betula alle | eghaniensis | ✓ | Quercus a | lba | | philoxeroid | | | Microstegiun | n vimineum |
| | Betula ler | nta | | Quercus c | occinea | | Aster tatari | cus | | Paulownia | tomentosa |
| | Carya alb | a | | Quercus in | mbricaria | | Cerastium | fontanum | | Polygonum o | cuspidatum |
| | Carya gla | bra | | Quercus p | rinus | | Coronilla va | aria | | Pueraria m | ontana |
| | Carya ova | alis | V | Quercus ru | ubra | | Elaeagnus u | mbellata | | Rosa multii | flora |
| ✓ | Carya ova | ata | | Quercus v | elutina | | Lespedeza | bicolor | | Sorghum h | alepense |
| V | Cornus flo | orida | | Sassafras | albidum | | Lespedeza | cuneata | | Verbena br | asiliensis |
| | Fagus gra | andifolia | | Tilia ameri | cana | | Ligustrum ob | otusifolium | | | |
| | Fraxinus | americana | | Tsuga can | adensis | | Ligustrum s | sinense | | | |
| | Liriodendro | on tulipifera | | Ulmus ame | ericana | | | | | | |
| | Magnolia | acuminata | | | | | | | | | |
| | 6 Species in Group 1 | | | | | | 0 | Species in | Group 2 | | |
| | | | | | | | | | | | |

| _ | | | | - | | - | - | | zone within | n 25 feet fro | om each |
|----------------------|-----------------------|---------------|---------------|--------------|---------------|-------------|--------------|-------------|-------------------|---------------|------------|
| banк. і 10 | V _{DETRITUS} | | | | equidistant | | | | s <4" diamet | er and | |
| 10 | DETRITUS | | | | ercent cove | | | | | or and | 93.75 % |
| | | | Left | Side | | | Righ | t Side | | | |
| | | 95 | 100 | 65 | 100 | 100 | 95 | 90 | 100 | | |
| 11 | V_{HERB} | 100 | 100 | 90 | 95 | 100 | 100 | 75 | 95 is <20%). D | o not | |
| • • • | ▼ HERB | | | | | | | | layers of gro | | Not Used |
| | | | | s up through | n 200% are | accepted. E | Enter the pe | rcent cover | of ground v | egetation | Not Used |
| | | at each sub | plot. Left | Side | | | Righ | t Side | |] | |
| | | | | | | | J | | | 1 | |
| | | | | | | | | | | | |
| Sample | Variable 1 | 2 within the | e entire cat | chment of | the stream. | | | | | | |
| 12 | V_{WLUSE} | Weighted A | Average of F | Runoff Score | e for watersl | ned: | | | | | 1.00 |
| | | | | | | | | | Runoff | % in | Running |
| | | | Land | Use (Choos | e From Dro | p List) | | | Score | Catch- | Percent |
| | Faucat and a | ativa vanas (| 750/ 20200 | | | | | | | ment | (not >100) |
| | rorest and n | ative range (| >/5% ground | i cover) | | | | | 1 | 100 | 100 |
| | | | | | | | | _ | | | |
| | ▼ | | | | | | | | | | |
| | ▼ | | | | | | | | | | |
| | _ | | | | | | | • | | | |
| | | | | | | | | ~ | | | |
| | _ | | | | | | | _ | | | |
| | | | | | | | | | <u> </u> | | |
| | | | | | | | NI- | 4 | | | |
| \/- | | mmary | \ (O) | Streams | are within m | nature unla | | tes: | | | |
| | ariable | Value | VSI | Ott Carris c | are within ii | iature upia | ina iorest. | | | | |
| V _C | CANOPY | 99 % | 1.00 | | | | | | | | |
| VEN | MBED | 2.5 | 0.64 | | | | | | | | |
| V _{st} | JBSTRATE | 0.08 in | 0.04 | | | | | | | | |
| V _{BE} | ERO | 14 % | 1.00 | | | | | | | | |
| V_{LV} | VD | 2.7 | 0.34 | | | | | | | | |
| V _{TE} | овн | 11.6 | 1.00 | | | | | | | | |
| V _{sn} | NAG | 2.3 | 1.00 | | | | | | | | |
| Vss | SD | Not Used | Not Used | | | | | | | | |
| VsF | RICH | 2.73 | 1.00 | | | | | | | | |
| V _{DE} | ETRITUS | 93.8 % | 1.00 | | | | | | | | |
| V_{HE} | -RB | Not Used | Not Used | | | | | | | | |

V_{WLUSE} 1 1.00

<u>Version 1-25-11</u>

| | Hign-G | radient i | Headwat | | ms in ea Data She | | _ | and wes | tern wes | st virgini | a |
|---------|--------------------|---|-----------------------------|-----------------------------|--------------------------------|-------------------------------|--------------------------------------|---|-----------------------------|----------------|---------|
| | Team: | M. Thomay | er, B. Otto | | | | | Latitude/UT | M Northing: | 38.184011 | |
| Proie | | | Pond Closu | re Project | | | | Longitude/U | - | | |
| | | | County, Ken | | am Habitat A | Area 5) | | - | _ | 15 May 201 | |
| SAR | R Number: | | - | Length (ft): | | Stream Ty | /pe: Epl | nemeral Stream | | <u> </u> | - |
| To | op Strata: | Tree | e/Sapling St | rata | (determine | d from perce | ent calcula | ated in V _{CCANO} | opy) | | |
| Site an | nd Timing: | Project Site | n. | | | - | Before Pro | ject | | | - |
| | | 1 4 in etros | ım channel | | | | | 701 | | | |
| 1 V | CCANOPY | Average pe equidistant 20%, enter | rcent cover | g the strean value betw | n. Measure reen 0 and 1 | only if tree/ 9 to trigger | sapling co | easure at no ver is at least a choice.) | | | 98.5 % |
| | 100 | 95 | 100 | 100 | 95 | 100 | 100 | 95 | 100 | 100 | |
| _ | 100 | 95 | 100 | 100 | 95 | 100 | 100 | 95 | 100 | 100 | |
| 2 V | / _{EMBED} | along the si | tream. Sele d area surro | ect a particle unding the p | e from the be particle that | ed. Before is covered l | moving it, by fine sec | er than 30 rou determine the diment, and e composed of | e percentagenter the ration | e of the ng | 2.0 |
| | | | of 1. If the | | | | | | | , | |
| | | Embeddedi Minshall 19 | • | for gravel, c | obble and b | oulder parti | cles (resc | aled from Pla | tts, Megaha | n, and | |
| | | Rating | Rating Des | cription | | | | | | | |
| | | 5 | | | | | | fine sedimen | | k) | |
| | | 4 | | | | | | d by fine sedi | | | |
| | | | | | | | | ed by fine sed ed by fine sed | | | |
| | | | | | | | | y fine sedime | | ial surface) | |
| L | ا ist the rati∟ | | point below | | | | | <i>y</i> | (0) | | |
| | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | |
| | 2 | 3 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | |
| | 2 | 2 | 3 | 1 | 1 | 2 | 3 | 4 | 3 | 4 | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 3 V | SUBSTRATE | Median stream | eam channe tream; use t | l substrate he same po | particle size pints and pa | . Measure a rticles as us | at no fewe sed in V _{EM} | r than 30 roug | ghly equidis | tant points | 0.08 in |
| | | | ches to the 0.0 in, sand | | | | w (bedroc | k should be c | ounted as 9 | 9 in, | |
| | 0.08 | 0.08 | 0.08 | 0.50 | 0.08 | 0.20 | 0.08 | 0.50 | 0.08 | 0.08 | |
| | 0.08 | 0.50 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.10 | |
| | 0.25 | 0.50 | 1.00 | 1.00 | 0.08 | 2.00 | 2.00 | 6.00 | 8.00 | 5.00 | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 4 V | I_{BERO} | • | e total perce | | | | | er of feet of e roded, total e | | | 6 % |
| | | | Left Bank: | 8 | ft | 1 | Right Banl | k: 10 |) ft | · ' | |

| Sampl | ample Variables 5-9 within the entire riparian/buffer zone | | | | | | ne stream ch | nannel (25 | feet from e | ach bank). | |
|----------------------|--|--|---------------|---------------|---------------|---------------|-------------------------------|-------------|----------------|--------------|----------|
| 5 | V_{LWD} | stream rea | ch. Enter th | | rom the enti | | ter and 36 in buffer and w | | | | 1.9 |
| | | | | | | | oody stems: | | 6 | · | |
| 6 | V_{TDBH} | | | | | | ng cover is a | t least 20% | 6). Trees ar | e at least 4 | 8.2 |
| | | , | , | eter. Enter | | | | L | | | |
| | | the stream | | nents of Indi | vidual trees | (at least 4 i | n) within the | buffer on e | each side of | | |
| | | the stream | Left Side | | | | | Right Side | <u> </u> | | |
| | 10 | 11 | 8 | 12 | 9 | 9 | 12 | 9 | 13 | 11 | |
| | 12 | 6 | 4 | 5 | 6 | 5 | 9 | 8 | 7 | 6 | |
| | 9 | 7 | 13 | 8 | 6 | 5 | 6 | 9 | 7 | 11 | |
| | 7 | 5 | 6 | 9 | 5 | 10 | 13 | 5 | 7 | 9 | |
| | 5 | 8 | 11 | | | 6 | 5 | 9 | 11 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 7 | V_{SNAG} | Number of | snags (at le | east 4" dbh a | and 36" tall) | per 100 fee | et of stream. | Enter num | ber of snag | s on each | |
| | SNAG | | | the amoun | | | | | 9 | | 0.6 |
| | | | Left Side: | | 1 | | Right Side: | | 1 | | |
| 8 | V_{SSD} | | | | | | hes dbh) per | | | | Not Used |
| | | | | | | | ıbs on each | side of the | stream, and | tne | Not Used |
| | | amount per 100 ft of stream will be calc | | | | | Right Side: | | | ' | |
| 9 | | | | | | | | | | | |
| | | | | | | | ive species p from these d | | ili strata. Sp | ecies | 1.87 |
| | | | p 1 = 1.0 | ana 1110 0abi | Hack Hill Do | carcaratea | | | 2 (-1.0) | | |
| V | Acer rubru | | <u>.</u> П | Magnolia ti | ripetala | | Ailanthus a | | | Lonicera ja | ponica |
| | Acer sacc | harum | | Nyssa sylv | atica | | Albizia julib | rissin | | Lonicera ta | tarica |
| | Aesculus | flava | | Oxydendrun | | | Alliaria peti | | | Lotus corni | culatus |
| | Asimina tr | | | Prunus ser | | | - | | | Lythrum sa | |
| | Betula alle | | | Quercus ai | | | Alternanthe philoxeroide | | | Microstegiun | |
| | Betula len | - | | Quercus co | | | Aster tatari | | П | Paulownia | |
| | Carya alba | | | Quercus in | | | Cerastium 1 | | П | Polygonum o | |
| | Carya glal | | | Quercus pi | | | Coronilla va | | | Pueraria m | • |
| | Carya ova | | | Quercus ru | | | Elaeagnus u | | ✓ | Rosa multit | |
| ▽ | Carya ova | | | Quercus ve | | | Lespedeza | | | Sorghum h | |
| | Cornus flo | | | Sassafras | | | Lespedeza | | | Verbena br | |
| | Fagus gra | | | Tilia ameri | cana | | Ligustrum ob | | _ | | |
| | Fraxinus a | americana | П | Tsuga can | adensis | | Ligustrum s | sinense | | | |
| | | | | | | | • | | | | |
| ☐ Magnolia acuminata | | | | | | | | | | | |
| | - | | Chapies in | Croun 4 | | - | | 4 | Onceise: | Crouse C | |
| | | 7 | Species in | отоир Т | | | | 1 | Species in | Group 2 | |

| | ., | | | | | | | | | | |
|-----------------|-----------------------|--|--------------|--------------|----------------|----------------|--------------|-------------|--------------|----------------|-----------------------|
| | | 10-11 within at least 8 subplots (40" x 40", or 1m x 1m) in the riparian/buffer zone within 25 feet from each bplots should be placed roughly equidistantly along each side of the stream. | | | | | | | | | |
| 10 | V _{DETRITUS} | Average pe | rcent cover | of leaves, s | sticks, or oth | er organic r | material. W | oody debris | <4" diamet | er and | 00.00.0/ |
| | i | <36" long a | | | ercent cove | r of the detri | - | | ot. | | 89.06 % |
| | | 400 | Left | | 00 | 400 | | Side | 0.5 | | |
| | | 100 100 | 95 75 | 85 80 | 90 65 | 100 100 | 95 85 | 100 95 | 85 75 | ł | |
| 11 | V_{HERB} | | | | aceous veg | | | | _ | o not | |
| | | | | | oh and 36" ta | | | | | | Not Used |
| | | at each sub | | s up througi | n 200% are | ассертеа. в | enter the pe | rcent cover | or ground v | egetation | |
| | | | Left | Side | | | Righ | t Side | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| - | | | | | the stream. | | | | | | |
| 12 | V _{WLUSE} | Weighted A | Average of F | Runoff Score | e for watersl | ned: | | | | | 0.90 |
| | | | | (Ob | - F D | - 1 :- 4) | | | Runoff | % in | Running |
| | | | Land | Use (Choos | se From Dro | p List) | | | Score | Catch- ment | Percent (not >100) |
| | Forest and n | ative range (| >75% ground | d cover) | | | | • | 1 | 65 | 65 |
| | Forest and n | ative range (| 50% to 75% | ground cover | r) | | | - | 0.7 | 35 | 100 |
| | _ | | | | | | | • | | | |
| | | | | | | | | | | | |
| | | | | | | | | _ | | | |
| | - | | | | | | | - | | | |
| | | | | | | | | • | | | |
| | | | | | | | | - | | | |
| | Su | mmary | | | | | No | tes: | | | |
| Va | ariable | Value | VSI | - | ounger tha | | eas on pro | perty. Unde | erstory is d | enser than | most |
| Vcc | CANOPY | 99 % | 1.00 | other loca | tions on pr | operty. | | | | | |
| VE | MBED | 2.0 | 0.45 | | | | | | | | |
| V _{st} | JBSTRATE | 0.08 in | 0.04 | | | | | | | | |
| V _{BI} | ĒRO | 6 % | 1.00 | | | | | | | | |
| VLV | VD | 1.9 | 0.24 | | | | | | | | |
| V _{TI} | овн | 8.2 | 0.90 | | | | | | | | |
| Vsi | NAG | 0.6 | 1.00 | | | | | | | | |
| Vss | SD | Not Used | Not Used | | | | | | | | |
| Vsi | RICH | 1.87 | 0.89 | | | | | | | | |
| V _{DI} | ETRITUS | 89.1 % | 1.00 | | | | | | | | |
| V _{HI} | ERB | Not Used | Not Used | | | | | | | | |

V_{WLUSE} 0.9 0.95

| | High-G | radient l | ent Headwater Streams in eastern Kentucky and western West Virginia Field Data Sheet and Calculator | | | | | | | | |
|--------|------------------------|---------------------------|---|---|----------------------------|-------------------------------|---------------|---|---------------|--------------|---------|
| | Team: | M. Thomay | er B Otto | i icia L | Julu Onc | ot and o | aioaiate | Latitude/UT | M Northina | 38 177507 | |
| Pro | oject Name: | | | re Project | | | | _ongitude/U7 | - | | |
| | - | | County, Ken | | m Habitat A | Area 6) | | | | 4 May 2012 | |
| C . | | | - | | | | | | | | 650 |
| SF | R Number: | | Reach | Length (ft): | | Stream Ty | 1.00 | emeral Stream | | | |
| | Top Strata: | Tree | e/Sapling St | rata | (determine | d from perc | ent calculat | ed in V _{CCANC} | DPY) | | |
| | and Timing: | Project Site | | | | ~ | Before Proje | ect | | | |
| Sample | Variables | | | | | | | | | | |
| 1 | | equidistant 20%, enter | | g the strean value betw | n. Measure reen 0 and 1 | only if tree/ 9 to trigger | sapling cov | easure at no er is at least choice.) | | | 95.5 % |
| | 100 | 100 | 100 | 100 | 95 | 100 | 100 | 95 | 100 | 65 | |
| | 100 | 100 | 100 | 100 | 90 | 100 | 100 | 90 | 100 | 0.5 | |
| 2 | V_{EMBED} | along the s | tream. Sele | ct a particle | from the be | ed. Before | moving it, c | r than 30 rou letermine the ment, and e | e percentag | e of the | 1.8 |
| | | according t | | ng table. If | the bed is a | an artificial s | surface, or o | composed of | | | |
| | | | ness rating | | - | | | led from Pla | tts, Megaha | n, and | |
| | | Rating | Rating Des | cription | | | | | | | |
| | | 5 | <5 percent | <5 percent of surface covered, surrounded, or buried by fine sediment (or bedrock) 5 to 25 percent of surface covered, surrounded, or buried by fine sediment | | | | | | | |
| | | 4 | | | | | | | | | |
| | | 3 | | | | | | d by fine sec | | | |
| | | <u>2</u> 1 | | | | | | d by fine sed fine sedime | | ial surface) | |
| | List the rati | ngs at each | point below | | 0010.00, 00 | oundou, c | or buriou by | mio coamio | in (or artino | ar ouridoo) | |
| | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 1. |
| | 2 | 3 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | |
| | 2 | 2 | 3 | 1 | 1 | 2 | 3 | 2 | 2 | 3 | |
| | | | | | | | | | | | |
| 2 | V | Madian stra | | l auchatuata u | a autiala aima | Managema | at wa farran | th am 20 man | | tant nainta | |
| 3 | V _{SUBSTRATE} | | eam channe tream; use t | | | | | than 30 rou _{ED} . | gniy equiais | tant points | 0.08 in |
| | | | | | | | w (bedrock | should be c | ounted as 9 | 9 in, | |
| | | | 0.0 in, sand | | | | | | | | |
| | 0.08 | 0.08 | 0.08 | 0.50 | 0.08 | 0.20 | 0.08 | 0.50 | 0.08 | 0.08 | |
| | 0.08 | 0.50 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.10 | |
| | 0.25 | 0.50 | 1.00 | 1.00 | 0.08 | 3.00 | 2.00 | 6.00 | 8.00 | 5.00 | |
| | | | | | | | | | | | |
| 4 | V | Total | nt of an all | l otro' | annal beer | Enter the si | otal muss b | n of foot of | rodod b = l | on ocak | |
| 4 | V_{BERO} | • | e total perce | | | | | r of feet of e oded, total e | | | 6 % |
| | | , ' | Left Bank: | 4 | ft | | Right Bank | 6 | ft | | |

| Sampl | e Variable: | s 5-9 within | the entire r | iparian/buf | fer zone ad | jacent to th | ne stream cl | nannel (25 | feet from e | ach bank). | |
|-----------|-------------|--|--------------|------------------------------|--------------|--------------|-------------------------------|--------------|----------------|--------------|------------|
| 5 | V_{LWD} | stream rea | ch. Enter th | | rom the enti | | ter and 36 ir buffer and w | | | | 3.9 |
| | | | | | | | oody stems: | | 7 | | |
| 6 | V_{TDBH} | | | measure on neter. Enter | | | ng cover is a | it least 20% | 6). Trees ar | e at least 4 | 9.1 |
| | | • | • | | | | n) within the | buffer on e | each side of | | |
| | | the stream | below: | | | ` | , | | | | ı |
| | | _ | Left Side | | | | | Right Side | | | |
| | 10 | 11 | 8 | 12 | 9 | 9 | 12 | 9 | 13 | 11 | |
| | 12 | 6 | 4 | 5 | 6 | 5 | 14 | 8 | 15 | 6 | |
| | 9 12 | 13 11 | 15 12 | 8 | 6 5 | 5 10 | 6 13 | 13 5 | 7 | 11 9 | |
| | 12 | + '' | 12 | 9 | 3 | 6 | 5 | 9 | 11 | 9 | |
| | | | | | | - ŭ | Ů | Ü | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 7 | V_{SNAG} | | | east 4" dbh a d the amour | | | et of stream. alculated. | Enter num | ber of snag | s on each | 1.1 |
| | | | Left Side: | | 2 | | Right Side: | | 0 | · | |
| 8 | V_{SSD} | | | | | | hes dbh) per | | | | N |
| | | | | Enter numi tream will be | | | ubs on each | side of the | stream, and | I the | Not Used |
| | | amount po | Left Side: | | oaloulatou | | Right Side: | | | | |
| 9 | V_{SRICH} | Riparian vegetation species richness per | | | | | | | | | |
| | | | | | | | ive species p from these c | | ıll strata. Sp | ecies | 3.15 |
| | | - | p 1 = 1.0 | and the ode | HOOK WIII DO | calculated | 110111 111000 0 | | 2 (-1.0) | | |
| V | Acer rubri | | | Magnolia t | ripetala | | Ailanthus a | | | Lonicera ja | ponica |
| | Acer sacc | charum | | Nyssa sylv | • | | Albizia julib | | | Lonicera ta | - |
| | Aesculus | flava | | Oxydendrun | n arboreum | | Alliaria peti | olata | | Lotus corni | iculatus |
| | Asimina ti | riloba | V | Prunus sei | rotina | | Alternanthe | ara | | Lythrum sa | licaria |
| | Betula alle | eghaniensis | ~ | Quercus a | | | philoxeroid | | | Microstegiun | |
| | Betula ler | nta | | Quercus c | occinea | | Aster tatari | cus | | Paulownia | tomentosa |
| | Carya alb | a | | Quercus in | nbricaria | | Cerastium | fontanum | | Polygonum o | cuspidatum |
| | Carya gla | bra | | Quercus p | rinus | | Coronilla va | aria | | Pueraria m | ontana |
| | | | | | | | Elaeagnus u | mbellata | ✓ | Rosa multii | flora |
| V | • | | | | | | Lespedeza | bicolor | | Sorghum h | alepense |
| | • | | | | | | Lespedeza | cuneata | | Verbena br | asiliensis |
| V | | | | | | | Ligustrum ob | otusifolium | | | |
| | | | | | | | Ligustrum s | sinense | | | |
| <u></u> ✓ | | | | | | | - | | | | |
| | | acuminata | | | | | | | | | |
| | | 7 | Species in | Group 1 | | | | 1 | Species in | Group 2 | |
| | | 1 | opecies in | Gloup I | | | | 1 | opedies in | Group 2 | |

| _ | | ables 10-11 within at least 8 subplots (40" x 40", or 1m x 1m) in the riparian/buffer zone within 25 feet from each ur subplots should be placed roughly equidistantly along each side of the stream. | | | | | | | | | |
|-----------------|-----------------------|---|--------------------------------------|-------------------------------|--|--------------|---------------------------|-----------------------------|-----------------|------------------------|----------------------------------|
| 10 | V _{DETRITUS} | Average pe | rcent cover | of leaves, | sticks, or oth | er organic r | material. W | oody debris | <4" diamet | er and | 90.00 % |
| | | | | Side | | | - | t Side | |] | |
| | | 100 | 95 | 95 | 90 | 100 | 95 | 90 | 85 | 1 | |
| | | 100 | 90 | 80 | 65 | 100 | 85 | 95 | 75 | | |
| 11 | V _{HERB} | include woo | ody stems a percentage: oplot. | t least 4" dk s up through | aceous vego th and 36" to the 200% are | all. Because | there may Enter the pe | be several l rcent cover | ayers of gro | ound cover | Not Used |
| | | | Left | Side | | | Righ | Side | | ł | |
| | | | | | | | | | | 1 | |
| _ | | | | | the stream. | | | | | | |
| 12 | V _{WLUSE} | Weighted A | Average of F | Runoff Score | e for watersl | ned: | | | | | 0.81 |
| | | | Land | Use (Choos | se From Dro | p List) | | | Runoff Score | % in Catch- ment | Running Percent (not >100) |
| | Forest and n | ative range (| >75% ground | d cover) | | | | • | 1 | 35 | 35 |
| | Forest and n | ative range (| 50% to 75% | ground cover | r) | | | • | 0.7 | 65 | 100 |
| | _ | | | | | | | • | | | |
| | | | | | | | | | | | |
| | | | | | | | | • | | | |
| | | | | | | | | • | | | |
| | | | | | | | | • | | | |
| | | | | | | | | • | | | |
| | Su | mmary | | | | | No | tes: | | | |
| Va | ariable | Value | VSI | | ounger tha | | | | | | |
| V _C | CANOPY | 96 % | 1.00 | locations. work on p | Downstrea ond. | ım limits of | some cha | nnels have | e been imp | acted by cu | urrent |
| VE | MBED | 1.8 | 0.40 | | | | | | | | |
| V _{st} | JBSTRATE | 0.08 in | 0.04 | | | | | | | | |
| V _{BI} | ERO | 6 % | 1.00 | | | | | | | | |
| VLV | V D | 3.9 | 0.49 | | | | | | | | |
| V _{TI} | рвн | 9.1 | 1.00 | | | | | | | | |
| Vs | NAG | 1.1 | 1.00 | | | | | | | | |
| Vss | SD | Not Used | Not Used | | | | | | | | |
| Vsi | RICH | 3.15 | 1.00 | | | | | | | | |
| V _{DI} | ETRITUS | 90.0 % | 1.00 | | | | | | | | |
| V_{HI} | ERB | Not Used | Not Used | | | | | | | | |

Representative Field Sheet for Habitat Area 6

V_{WLUSE} 0.81 0.85

<u>Version 1-25-11</u>

| | Hign-G | radient i | Headwat | | ms in ea Data She | | tern wes | st virgini | a | | | |
|--------|------------------------|-----------------------------|---|---|----------------------------|--------------------------------|---------------------|------------|--------------------------|-----------------|--------------|---------|
| | Team: | M. Thomay | er, P. Renn | | | | | | | M Northing: | 38.17447 | |
| Pro | | | Pond Closu | | | | | | | _ | -82.648223 | |
| | - | | County, Ken | | m Habitat A | Area 7) | | | - | _ | 6 June 201 | |
| 0.4 | | | • | • (| | , | <u>.</u> | Section 1 | | | | 4-5 |
| SA | R Number: | | Reacn | Length (ft): | 225 | Stream Ty | /pe: | Ephei | meral Stream | I (| | |
| | Top Strata: | Tree | e/Sapling St | rata | (determine | d from perce | ent cald | culate | ed in V _{CCANC} | _{PY}) | | |
| Site a | and Timing: | Project Site | | | | • | Before | Projec | ct | | | • |
| Sample | Variables | 1-4 in strea | ım channel | | | | | | | | | |
| 1 | V _{CCANOPY} | equidistant 20%, enter | ercent cover points along at least one measureme | g the strean value betw | n. Measure reen 0 and 1 | only if tree/ 9 to trigger | sapling | cove | er is at least | | | 99.5 % |
| | 100 | 100 | 95 | 100 | 100 | 100 | 10 | n | 100 | 100 | 100 | |
| | 100 | 100 | 30 | 100 | 100 | 100 | 10 | | 100 | 100 | 100 | |
| 2 | V_{EMBED} | along the s | nbeddednes tream. Sele d area surro | ect a particle | from the be | ed. Before | moving | j it, de | etermine the | percentage | e of the | 2.5 |
| | | according t rating score | o the followie of 1. If the | ng table. If bed is com | the bed is a posed of be | an artificial s edrock, use | urface, a ratino | , or co | omposed of re of 5. | fine sedime | ents, use a | |
| | | Minshall 19 | | | obble and b | oulder parti | cies (re | escaie | ed from Plat | rts, Megana | n, and | |
| | | Rating | Rating Des | | | | | | | | | |
| | | 5 4 | | | covered, sur | | | | | | K) | |
| | | 3 | | 5 to 25 percent of surface covered, surrounded, or buried by fine sediment 26 to 50 percent of surface covered, surrounded, or buried by fine sediment | | | | | | | | |
| | | 2 | | | face covere | | | | | | | |
| | | 1 | | | covered, su | | | | | | ial surface) | |
| | List the rati | ngs at each | point below | <i>r</i> : | | | | | | | | |
| | 2 | 3 | 2 | 1 | 2 | 3 | 2 | | 1 | 2 | 2 | |
| | 2 | 3 | 2 | 3 | 2 | 3 | 2 | | 3 | 2 | 2 | |
| | 2 | 3 | 3 | 2 | 4 | 3 | 4 | | 3 | 4 | 4 | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 3 | V _{SUBSTRATE} | | eam channe tream; use t | | | | | | | ghly equidis | tant points | 0.15 in |
| | | | ches to the 0.0 in, sand | | | | w (bedı | rock s | should be c | ounted as 9 | 9 in, | |
| | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 1.00 | 0.0 | 8 | 0.08 | 0.08 | 0.08 | |
| | 0.08 | 0.10 | 0.08 | 1.00 | 0.08 | 0.50 | 0.0 | 8 | 0.50 | 0.08 | 0.20 | |
| | 0.50 | 1.00 | 0.25 | 1.00 | 4.00 | 2.00 | 5.0 | 00 | 7.00 | 6.00 | 10.00 | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 4 | V_{BERO} | • | nt of eroded e total perce to 200%. | | | | | | | | | 10 % |
| | | | Left Bank: | 11 | l ft | | Right B | ank: | 12 | 2 ft | | |

| Sampl | e Variables | s 5-9 within | the entire r | iparian/buf | fer zone ad | jacent to th | ne stream ch | nannel (25 | feet from e | ach bank). | |
|----------|---|--------------|--------------|----------------------------|---------------|--------------|--------------------------------|--------------|----------------|--------------|------------|
| 5 | V_{LWD} | stream rea | ch. Enter th | | rom the enti | | eter and 36 in buffer and w | | | | 3.1 |
| | | | | | | | oody stems: | | 7 | | |
| 6 | V_{TDBH} | | | measure on neter. Enter | | | ng cover is a | it least 20% | 6). Trees ar | e at least 4 | 12.0 |
| | | , | • | | | | in) within the | buffer on e | each side of | | |
| | | the stream | | | | | • | | | | l |
| | | | Left Side | | | | | Right Side | | | |
| | 14 | 10 5 | 12 9 | 12 11 | 17 12 | 9 | 12 16 | 15 11 | 13 10 | 6 14 | |
| | 12 | 16 | 11 | 10 | 14 | 13 | 15 | 10 | 18 | 12 | |
| | 13 | 12 | 15 | 10 | 17 | 9 | 13 | 15 | 10 | 12 | |
| | - 10 | 1 | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 7 | \/ | Number of | opogo (ot la | oot 4" dbb | and 26" tall) | por 100 for | et of stream. | Entor num | har of anga | o on oooh | |
| , | V_{SNAG} | | | d the amour | | | | Enter nun | iber of snag | s on each | 2.7 |
| | | | Left Side: | | 3 | | Right Side: | | 3 | | |
| 8 | V_{SSD} | | | | | | hes dbh) per | | | | Not Used |
| | | | | | | | ubs on each | side of the | stream, and | i the | Not Used |
| | amount per 100 ft of stream will be calc Left Side: V _{SRICH} Riparian vegetation species richness per | | | | | | Right Side: | | | | |
| 9 | V_{SRICH} | | | | | | | | | | |
| | | | | | | | ive species p from these d | | ııı strata. Sp | ecies | 2.67 |
| | | - | ıp 1 = 1.0 | | | | | | 2 (-1.0) | | |
| / | Acer rubri | um | | Magnolia t | ripetala | | Ailanthus a | ltissima | | Lonicera ja | ponica |
| | Acer sacc | charum | | Nyssa sylv | atica | | Albizia julib | rissin | | Lonicera ta | tarica |
| | Aesculus | flava | | Oxydendrun | n arboreum | | Alliaria peti | olata | | Lotus corni | iculatus |
| | Asimina ti | riloba | J | Prunus sei | rotina | | Alternanthe | era | | Lythrum sa | licaria |
| | Betula alle | ghaniensis | V | Quercus a | lba | | philoxeroid | | | Microstegiun | m vimineum |
| | Betula ler | nta | | Quercus c | occinea | | Aster tatari | cus | | Paulownia | tomentosa |
| | Carya alb | a | | Quercus in | nbricaria | | Cerastium | fontanum | | Polygonum o | cuspidatum |
| | Carya gla | bra | | Quercus p | rinus | | Coronilla va | aria | | Pueraria m | ontana |
| | Carya ova | alis | V | Quercus ru | ıbra | | Elaeagnus u | mbellata | | Rosa multii | flora |
| V | Carya ova | ata | | Quercus v | elutina | | Lespedeza | bicolor | | Sorghum h | alepense |
| V | Cornus flo | orida | | Sassafras | albidum | | Lespedeza | cuneata | | Verbena br | asiliensis |
| | Fagus gra | andifolia | | Tilia ameri | cana | | Ligustrum ob | otusifolium | | | |
| | | americana | | Tsuga can | | | Ligustrum s | sinense | | | |
| | | | | | | <u>-</u> | | | | | |
| | | acuminata | _ | | | | | | | | |
| | | • | 0 | 0 1 | | | | • | 0 | 0 5 | |
| | | 6 | Species in | Group 1 | | | | 0 | Species in | Group 2 | |

| _ | | ariables 10-11 within at least 8 subplots (40" x 40", or 1m x 1m) in the riparian/buffer zone within 25 feet from each four subplots should be placed roughly equidistantly along each side of the stream. | | | | | | | | | |
|-----------------|-----------------------|--|--------------|--------------------|------------------|---------------------|--------------|-------------|------------------|-----------|------------|
| 10 | V _{DETRITUS} | | | | | ner organic r | | | | er and | |
| .0 | *DETRITUS | | | | | r of the detri | | | | _ | 96.88 % |
| | | | Left | Side | | | Righ | t Side | |] | |
| | | 95 | 100 | 100 | 100 | 100 | 100 | 90 | 100 | | |
| 11 | V_{HERB} | 100 Average pe | 100 | 90 over of herb | 95 aceous veg | 100 etation (mea | 100 | 85 | 95 is <20%) □ | o not | |
| • • • | ▼ HERB | | | | | all. Because | | | | | Not Used |
| | | | | s up through | n 200% are | accepted. E | Enter the pe | rcent cover | of ground v | egetation | Not Oseu |
| | | at each sub | Left | Side | | | Righ | t Side | | 1 | |
| | | | | | | | J | | | 1 | |
| | | | | | | | | | | | |
| Sample | e Variable 1 | 2 within the | e entire cat | chment of | the stream. | | | | | | |
| 12 | V_{WLUSE} | Weighted A | Average of F | Runoff Score | e for watersl | hed: | | | | | 1.00 |
| | | | | | | | | | Runoff | % in | Running |
| | | | Land | Use (Choos | e From Dro | p List) | | | Score | Catch- | Percent |
| | Faucat and a | ativa vanas (| 750/ 20200 | | | | | | | ment | (not >100) |
| | Forest and n | ative range (| >75% ground | i cover) | | | | <u> </u> | 1 | 100 | 100 |
| | _ | | | | | | | _ | | | |
| | _ | | | | | | | • | | | |
| | | | | | | | | | | | |
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| | | | | | | | | _ | | | |
| | | | | | | | | _ | | | |
| | | | | | | | | ~ | | | |
| | Su | mmary | | | | | No | tes: | | | |
| Va | ariable | Value | VSI | Streams a | are within m | nature upla | nd forest. | | | | |
| Vcc | CANOPY | 100 % | 1.00 | | | | | | | | |
| VEN | MBED | 2.5 | 0.65 | | | | | | | | |
| V _{st} | JBSTRATE | 0.15 in | 0.08 | | | | | | | | |
| V _{BE} | ≣RO | 10 % | 1.00 | | | | | | | | |
| V_{LV} | VD | 3.1 | 0.39 | | | | | | | | |
| V _{TC} | овн | 12.0 | 1.00 | | | | | | | | |
| V _{SN} | NAG | 2.7 | 1.00 | | | | | | | | |
| Vss | SD | Not Used | Not Used | | | | | | | | |
| V _{SF} | RICH | 2.67 | 1.00 | | | | | | | | |
| V_{DE} | ETRITUS | 96.9 % | 1.00 | | | | | | | | |
| V_{HE} | ERB | Not Used | Not Used | | | | | | | | |

V_{WLUSE} 1 1.00

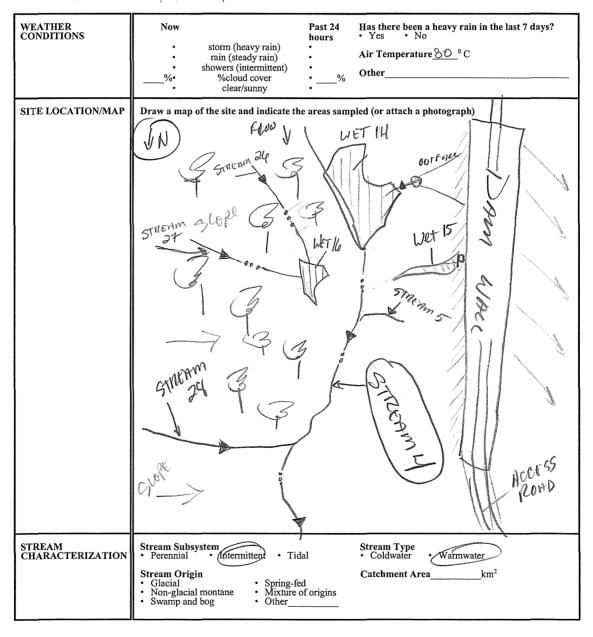


APPENDIX D U.S. EPA RAPID BIOASSESSMENT STREAM FORMS



PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

| STREAM NAME 5-840-101512-01 | LOCATION AEP Bia | Sandy Lawrence (O. KY |
|-------------------------------|------------------|-----------------------|
| STATION # RIVERMILE | STREAM CLASS 0 | All Jackshire. |
| LAT38. 174875 LONG-82.625015 | RIVER BASIN — | |
| STORET# | AGENCY — | |
| INVESTIGATORS B. Otto, M. | Momente/ | |
| FORM COMPLETED BY | DATE 10/15/12 | REASON FOR SURVEY |
| B. Otto, M. Thomaser URS COLD | TIME 7 AM PM | POND CLOSURE |



PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

| WATERS: FEATURI | | Fores | Pasture • Industria ultural • Other _ | rcial al | Local Watershed NPS-1 No evidence • Some Obvious sources Local Watershed Erosi None • Moderate | on | | | | |
|--------------------------------|----------------------------------|---|---|---|--|-----------------------------------|--|--|--|--|
| RIPARIA VEGETA (18 meter | | | | | minant species present • Grasses • He NRUE MIKED | rbaceous | | | | |
| INSTREA FEATURI | | Estimat Estimat Samplin Area in Estimat | red Reach Length ed Stream Width g Reach Area km² (m²x1000) red Stream Depth Velocity | m m² km² km² | Canopy Cover Partly open Partly High Water Mark Proportion of Reach Re Morphology Types | epresented by Stream Run% • No | | | | |
| LARGE W DEBRIS | NONt | LWD Density | of LWDm | 1 ² /km² (LWD / 1 | reach area) | | | | | |
| AQUATIO VEGETA | TION | Indicate Roote Floati | e the dominant type and ed emergent • Ro ng Algae • At | record the do ooted submerge tached Algae | minant species present nt • Rooted floating | Free floating | | | | |
| Non | It | domina | ominant species present | | | | | | | |
| WATER O | - | Specific Dissolv pH Turbidi | rature° C Conductance ed Oxygen ty ttument Used | | Water Odors Normal/None • Sewa Petroleum Fishy Water Surface Oils Slick • Sheen None • Other Turbidity (if not measu Clear • Slightly tu Opaque • Stained | Chemical AMD Globs • Flecks | | | | |
| SEDIMEN SUBSTRA | | • Other | al • Sewage ical • Anaerobic — AM | Petroleum None | Relict shells Looking at stones which | h are not deeply embedded, | | | | |
| | | Oils Abser | Slight • Moderat | te • Profus | are the undersides blac se • Yes • No | k in color? | | | | |
| INC | ORGANIC SUBS (should a | | COMPONENTS | | ORGANIC SUBSTRATE C (does not necessarily add | | | | | |
| Substrate Type | Diamet | er | % Composition in Sampling Reach | Substrate Type | Characteristic | % Composition in Sampling Area | | | | |
| Bedrock | > 256 mm (1011) | | | Detritus | sticks, wood, coarse plant materials (CPOM) | 20 | | | | |
| Boulder Cobble | > 256 mm (10") 64-256 mm (2.5 | | 10 | Muck-Mud black, very fine organic | | | | | | |
| Gravel | 2-64 mm (0.1"-2 | | 40 | 1470CV-1410G | (FPOM) | | | | | |

Sand

Silt

Clay

0.06-2mm (gritty)

< 0.004 mm (slick)

0.004-0.06 mm

grey, shell fragments

Marl

30

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

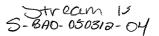
| STREAM NAME S-BAD-101512-01 | LOCATION BIG SANDY POND CLOSURE SUFE | | | | | | |
|-----------------------------|--|--|--|--|--|--|--|
| STATION#RIVERMILE | STREAM CLASS | | | | | | |
| LATLONG | RIVER BASIN | | | | | | |
| STORET# | AGENCY | | | | | | |
| INVESTIGATORS BAO, MOT | | | | | | | |
| FORM COMPLETED BY | DATE /s/2 REASON FOR SURVEY TIME AM PM | | | | | | |
| BKD, NOT | TIME AM (B) POND CLOSURE | | | | | | |

| | Habitat | Condition Category | | | | |
|--|---|---|---|---|--|--|
| l | Parameter | Optimal | Suboptimal | Marginal | Poor | |
| Parameters to be evaluated in sampling reach | 1. Epifaunal Substrate/ Available Cover | Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | 30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | |
| | SCORE X | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 7 7 6 | 5 4 3 2 1 0 | |
| | 2. Pool Substrate Characterization | Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common. | Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present. | All mud or clay or sand bottom; little or no root mat; no submerged vegetation. | Hard-pan clay or bedrock; no root mat or vegetation. | |
| | SCORE / 5 | 20 19 18 17 16 | 15 14 (13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| | 3. Pool Variability | Even mix of large- shallow, large-deep, small-shallow, small-deep pools present. | Majority of pools large- deep; very few shallow. | Shallow pools much more prevalent than deep pools. | Majority of pools small- shallow or pools absent. | |
| mete | SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | (5) 4 3 2 1 0 | |
| Paran | 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | |
| | SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| | 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. | |
| | SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 🕏 6 | 5 4 3 2 1 0 | |

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

| | Habitat | Condition Category | | | |
|--|--|--|--|---|---|
| | Parameter | Optimal | Suboptimal | Marginal | Poor |
| | 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. |
| | SCORE / | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| Parameters to be evaluated broader than sampling reach | 7. Channel Sinuosity | The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.) | The bends in the stream increase the stream length I to 2 times longer than if it was in a straight line. | The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line. | Channel straight; waterway has been channelized for a long distance. |
| | SCORE 10 | 20 19 18 17 16 | 15 14 13 (12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| | 8. Bank Stability (score each bank) | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. |
| e eva | SCORE (LB) | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| to b | SCORE (RB) | Right Bank 10 9 | 8 7 6 | 5 4/ 3 | 2 1 0 |
| Parameters | 9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream. | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. |
| | SCORE <u>(</u> (LB) | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| | SCORE (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally. | Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal. | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. |
| | SCORE(LB) | Left Bank 10 (9) | 8 7 6 | 5 4 3 | 2 1 0 |
| | SCORE (RB) | Right Bank 10 (9) | 8 7 6 | 5 4 3 | 2 1 0 |

Total Score 103



PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

| STREAM NAME S-BAO-050310-04 | LOCATION AEP BIG | SANDY LAWRENCE CO. KY | | |
|--|--------------------------------|-----------------------|--|--|
| STATION# RIVERMILE — | STREAM CLASS — | | | |
| LAT 38.185593 LONG-82. UH8905 | RIVER BASIN — | | | |
| STORET# | AGENCY | | | |
| INVESTIGATORS B. 0170, M. THOMPYEVE // | | | | |
| FORM COMPLETED BY | DATE OSOSIO TIME 0936 AM PM | REASON FOR SURVEY | | |
| B. OTTO, M. THOMAYER, URS CORP | TIME <u>8938</u> AM PM | POND CLOSURE | | |

| WEATHER CONDITIONS | Now Past 24 hours storm (heavy rain) rain (steady rain) showers (intermittent) % % Cloud cover elear/sunny Past 24 hours Yes No Air Temperature 90 ° C Other Other |
|----------------------------|--|
| SITE LOCATION/MAP | Draw a map of the site and indicate the areas sampled (or attach a photograph) S-340-05812 04 Slove Change Lag. Shope Shope Shope Wooded Wooded |
| | HORSEFORD CREEK |
| | 13 3 GANAGH |
| STREAM CHARACTERIZATION | Stream Subsystem • Perennial Intermittent • Tidal • Coldwater • Catchment Area km² • Spring-fed • Non-glacial montane • Swamp and bog • Swamp and bog |

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

| WATERSHED FEATURES | Predominant Surrounding Landuse Forest • Commercial • Field/Pasture • Industrial • Agricultural • Residential | Local Watershed NPS Pollution No evidence Some potential sources Obvious sources Local Watershed Erosion None Moderate Heavy | |
|---|---|---|--|
| RIPARIAN VEGETATION (18 meter buffer) | | | |
| INSTREAM FEATURES | Estimated Reach Length Estimated Stream Width Sampling Reach Area Area in km² (m²x1000) Estimated Stream Depth Surface Velocity (at thalweg) | Canopy Cover Partly open Partly shaded High Water Mark Proportion of Reach Represented by Stream Morphology Types Riffle 80 % Run % Pool 20 % Channelized Yes No Dam Present Yes No | |
| LARGE WOODY DEBRIS | LWDm² THERE IS A LOT OF WOODY DEBRIS Density of LWDm²/km² (LWD/ reach area) | | |
| AQUATIC VEGETATION | Indicate the dominant type and record the domin Rooted emergent Floating Algae dominant species present Portion of the reach with aquatic vegetation | • Rooted floating • Free floating | |
| WATER QUALITY | Temperature0 C Specific Conductance Dissolved Oxygen pH Turbidity_ WQ Instrument Used | Water Odors Normal/None Petroleum Chemical |
| SEDIMENT/ SUBSTRATE | Odors Normal Chemical Other Sewage Petroleum None None Other Oils Absent Slight Moderate Profuse | Deposits • Sludge • Sawdust • Paper fiber • Sand • Relict shells • Other Looking at stones which are not deeply embedded, are the undersides black in color? • Yes • No | |

| INORGANIC SUBSTRATE COMPONENTS (should add up to 100%) | | | ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%) | | |
|--|----------------------|------------------------------------|--|--|-----------------------------------|
| Substrate Type | Diameter | % Composition in Sampling Reach | Substrate Type | Characteristic | % Composition in Sampling Area |
| Bedrock | | | Detritus | sticks, wood, coarse plant materials (CPOM) | |
| Boulder | > 256 mm (10") | 30 | | materials (CPOM) | |
| Cobble | 64-256 mm (2.5"-10") | 10 | Muck-Mud | black, very fine organic | |
| Gravel | 2-64 mm (0.1"-2.5") | 15 | 1 | (FPOM) | |
| Sand | 0.06-2mm (gritty) | 5 | Marl | grey, shell fragments | |
| Silt | 0.004-0.06 mm | 5 | 1 | | |
| Clay | < 0.004 mm (slick) | 35 | 1 | | |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| STREAM NAME S-BAD-050312-04 | LOCATION AEP BIGS. | ANDY, LAURENCE CO. KLY | | |
|--------------------------------------|--|------------------------|--|--|
| STATION# RIVERMILE | STREAM CLASS | | | |
| LAT 38/85593 LONG-85.64 89 05 | RIVER BASIN — | | | |
| STORET# | AGENCY — | | | |
| INVESTIGATORS B. O 470, M. THOM RYEN | , U15 | | | |
| FORM COMPLETED BY B.0170 | DATE <u>6503/2</u> TIME <u>6930</u> M PM | REASON FOR SURVEY | | |

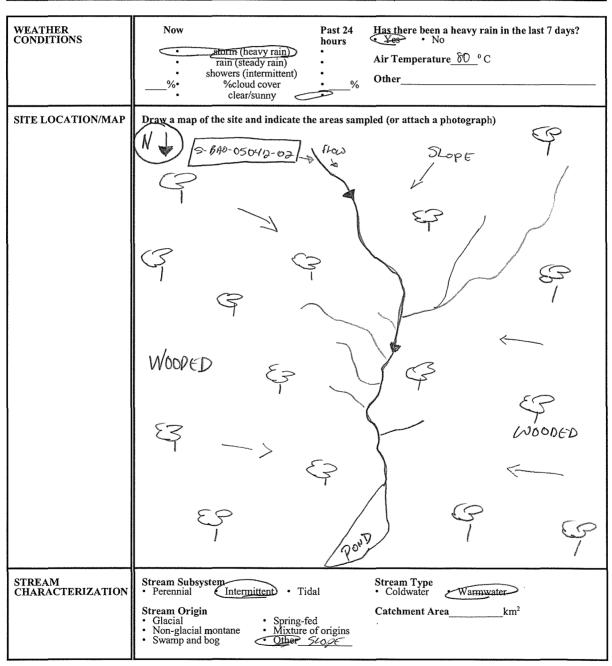
| | Habitat | | Condition | Category | |
|--|---|---|---|---|--|
| | Parameter | Optimal | Suboptimal | Marginal | Poor |
| | 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not now fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. |
| | SCORE (/ | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| ı sampling reach | 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50- 75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. |
| ted in | SCORE V | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| Parameters to be evaluated in sampling reach | 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/ depth regime (usually slow-deep). |
| ıram | SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 (3) 2 1 0 |
| P_{ϵ} | 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
| | SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 🐌 7 6 | 5 4 3 2 1 0 |
| | 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. |
| H | score 3 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| ſ | | Habitat | | Condition | Category | |
|----|--|--|--|--|---|---|
| | | Parameter | Optimal | Suboptimal | Marginal | Poor |
| | | 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. |
| 20 | | SCORE 20 | 20) 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| | ling reach | 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. |
| /o | samp | SCORE /D | 20 19 18 17 16 | /15 / 14 13 12 11 / | 10 9 8 7 6 | 5 4 3 2 1 0 |
| le | Parameters to be evaluated broader than sampling reach | 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. |
| W. | be ev | SCORE $\frac{3}{3}$ (LB) | Left Bank 10 9 | 8 7 6 | 5 4 💋 | 2 1 0 |
| l | s to | SCORE 3 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 🐧 | 2 1 0 |
| | S Parameter | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. |
| | | SCORE (LB) | Left Bank 10 9 | <u>(8)</u> 7 ₋ 6 | 5 4 3 | 2 1 0 |
| | | SCORE (RB) | Right Bank 10 9 | (8) 7 6 | 5 4 3 | 2 1 0 |
| | 18 | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal. | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. |
| | | SCORE $\frac{Q}{Q}$ (LB) | Left Bank 10 (9) | 8 7 6 | 5 4 3 | 2 1 0 |
| 10 | | SCORE (RB) | Right Bank 10 (9) | 8 7 6 | 5 4 3 | 2 1 0 |

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

| STREAM NAME 5-340-050412-02 | LOCATION AEP BIL SANDY, LAWRENCE CO. KY | | | |
|-----------------------------------|--|--|--|--|
| STATION# RIVERMILE | STREAM CLASS — | | | |
| LAT 38.17461 LONG -82.642901 | RIVER BASIN | | | |
| STORET# | AGENCY | | | |
| INVESTIGATORS B. 5710, M. THOMAYE | YL | | | |
| FORM COMPLETED BY | DATE 05/04//2 REASON FOR SURVEY TIME 07:00 AM PM | | | |
| B.OTTO | TIME AM) PM POND CLOSURE | | | |



PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

| WATERSHED FEATURES | Predominant Surrounding Landuse Forest - Forest - Fored/Pasture - Agricultural - Residential - Commercial - Industrial - Other | Local Watershed NPS Pollution No evidence Some potential sources Obvious sources Local Watershed Erosion None Moderate Heavy |
|---|---|---|
| RIPARIAN VEGETATION (18 meter buffer) | Indicate the dominant type and record the domin Trees Shrubs dominant species present M(LED ME3- | |
| INSTREAM FEATURES | Estimated Reach Length 894 m Estimated Stream Width 3 m + . Sampling Reach Area m² Area in km² (m²x1000) km² Estimated Stream Depth H M M AVE. Surface Velocity (at thalweg) AFT AFT (9 IN MP) | Canopy Cover Partly open Partly shaded High Water Mark Proportion of Reach Represented by Stream Morphology Types Riffle O Pool 40 Channelized Yes No No No No No No No No No No No No N |
| LARGE WOODY DEBRIS | LWD m² Density of LWD m²/km² (LWD/ reac | ch area) |
| AQUATIC VEGETATION | Indicate the dominant type and record the domin Rooted emergent Floating Algae dominant species present Portion of the reach with aquatic vegetation | • Rooted floating • Free floating |
| WATER QUALITY | Temperature0 C Specific Conductance Dissolved Oxygen pH Turbidity WQ Instrument Used | Water Odors Normal/None Petroleum Fishy Other Water Surface Oils Slick Slick Sheen Other Turbidity (if not measured) Clear Slightly turbid Opaque Stained Turbid Opaque Stained |
| SEDIMENT/ SUBSTRATE | Odors Normal Chemical Other Oils Absent Slight Moderate Petroleum None Petroleum Profuse | Deposits • Sludge • Sawdust • Paper fiber • Sand • Relict shells • Other Looking at stones which are not deeply embedded, are the undersides black in color? • Yes • No |

| INC | ORGANIC SUBSTRATE (should add up to | | | ORGANIC SUBSTRATE CO (does not necessarily add u | |
|-------------------|--|------------------------------------|-------------------|---|-----------------------------------|
| Substrate Type | Diameter | % Composition in Sampling Reach | Substrate Type | Characteristic | % Composition in Sampling Area |
| Bedrock | | 5 | Detritus | sticks, wood, coarse plant materials (CPOM) | |
| Boulder | > 256 mm (10") | 15 | | | |
| Cobble | 64-256 mm (2.5"-10") | 30 | Muck-Mud | black, very fine organic | |
| Gravel | 2-64 mm (0.1"-2.5") | 30 | | (FPOM) | |
| Sand | 0.06-2mm (gritty) | | Marl | grey, shell fragments | |
| Silt | 0.004-0.06 mm | | | | |
| Clay | < 0.004 mm (slick) | <i>30</i> |] | | |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| STREAM NAME S-B40-050412-02 | LOCATION AEP BIGG | BANDY, LAWRENCE KY | | |
|--|---|--------------------|--|--|
| STATION # RIVERMILE | STREAM CLASS - | , | | |
| LAT <u>78./85593</u> LONG <u>82.648905</u> | RIVER BASIN — | | | |
| STORET# | AGENCY — | | | |
| INVESTIGATORS BOTTO, M. THOMPYE | ح. | | | |
| FORM COMPLETED BY B. 0170 | DATE <u>0504/2</u> TIME <u>0900</u> | REASON FOR SURVEY | | |

| | Habitat | | Condition | Category | |
|--|---|---|---|---|--|
| 1 | Parameter Parameter | Optimal | Suboptimal | Marginal | Poor |
| | 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. |
| | SCORE 15 | 20 19 18 17 16 | 6 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| sampling reach | 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. |
| ted ir | SCORE / | 20 19 18 17 16 | 15 14 (13/12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| Parameters to be evaluated in sampling reach | 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/ depth regime (usually slow-deep). |
| ıram | score 5 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | ® 4 3 2 1 0 |
| Ps | 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
| | SCORE L | 20 19 18 17 16 | 15 14 13 12 (1) | 10 9 8 7 6 | 5 4 3 2 1 0 |
| | 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. |
| | SCORE | 20 19 18 17 16 | (15) 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |

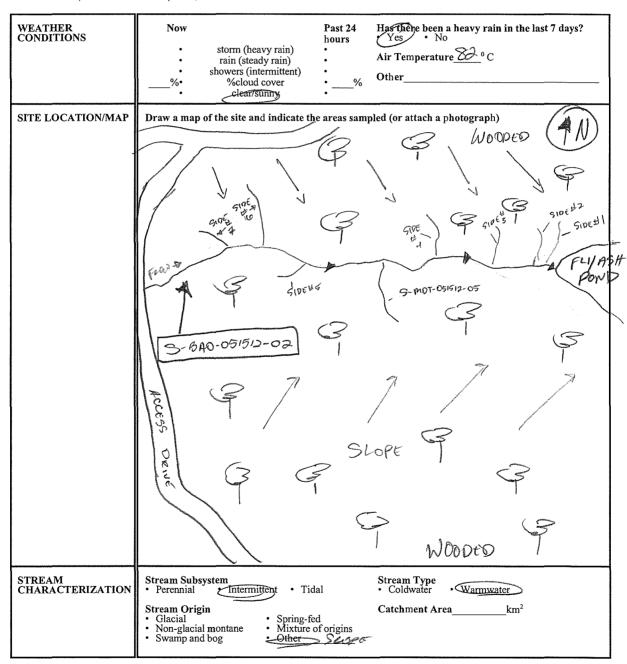
HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| | Habitat | | Condition | Category | |
|--|---|--|--|--|---|
| | Parameter | Optimal | Suboptimal | Marginal | Poor |
| | 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. |
| | score /5 | 20 19 18 17 16 | (15) 14 13 12 11 | 10 9 8 7 6 | -5 4 3 2 1 0 |
| ing reach | 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. |
| ampl | SCORE / | 20 19 (18/ 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| Parameters to be evaluated broader than sampling reach | 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. |
| e eva | SCORE (LB) | Left Bank 10 9 | (8) 7 6 | 5 4 3 | 2 1 0 |
| to b | SCORE (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| Parameter | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one- half of the potential plant stubble height remaining. | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. |
| | SCORE (LB) | Left Bank 10 (9) | 8 7 6 | 5 4 3 | 2 1 0 |
| | SCORE G(RB) | Right Bank 10 | 8 7 6 | 5 4 3 | 2 1 0 |
| | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal. | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. |
| | SCORE (LB) | Left Bank 10 | 8 7 6 | 5 4 3 | 2 1 0 |
| l | SCORE 9 (RB) | Right Bank 10 (9) | 8 7 6 | 5 4 3 | 2 1 0 |

Total Score 144

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

| STREAM NAME S-BAD-051512-02 | LOCATION AND BIGSANDY, LAWRENCE, KY |
|-----------------------------------|---|
| STATION# RIVERMILE | STREAM CLASS / |
| LAT 38.18225 LONG - 82. 1048104 | RIVER BASIN |
| STORET# | AGENCY |
| INVESTIGATORS B. OTTO M. THOMPYCE | R |
| FORM COMPLETED BY | DATE 05/15/12 TIME H440 AM AM POLICY CLOSURE |
| B. OTTO, M. THOMAYER, URS | 11ME 1440 AM RM POND CLOSURE |



PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

| WATERSHED FEATURES | Predominant Surrounding Landuse Commercial Field/Pasture Agricultural Residential | Local Watershed NPS Pollution No evidence Some potential sources Obvious sources Local Watershed Erosion None Moderate Heavy |
|---|--|---|
| RIPARIAN VEGETATION (18 meter buffer) | Indicate the dominant type and record the domin Shrubs dominant species present Sycamone, To | ant species present Grasses • Herbaceous |
| INSTREAM FEATURES | Estimated Reach Length 120 m F4 Estimated Stream Width 2.5 mc P4. Sampling Reach Area m² Area in km² (m²x1000) km² Estimated Stream Depth 5 m/s MPP Surface Velocity m/sec (at thalweg) | Canopy Cover Partly open Partly shaded High Water Mark Proportion of Reach Represented by Stream Morphology Types Proposed Stream Morphology Types |
| LARGE WOODY DEBRIS | LWD m² Density of LWD m²/km² (LWD/ reac | |
| AQUATIC VEGETATION | Indicate the dominant type and record the domin Rooted emergent Floating Algae dominant species present Portion of the reach with aquatic vegetation | Rooted floating Free floating |
| WATER QUALITY | Temperature0 C Specific Conductance Dissolved Oxygen pH Turbidity WQ/instrument Used | Water Odors Mormal/None • Sewage Petroleum • Chemical Fishy • Other Water Surface Oils Slick • Sheen • Globs • Flecks None • Other Turbidity (if not measured) Clear • Slightly turbid Opaque • Stained • Other |
| SEDIMENT/ SUBSTRATE | Odors Normal Sewage Chemical Other Other Oils Absent Slight Moderate Petroleum None Profuse | Deposits Sludge • Sawdust • Paper fiber • Sand Relict shells • Other Looking at stones which are not deeply embedded, are the undersides black in color? Yes • No |

| INC | ORGANIC SUBSTRATE (should add up to | | | ORGANIC SUBSTRATE CO (does not necessarily add | |
|-------------------|--|------------------------------------|-------------------|---|-----------------------------------|
| Substrate Type | Diameter | % Composition in Sampling Reach | Substrate Type | Characteristic | % Composition in Sampling Area |
| Bedrock | | | Detritus | sticks, wood, coarse plant | |
| Boulder | > 256 mm (10") | 20 | | materials (CPOM) | |
| Cobble | 64-256 mm (2.5"-10") | lo | Muck-Mud | black, very fine organic | |
| Gravel | 2-64 mm (0.1"-2.5") | 20 | | (FPOM) | |
| Sand | 0.06-2mm (gritty) | 10 | Marl | grey, shell fragments | |
| Silt | 0.004-0.06 mm | /0 / | | | |
| Clay | < 0.004 mm (slick) | 30 | | | |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| STREAM NAME S-BAO. 015/512-08 | LOCATION AEP BIG SANDY, LAWRENCE, KLY | | |
|--------------------------------|---|--|--|
| STATION # RIVERMILE | STREAM CLASS — | | |
| LATLONG | RIVER BASIN — | | |
| STORET# — | AGENCY | | |
| INVESTIGATORS B. OTTO U. THOMA | yer, URS | | |
| FORM COMPLETED BY B. 6170 | DATE OS 1512 REASON FOR SURVEY TIME AM PM | | |

| | Habitat | Condition Category | | | |
|--|---|---|---|---|--|
| | Parameter | Optimal | Suboptimal | Marginal | Poor |
| | 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. |
| | SCORE / | 20 19 18 17 16 | 15 14 13 12 11 | (10) 9 8 7 6 | 5 4 3 2 1 0 |
| sampling reach | 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25- 50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50- 75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. |
| ted in | SCORE () | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 (6) | 5 4 3 2 1 0 |
| Parameters to be evaluated in sampling reach | 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/ depth regime (usually slow-deep). |
| ram | SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 🌀 | 5 4 3 2 1 0 |
| Par | 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
| | SCORE () | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 (8) 7 6 | 5 4 3 2 1 0 |
| A | 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. |
| ' | score V | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 (8) 7 6 | 5 4 3 2 1 0 |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| | Habitat | | Condition | Category | |
|--|--|--|--|---|---|
| | Parameter Parameter | Optimal | Suboptimal | Marginal | Poor |
| | 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. |
| | SCORE (4) | 20 19 (18) 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| ling reach | 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. |
| samp | SCORE /O | 20 19 18 17 16 | 15 14 13 12 11 | 0 9 8 7 6 | 5 4 3 2 1 0 |
| Parameters to be evaluated broader than sampling reach | 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. |
| be ev | SCORE 1 (LB) | Left Bank 10 9 | 8 (2) 6 | 5 4 3 | 2 1 0 |
| rs to | SCORE 1(RB) | Right Bank 10 9 | 8 Ø 6 | 5 4 3 | 2 1 0 |
| Parameters | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. |
| | SCORE $\frac{7}{4}$ (LB) | Left Bank 10 9 | 8 (7) 6 | 5 4 3 | 2 1 0 |
| | SCORE 1/2 (RB) | Right Bank 10 9 | 8 (7) 6 | 5 4 3 | 2 1 0 |
| | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal. | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. |
| | SCORE (LB) | Left Bank 10 | 8 7 6 | 5 4 3 | 2 1 0 |
| | SCORE (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |

Total Score 112

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

| STREAM NAME S-1340-052412 -04 | LOCATION AEP BIH | SANDY, LAURENCE COLLY |
|-----------------------------------|--------------------------|-----------------------|
| STATION # RIVERMILE | STREAM CLASS — | |
| LAT 38.182538 LONG-82.636175 | RIVER BASIN — | |
| STORET# | AGENCY — | |
| INVESTIGATORS B. OTTO, M. THOM AL | in , uns comp | |
| FORM COMPLETED BY | DATE OS/24/12 TIME AM PM | REASON FOR SURVEY |
| B.0470 | | POHD CLOSUNE |

| WEATHER CONDITIONS | Now | Past 24 Has there been a heavy rain in the last 7 days? hours • Yes No |
|----------------------------|---|--|
| | storm (heavy rain) rain (steady rain) showers (intermittent) % wcloud cover | Air Temperature 90 ° C Other |
| | • clear/sunny | |
| SITE LOCATION/MAP | Draw a map of the site and indicate th | ne areas sampled (or attach a photograph) |
| | PORMEN PUT BEORDE | 5-BAD-052412-041 (JOODED) |
| | Anca Ding Rices, | Scope (|
| | Stope Orive | |
| | | |
| | 9 6 | gry Ast Pors |
| STREAM CHARACTERIZATION | Stream Subsystem - EPHONE • Perennial • Intermittent • Tio | |
| | Stream Origin Glacial Non-glacial montane Swamp and bog Gther | Catchment Areakm² |

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

| WATERSHED FEATURES | Predominant Surrounding Landuse | Local Watershed NPS Pollution No evidence • Some potential sources Obvious sources Local Watershed Erosion None • Moderate Heavy |
|---|--|--|
| RIPARIAN VEGETATION (18 meter buffer) | Indicate the dominant type and record the domin Trees Shrubs dominant species present | |
| INSTREAM FEATURES | Estimated Reach Length 778 m Estimated Stream Width 1 m 4. Sampling Reach Area m² Area in km² (m²x1000) km² Estimated Stream Depth 0 m 1 N 1 N 1 N 1 N 1 N 1 N 1 N 1 N 1 N 1 | Canopy Cover Partly Shaded • Shaded High-Water-Mark m Proportion of Reach Represented by Stream Morphology Types Riffle % - Run % Pool % - Run % Channelized • Yes No |
| LARGE WOODY DEBRIS | LWD m ² Density of LWD m ² /km ² (LWD/ reach | h area) |
| AQUATIC VEGETATION NO (LOW) | Indicate the dominant type and record the domin Rooted emergent Floating Algae dominant species present Portion of the reach with aquatic vegetation | • Rooted floating • Free floating |
| WATER QUALITY | Temperature0 C Specific Conductance Dissolved Oxygen pH Turbidity WQ Instrument Used | Water Odors Notinal/None · Sewage Petroleum · Chemical Fishy · Other Water Surface Oils Slick · Sheen · Globs · Flecks None · Other Turbidity (if not measured) Clear · Slightly turbid · Turbid Opaque · Stained · Other |
| SEDIMENT/ SUBSTRATE | Odors Normal Chemical Other Oils Absent Slight Moderate Petroleum None Porfuse | Deposits Sludge Sawdust Paper fiber Sand Relict shells Other Looking at stones which are not deeply embedded, are the undersides black in color? Yes No |

| INORGANIC SUBSTRATE COMPONENTS (should add up to 100%) | | | ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%) | | |
|---|----------------------|------------------------------------|--|--|-----------------------------------|
| Substrate Type | Diameter | % Composition in Sampling Reach | Substrate Type | Characteristic | % Composition in Sampling Area |
| Bedrock | | 50 | Detritus | sticks, wood, coarse plant materials (CPOM) | |
| Boulder | > 256 mm (10") | 10 | materials (CPOM) | | |
| Cobble | 64-256 mm (2.5"-10") | | Muck-Mud | black, very fine organic | |
| Gravel | 2-64 mm (0.1"-2.5") | 20 | | (FPOM) | |
| Sand | 0.06-2mm (gritty) | 10 | Marl | grey, shell fragments | |
| Silt | 0.004-0.06 mm | 10 | | | |
| Clay | < 0.004 mm (slick) | |] | | |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| STREAM NAME 5- BAO-05242-04 | LOCATION AED BY SANDY, LAWRENCE CO., KY |
|-----------------------------------|---|
| STATION# RIVERMILE | STREAM CLASS — |
| LAT 38.182538 LONG-82.636/75 | RIVER BASIN — |
| STORET# | AGENCY |
| INVESTIGATORS B. 0770 M. THOMAYER | |
| FORM COMPLETED BY | DATE 0524/2 REASON FOR SURVEY |
| B. 0170 | TIME ///65 (AM) PM |

| | Habitat | | Condition Category | | | |
|--|---|---|---|---|--|--|
| | Parameter | Optimal | Suboptimal | Marginal | Poor | |
| | 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | |
| | SCORE (| 20 19 18 17 16 | 15 14 13 12 🛈 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| n sampling reach | 2. Embeddedness | Gravel, cobble, and boulder particles are 0- 25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | |
| ted in | score 5 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 🚳 7 6 | 5 4 3 2 1 0 | |
| Parameters to be evaluated in sampling reach | 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/ depth regime (usually slow-deep). | |
| ıram | SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 🕥 Ó | |
| Par | 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | |
| | SCORE O | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 🕸 7 6 | 5 4 3 2 1 0 | |
| | 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. | |
| 28 | SCORE U | 20 19 18 17 16 | 15 14 1 3 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

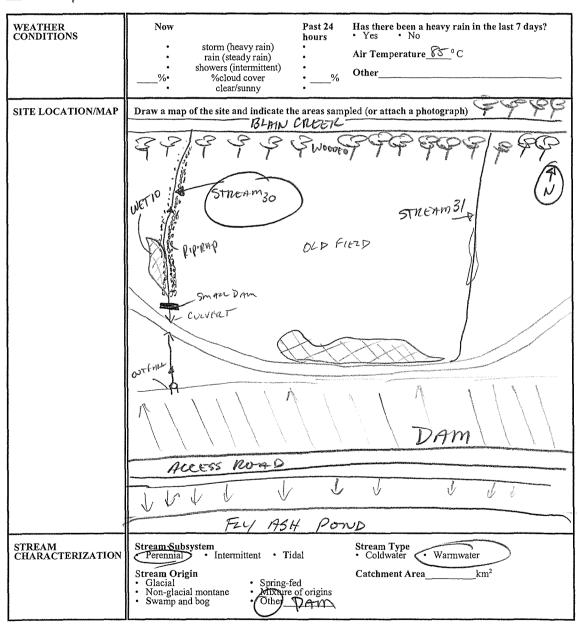
| | Habitat | | Condition | Category | |
|--|--|--|--|---|---|
| | Parameter Parameter | Optimal | Suboptimal | Marginal | Poor |
| | 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. |
| | score /O | 20 19 18 17 16 | 15 14 13 12 11 | (10) 9 8 7 6 | 5 4 3 2 1 0 |
| g reach | 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. |
| amp | SCORE 5 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 3 4 3 2 1 0 |
| Parameters to be evaluated broader than sampling reach | 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. |
| pe ev | SCORE (LB) | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| rs to | SCORE (RB) | Right Bank 10 9 | 8 7 🕏 | 5 4 3 | 2 1 0 |
| Parameters | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. |
| | SCORE $\frac{7}{2}$ (LB) | Left Bank 10 9 | 8 7 6 | 5 4 (3) | 2 1 0 |
| | SCORE 3 (RB) | Right Bank 10 9 | 8 7 6 | <u> </u> | 2 1 0 |
| | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal. | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. |
| A | SCORE 5 (LB) | Left Bank 10 9 | 8 7 6 | 5 4 (8) | 2 1 0 |
| 8 | SCORE 3 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |

Total Score

Canafil outfall 1 Stream 30

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

| STREAM NAME Jandfill ourfress / | LOCATION AL-P BIG | BANDY | | | |
|---------------------------------|----------------------|----------------|--|--|--|
| STATION# RIVERMILE | STREAM CLASS | * | | | |
| LAT 38 188 125 LONG-92 (133499 | RIVER BASIN | | | | |
| STORET# | AGENCY | | | | |
| INVESTIGATORS MOT, PR | INVESTIGATORS MOT PR | | | | |
| FORM COMPLETED BY | | SON FOR SURVEY | | | |
| MOT, RAS | THVIE 0500 AM PM | OND CLOSURE | | | |



PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

| WATERSHED FEATURES RIPARIAN VEGETATION (18 meter buffer) | Predominant Surrounding Landuse Forest | ominant species present • Grasses • Herbaceous |
|--|---|--|
| INSTREAM FEATURES | dominant species present Estimated Reach Length Estimated Stream Width Sampling Reach Area Area in km² (m²x1000) Estimated Stream Depth Surface Velocity (at thalweg) | Canopy Cover Partly open Partly shaded • Shaded High Water Markm Proportion of Reach Represented by Stream Morphology Types Riffle 50 % • Run 50 % Pool 70 % Channelized • Yes • No Dam Present Yes • No |
| LARGE WOODY DEBRIS NONE | LWDm² Density of LWDm²/km² (LWD/ | reach area) |
| AQUATIC VEGETATION | Indicate the dominant type and record the d Rooted emergent Floating Algae Rooted Algae dominant species present Portion of the reach with aquatic vegetation | ent · Rootêd floating · Free floating |
| WATER QUALITY | Temperature ° C Specific Conductance Dissolved Oxygen pH Turbidity WQ Instrument Used | Water Odors Normal/Norre Sewage Petroleum |
| SEDIMENT/ SUBSTRATE | Odors Normal Chemical Other Oils Absent Slight Moderate Petroleum None Prof | Relict shells Other Looking at stones which are not deeply embedded, are the undersides black in color? |
| INORGANIC SUB | STRATE COMPONENTS | ORGANIC SUBSTRATE COMPONENTS |

| INORGANIC SUBSTRATE COMPONENTS (should add up to 100%) | | | ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%) | | |
|---|----------------------|------------------------------------|---|--------------------------|-----------------------------------|
| Substrate Type | Diameter | % Composition in Sampling Reach | Substrate Type | Characteristic | % Composition in Sampling Area |
| Bedrock | | | Detritus sticks, wood, coarse plant | | |
| Boulder | > 256 mm (10") | 10 | | materials (CPOM) | |
| Cobble | 64-256 mm (2.5"-10") | 30 | Muck-Mud | black, very fine organic | |
| Gravel | 2-64 mm (0.1"-2.5") | 25 | | (FPOM) | |
| Sand | 0.06-2mm (gritty) | 1-6 | Marl | grey, shell fragments | |
| Silt | 0.004-0.06 mm | 25 |] | | |
| Clay | < 0.004 mm (slick) | | | | |

RIP-RAP ON BANKS & SUBSTRATE

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| STREAM NAME STR. 30 | LOCATION AEP BILL SANDLY | | |
|---------------------|-----------------------------------|--|--|
| STATION # RIVERMILE | STREAM CLASS | | |
| LATLONG | RIVER BASIN | | |
| STORET# | AGENCY | | |
| INVESTIGATORS | | | |
| FORM COMPLETED BY | DATE REASON FOR SURVEY TIME AM PM | | |

| | Habitat | | Condition | Category | |
|--|---|---|---|---|--|
| | Parameter | Optimal | Suboptimal | Marginal | Poor |
| | 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. |
| | score !! | 20 19 18 17 16 | 15 14 13 12 (17) | 10 9 8 7 6 | 5 4 3 2 1 0 |
| sampling reach | 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25- 50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50- 75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. |
| ed in | SCORE J | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | (5) 4 3 2 1 0 |
| Parameters to be evaluated in sampling reach | 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/ depth regime (usually slow-deep). |
| aran | SCORE (| 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 🕤 6 | 5 4 3 2 1 0 |
| P | 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
| | SCORE (4 | 20 19 18 17 16 | 15 (4) 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| .,1 | 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. |
| MH | SCORE /U | 20 19 18 17 16 | 15 14 13 12 11 | (fo) 9 8 7 6 | 5 4 3 2 1 0 |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| | Habitat | | Condition | Category | |
|--|---|--|--|--|---|
| | Parameter | Optimal | Suboptimal | Marginal | Poor |
| | 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. |
| | SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 (1)0 |
| ing reach | 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. |
| ampl | SCORE 0 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 (8) 7 6 | 5 4 3 2 1 0 |
| Parameters to be evaluated broader than sampling reach | 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. SCORE (LB) | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. Left Bank 10 | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. |
| s to | SCORE (RB) | Right Bank 10 (9) | 8 7 6 | 5 4 3 | 2 1 0 |
| A Parameter | 9. Vegetative Protection (score each bank) More than 90% of the streambank surfaces immediate riparian zerovered by native vegetation, including trees, understory shruor nonwoody macrophytes; vegetated disruption through grazing or mowing minimal or not evide almost all plants allot to grow naturally. | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one- half of the potential plant stubble height remaining. | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. |
| | SCORE (LB) | Left Bank 10 9 | 8 7 🔞 | 5 4 3 | 2 1 0 |
| | SCORE (RB) | Right Bank 10 9 | 8 7 (6) | 5 4 3 | 2 1 0 |
| 0 | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal. | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. |
| | SCORE (LB) | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 0 0 |
| | SCORE (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 0 0 |

Total Score

41

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

| STREAM NAME OUTFALL # 3 | LOCATION AEP BK, SANDI/ |
|------------------------------|---|
| STATION # RIVERMILE | STREAM CLASS |
| LAT 38.18806/LONG -82.63079/ | RIVER BASIN |
| STORET# | AGENCY |
| INVESTIGATORS NOT. PR | |
| FORM COMPLETED BY | DATE 6/2/12 REASON FOR SURVEY TIME 5/2/0 AM PM FOND CLOSURE |

| WEATHER CONDITIONS | Now Past 24 hours Yes No storm (heavy rain) rain (steady rain) showers (intermittent) Modeling the following storm of the last 7 days? Air Temperature Other Clear/sunny Other |
|-----------------------|--|
| SITE LOCATION/MAP | Draw a map of the site and indicate the areas sampled (or attach a photograph) BURIN CREEK TORON STANDARD Small (LOSER SPREADER) SMALL IS OUTFAIL OUTFAIL |
| STREAM | Stream Subsystem • Perennial • Intermittent • Tidal • Coldwater • Warmwater |
| CHARACTERIZATION | • Perennial • Intermittent • Tidal • Coldwater • Warmwater Stream Origin |

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

| WATERSHED FEATURES | Predominant Surrounding Landuse Forest Commercial Industrial Industrial Residential Other Pam Pam Pam Pam Pam Pam Pam Pa | Local Watershed NPS Pollution No exidence Some potential sources Cobvious sources Local Watershed Erosion None Moderate Heavy |
|---|--|--|
| RIPARIAN VEGETATION (18 meter buffer) | Indicate the dominant type and record the domina • Trees • Shrubs • dominant species present | |
| INSTREAM FEATURES | Estimated Reach Length m Estimated Stream Width Sm Ft. Sampling Reach Area m² Area in km² (m²x1000) km² Estimated Stream Depth S m/sec m/sec (at thalweg) | Canopy Cover Partly open Partly shaded • Shaded High Water Markm Proportion of Reach Represented by Stream Morphology Types • Riffle% • Run/% • Pool |
| LARGE WOODY DEBRIS HOULE | LWD m ² /km ² (LWD/ reach | h area) |
| AQUATIC VEGETATION | Indicate the dominant type and record the domina • Rooted emergent • Rooted submergent • Attached Algae dominant species present Portion of the reach with aquatic vegetation | • Rooted floating • Free floating |
| WATER QUALITY | Temperature ° C Specific Conductance Dissolved Oxygen pH Turbidity WQ Instrument Used | Water Odors Normal None • Sewage Petroleum • Chemical Fishy • Other Water Surface Oils Slick • Sheen • Globs • Flecks None • Other Turbidity (if not measured) Clear • Slightly turbid • Turbid Opaque • Stained • Other |
| SEDIMENT/ SUBSTRATE | Odors Norma Chemical Other Oils Anaerobic None Oils Anaerobic Petroleum None Profuse | Deposits • Sludge • Sawdust • Paper fiber • Sand • Relict shells • Other Looking at stones which are not deeply embedded, are the undersides black in color? • Yes • No |

| INC | INORGANIC SUBSTRATE COMPONENTS (should add up to 100%) | | | ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%) | | |
|-------------------|---|------------------------------------|-------------------|--|-----------------------------------|--|
| Substrate Type | Diameter | % Composition in Sampling Reach | Substrate Type | Characteristic | % Composition in Sampling Area | |
| Bedrock | | | Detritus | sticks, wood, coarse plant | | |
| Boulder | > 256 mm (10") | | 1 | materials (CPOM) | 20 | |
| Cobble | 64-256 mm (2.5"-10") | 10 | Muck-Mud | black, very fine organic | | |
| Gravel | 2-64 mm (0.1"-2.5") | 30 | | (FPOM) | | |
| Sand | 0.06-2mm (gritty) | | Marl | grey, shell fragments | | |
| Silt | 0.004-0.06 mm | 40 |] | | | |
| Clay | < 0.004 mm (slick) | |] | | | |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| STREAM NAME STREAM 31 | LOCATION AEP BIHSHNOU | | |
|---------------------------------|---|--|--|
| STATION # RIVERMILE | STREAM CLASS / | | |
| LAT 39, 188601 LONG-82. (130791 | RIVER BASIN | | |
| STORET # | AGENCY | | |
| INVESTIGATORS | | | |
| FORM COMPLETED BY | DATE OG 54/12 REASON FOR SURVEY TIME AM PM | | |

| | Habitat | Condition Category | | | | |
|--|---|---|---|---|---|--|
| | Parameter | Optimal | Suboptimal | Marginal | Poor | |
| | 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | |
| | SCORE 9 | 20 19 18 17 16 | 15 14 13 12 11 | 10 🗿 8 7 6 | 5 4 3 2 1 0 | |
| sampling reach | 2. Embeddedness | Gravel, cobble, and boulder particles are 0- 25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25- 50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50- 75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | |
| ted in | SCORE & | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 (6) 7 6 | 5 4 3 2 1 0 | |
| Parameters to be evaluated in sampling reach | 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow- deep, slow-shallow, fast- deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/ depth regime (usually slow-deep). | |
| ıram | score 5 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| Pa | 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | |
| | SCORE -> | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | Ø 4 3 2 1 0 | |
| | 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. | |
| | SCORE /() | 20 19 18 17 16 | 15 14 13 12 11 | 100 9 8 7 6 | 5 4 3 2 1 0 | |

57

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| | Wahitat | | Condition | Category | |
|--|--|--|--|--|---|
| | Habitat Parameter | Optimal | Suboptimal | Marginal | Poor |
| | 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. |
| | SCORE 7 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 (4) 3 2 1 0 |
| ling reach | 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. |
| amp | score 5 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | <u>(5)</u> 4 3 2 1 0 |
| Parameters to be evaluated broader than sampling reach | 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. |
| e eva | SCORE 6 (LB) | Left Bank 10 9 | 8 7 😥 | 5 4 3 | 2 1 0 |
| to be | SCORE ((RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| Parameters | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one- half of the potential plant stubble height remaining. | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. |
| 12 | SCORE \mathcal{Q} (LB) | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| | SCORE (P) (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal. | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. |
| 10 | SCORE 5 (LB) | Left Bank 10 9 | \$ 7 7 6 | (5) 4 3 | 2 1 0 |
| - | SCORE (RB) | Right Bank 10 9 | 8 7 6 | (5) 4 3 | 2 1 0 |

Total Score S

43

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

| STREAM NAME LANFIL OUTFALL & | LOCATION ARP BIG SANDI |
|------------------------------|--|
| STATION# RIVERMILE | STREAM CLASS |
| LAT 38. 188/2000 - 82,6317 | 73 RIVER BASIN — |
| STORET# — | AGENCY |
| INVESTIGATORS MOT PR | |
| FORM COMPLETED BY | DATE (1/1/2) REASON FOR SURVEY |
| MDT. BAD | POND CLOSURE |
| | |
| WEATHER Now CONDITIONS | Past 24 Has there been a heavy rain in the last 7 days? hours • Yes • No |

| WEATHER CONDITIONS | Now storm (heavy rain) rain (steady rain) showers (intermittent) % %cloud cover clear/sunny | Past 24 Has there been a heavy rain in the last 7 days? hours 'Yes 'No Air Temperature C Other |
|----------------------------|---|--|
| SITE LOCATION/MAP | Draw a map of the site and indicate the state of the site and indicate the state of the site and indicate the | PLAIN CREEK VEHETATE SUSPECTION STREAM 32 WET 12 |
| | D. Acc | AM ESS NOAD |
| STREAM CHARACTERIZATION | Stream Subsystem Perennial Intermittent Ti Stream Origin Glacial Spring-1 Non-glacial montane Swamp and bog Other Stream Origin | Catchment Areakm² fed of origins |

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

| WATERSHED FEATURES Predominant Surrounding Landuse Forest Commercial Field/Pasture Industrial Other Forest Commercial Industrial Other Forest Obvious sources Commercial Obvious sources Come potential sour Obvious sources Local Watershed NPS Pollution No evidence Obvious sources Local Watershed Erosion None Moderate Heavy | | | | | potential sources | | |
|--|----------------------|---|---|---|--|---|--|
| RIPARIA VEGETA (18 meter | N TION buffer) | Indicate • Trees | e the dominant type and • Sh | record the do | minant species present He | rbaceous | |
| | | domina | nt species present | CLOCK | fornoc, money war | 420_ | |
| INSTREA FEATUR | | Estimat Estimat | ed Reach Length ed Stream Width | m | Canopy Cover Partly open Partly | | |
| | | | ng Reach Area | | High Water Mark | | |
| | | Area in | km² (m²x1000) | km² | Proportion of Reach Re Morphology Types | epresented by Stream | |
| | | Estimat | ed Stream Depth | <u> </u> | • Riffle % • Pool % | Run%fore | |
| | | Surface (at thal | Velocitym weg) | /sec | Channelized Yes Dam Present Yes | • No | |
| LARGE V DEBRIS | VOODY JONE | ll . | m² of LWDm | 1²/km² (LWD / 1 | reach area) | | |
| AQUATIO VEGETA | C TION | Indicate • Roote • Floati | e the dominant type and d emergent • Ro ng Algae • At | record the do ooted submerge tached Algae | minant species present nt • Rooted floating | Free floating | |
| | | domina | nt species present | MONEYWO | M, BONESET, CAREX | Spe | |
| <u> </u> | | | of the reach with aquat | | | | |
| WATER | QUALITY | Specific Dissolve | eature ° C Conductance ed Oxygen | | Water Odors Normal/None Sewa Petroleum Fishy Water Surface Oils | Ī | |
| | | Water Surface Oils • Slick • Sheen • Globs • Flecks | | | | | |
| | • | ı | trument Used | | Turbidity (if not measu | red) rbid • Turbid • Turbid | |
| SEDIME! SUBSTRA | | Odors Norm Chem Other | • Sewage lical • Anaerobic | Petroleum None | Deposits • Sludge • Sawdust • Relict shells | • Paper fiber • Sand Other | |
| | | Oils | Slight • Modera | te • Profu | are the undersides blac | h are not deeply embedded, k in color? | |
| INC | | STRATE (| COMPONENTS 100%) | | ORGANIC SUBSTRATE C (does not necessarily add | | |
| Substrate Diameter Type | | % Composition in Sampling Reach | Substrate Type | Characteristic | % Composition in Sampling Area | | |
| Bedrock | | | | Detritus | sticks, wood, coarse plant materials (CPOM) | | |
| Boulder | > 256 mm (10") | | | | materials (Ct Olvi) | 50 | |
| Cobble | 64-256 mm (2.5"-10") | | 20 | Muck-Mud | black, very fine organic (FPOM) | | |
| Gravel | 2-64 mm (0.1"- | 2.5") | 40 | | | | |
| Sand | 0.06-2mm (gritt | y) | | Marl | grey, shell fragments | | |
| Silt | 0.004-0.06 mm | | /0 | | | | |

Clay

< 0.004 mm (slick)

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| STREAM NAME TINEAM 31 | LOCATION AEP BIGGANDY | | | | |
|-----------------------------|---|--|--|--|--|
| STATION# RIVERMILE | STREAM CLASS | | | | |
| LAT LONG | RIVER BASIN | | | | |
| STORET# | AGENCY | | | | |
| INVESTIGATORS | | | | | |
| FORM COMPLETED BY MDT, BAD | DATE CLOSTIF REASON FOR SURVEY TIME OGO MPM PONDCLOSURE | | | | |

| | Habitat | Habitat Condition Category | | | | | |
|--|---|---|---|---|---|--|--|
| | Parameter | Optimal | Suboptimal | Marginal | Poor | | |
| | 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | | |
| | SCORE + | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | |
| ı sampling reach | 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50- 75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | | |
| ed ir | SCORE + | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 🗘 6 | 5 4 3 2 1 0 | | |
| Parameters to be evaluated in sampling reach | 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow- deep, slow-shallow, fast- deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/ depth regime (usually slow-deep). | | |
| ram | SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 8) 2 1 0 | | |
| Pa | 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | | |
| | SCORE 1 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | |
| | 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. | | |
| | SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 1 | | |

27

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| Г | | Habitat | | | C | ondition | Categor | у | | | | |
|---------|--|--|--|--|--|--|--|---|---|--|--|--|
| | | Parameter Parameter | Optimal | Subo | optima | l l | | Margin: | al | | Poor | |
| | | 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | Some chanr present, usu of bridge ab evidence of channelizati dredging, (g past 20 yr) r present, but channelizati present. | pally in putment past ion, i.e. greater may be recent | areas s; , than | extensive or shoring presente and 40 to | ization r e; embar ng structi on both t o 80% o annelize d. | nkments ures oanks; f stream | Banks shor cementhe streamelic channelic disrupted habitat gremoved | nt; over 8 m reach zed and l. Instre reatly al | am tered or |
| 1 | | SCORE (| 20 19 18 17 16 | 15 14 | 13 1 | 2 11 | 10 9 | 8 | 7 6 | 5 4 | 3 2 | ① 0 |
| 11. | ung reach | 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | Occurrence infrequent; between rift the width of between 7 to | distance fles divi f the str | e ided by | bottom of some had between the widt | contours bitat; dis riffles d | stance ivided by stream is | shallow | riffles; p distance vided by the strea | between the |
| | samp | SCORE O | 20 19 18 17 16 | 15 14 | 13 1 | 2 11 | 10 9 | 8 | 7 6 | 5 4 | 3 2 | 1 (1) |
| 1 7 7 1 | Farameters to be evaluated broader than sampling reach | 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | Moderately infrequent, s erosion mos over. 5-30% reach has ar | small a stly hea % of ba | reas of led nk in | 60% of areas of | - | | Unstable areas; "r frequent sections obvious 60-100% erosiona | aw" area along st and bend bank slo 6 of bank | s raight ds; oughing; |
| ` | e ev | SCORE (LB) | Left Bank 10 9 | (3) | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| | s to p | SCORE <u>\$</u> (RB) | Right Bank 10 9 | (8) | 7 | 6 | 5 | 4 | 3 | 2 | 1 | () |
| | | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | 70-90% of istreambank covered by vegetation, of plants is represented evident but full plant gr to any great than one-hapotential plantight remarks. | surface native but one not wel ; disrup not affi rowth p t extent alf of the ant stul- aining. | e class II- otion ecting otential ; more e | covered disrupti patches closely commo half of t stubble | ank surfit by vege on obvio of bare s cropped n; less the he poten height re | tation; us; soil or vegetation an one- tial plant emaining. | streambe covered disruption vegetation vegetation removed 5 centime average | by veget on of stre on is ver on has be I to leters or stubble I | aces ation; ambank y high; een less in neight. |
| 1 | ٥) | SCORE $\frac{4}{5}$ (LB) | Left Bank 10 9 | 8 | 7 | 6 | (5) | 4 | 3 | 2 | <u>l</u> | 0 |
| | | SCORE (RB) | Right Bank 10 9 | 8 | 7 | 6 | (5) | 4 | 3 | 2 | l | 0 |
| | aler. | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | Width of rij 12-18 mete activities ha zone only n | rs; hum ave imp | nan pacted lly. | 12 mete activitie zone a g | ers; huma es have ir great dea | npacted l. | meters: riparian human a | little or r vegetation | on due to |
| | • | SCORE (LB) | Left Bank 10 9 | 8 | 7 | 6 | 5 | (4) (4) | 3 | 2 | 1 | 0 |
| | | SCORE (RB) | Right Bank 10 9 | 8 | 7 | 6 | 5 | T_A | 3 | 2 | 1 | 0 |

Total Score _______

A-8

Stream 44 5-nd + 5/15/2012 - 7 PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

| C. (| I Creek |
|--|---|
| STREAM NAME 5-NOT 5/15/12-7 Horsel | LOCATION Big Sandy Plant: Lawrence Co KY |
| STATION # RIVERMILE | STREAM CLASS |
| LAT 38./8353 LONG 82.65/65 | RIVER BASIN |
| STORET# | AGENCY |
| INVESTIGATORS M. Thomases, B. Oth | to |
| FORM COMPLETED BY M. THOMUSER B. OHO; URS COLD | DATE 15 May 2012 TIME 1713 AM PM Landfill |

| 1 DOUGE POUL | , ORS CAP 2410(111) |
|--------------------------------------|---|
| WEATHER CONDITIONS | Now Past 24 hours Yes Yes You Air Temperature Cother clear/sumy Past 24 hours Yes Yes You Air Temperature Other |
| SITE LOCATION/MAP | Draw a map of the site and indicate the areas sampled (or attach a photograph) |
| | Land State of the |
| several photos were also taken | P John Flyhold |
| STREAM | Stream Subsystem Stream Type Perennial Intermittent Tidal Coldwater Warmwater |
| CHARACTERIZATION | |
| | Stream Origin Output Glacial Non-glacial montane Swamp and bog Catchment Areakm² Mixture of origins Other 669 |

Stylan 44 5-12-7 PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

| WATERSHED FEATURES | Predominant Surrounding Landuse Foresp • Commercial FieldPasture • Industrial • Agricultural • Other • Residential | Local Watershed NPS Pollution No evidence • Some potential sources • Obvious sources Local Watershed Erosion • None • Moderate • Heavy |
|---|--|---|
| RIPARIAN VEGETATION (18 meter buffer) | Indicate the dominant type and record the domina Shrubs . Shrubs . dominant species present Wixed wes - and | ant species present Grasses Herbaceous alt-naple-hich-beech |
| INSTREAM FEATURES | Estimated Reach Length Estimated Stream Width Sampling Reach Area Mrea in km² (m²x1000) Estimated Stream Depth Surface Velocity (at thalweg) | Canopy Cover Partly open Partly shaded Shaded High Water Mark Proportion of Reach Represented by Stream Morphology Types Riffle 60 % Run 30 % Pool 10 % Channelized Yes No Dam Present Yes |
| LARGE WOODY DEBRIS | LWDm ² /ofs of a Density of LWDm ² /km ² (LWD/ reach | woody debnis |
| AQUATIC VEGETATION | Indicate the dominant type and record the domina Rooted emergent Floating Algae dominant species present Portion of the reach with aquatic vegetation | • Rooted floating • Free floating |
| WATER QUALITY | Temperature ° C Specific Conductance Dissolved Oxygen pH Turbidity WQ Instrument Used | Water Odors Normal/None • Sewage Petroteum • Chemical Fishy • Other Water Surface Oils Slick • Sheen • Globs • Flecks None • Other Turbidity (if not measured) Clear Slightly turbid • Turbid Opaque • Stained • Other |
| SEDIMENT/ SUBSTRATE | Odors Normal Chemical Other Oils Slight Moderate Petroleum None Profuse | Deposits Sludge Sawdust Paper fiber Relict shells Other Looking at stones which are not deeply embedded, are the undersides black in color? Yes |

| INORGANIC SUBSTRATE COMPONENTS (should add up to 100%) | | | ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%) | | | | |
|---|----------------------|------------------------------------|--|--|-----------------------------------|--|--|
| Substrate Type | Diameter | % Composition in Sampling Reach | Substrate Type | Characteristic | % Composition in Sampling Area | | |
| Bedrock | | 15 | Detritus | sticks, wood, coarse plant materials (CPOM) | | | |
| Boulder | > 256 mm (10") | 15 | | materials (CPOM) | | | |
| Cobble | 64-256 mm (2.5"-10") | 40 | Muck-Mud | black, very fine organic | | | |
| Gravel | 2-64 mm (0.1"-2.5") | 15 | | (FPOM) | | | |
| Sand | 0.06-2mm (gritty) | 10 | Marl | grey, shell fragments | | | |
| Silt | 0.004-0.06 mm | 5 |] | | | | |
| Clay | < 0.004 mm (slick) | | | | | | |

Stream 44 5-Nd+5/15/2012-7 HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| LOCATION Big Sandy Plant: Lawrence Co., RY |
|--|
| STREAM CLASS |
| RIVER BASIN |
| AGENCY |
| |
| DATE 15 May 2012 REASON FOR SURVEY |
| TIME 1713 AM EN Landfill |
| |

| | Habitat | | Condition | Category | |
|--|---|---|---|---|--|
| | Parameter | Opti mal | Suboptimal | Marginal | Poor |
| | 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. |
| | score 17 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| n sampling reach | 2. Embeddedness | Gravel, cobble, and boulder particles are 0- 25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50- 75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. |
| ted in | SCORE / | 20 19 18 🕜 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| Parameters to be evaluated in sampling reach | 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/ depth regime (usually slow-deep). |
| ıram | SCORE // | 20 19 18 17 16 | 15 14 13 12 🕕 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| P ₁ | 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
| | score (7 | 20 19 18 17 16 | (15) 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| | 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. |
| | SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |

Stycam 49 5-nd+5/5/2012-7 HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| | Habitat | | Condition | Category | |
|--|--|--|--|---|---|
| | Parameter | Optimal | Suboptimal | Marginal | Poor |
| | 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. |
| | score 17 | 20 19 18 🗗 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| ling reach | 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. |
| amp | score /8 | 20 19 🔞 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| Parameters to be evaluated broader than sampling reach | 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. |
| e ev | SCORE <u>(</u> (LB) | Left Bank 10 9 | 8 7 🚳 | 5 4 3 | 2 1 0 |
| s to k | SCORE <u>(</u> (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| Parameter | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. |
| | SCORE (LB) | Left Bank 10 9 | 8 7 6 | 5 4 🚳 | 2 1 0 |
| | SCORE <u>3</u> (RB) | Right Bank 10 9 | 8 7 6 | 5 4 (3) | 2 1 0 |
| | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal. | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. |
| , | SCORE $\frac{Q}{Q}$ (LB) | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| 6 | SCORE (RB) | Right Bank 10 9 | (8) 7 6 | 5 4 3 | 2 1 0 |

Total Score 142

Stream 68 5-pr 6/06/2012 PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHIP (FRONT)

| STREAM NAME 3- pr 6/6/2012-2 | LOCATION Big Sandy Plant, Lawrence Co, Ky |
|--|---|
| STATION#RIVERMILE | STREAM CLASS |
| LAT 38.17564 LONG-82.64765 | RIVER BASIN |
| STORET# | AGENCY |
| INVESTIGATORS M. Thomas, B. OHO | , |
| FORM COMPLETED BY NThomager B. Otto, URS Corp | DATE 6 June 2012 REASON FOR SURVEY TIME 1227 AM PM Land fill |
| | |

| VII HOMAGE, 12.0110 | y or cif |
|-----------------------------------|---|
| WEATHER CONDITIONS | Now Past 24 hours Storm (heavy rain) rain (steady rain) showers (intermittent) % % cloud cover elear/sumy Past 24 hours Yes Yes Yes Air Temperature Other Other |
| SITE LOCATION/MAP | Draw a map of the site and indicate the areas sampled (or attach a photograph) |
| | Goest |
| several photos were also taken | |
| | Ž . |
| STREAM CHARACTERIZATION | Stream-Subsystem Stream Type Perennial • Intermittent • Tidal • Coldwater Warmwater |
| | Stream Origin Glacial Non-glacial montane Swamp and bog • Spring-fed • Mixture of origins • Other flags |

Stream 68 5-pr 6/6/2012-2 PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

| WATERSHED FEATURES | | Local Watershed NPS Pollution No evidence • Some potential sources Local Watershed Erosion None Moderate • Heavy Control of the Control of |
|---------------------------------|---|---|
| VEGETATION (18 meter buffer) | Indicate the dominant type and record the domina • Shrubs dominant species present Wixed Mes : | ogh-raple-hickory-beech |
| INSTREAM FEATURES | | Canopy Cover Partly open Partly shaded Shaded High Water Mark Proportion of Reach Represented by Stream Morphology Types Riffle New Pool |
| LARGE WOODY DEBRIS | LWD m² lof5 of 10000 Density of LWD m²/km² (LWD/ reach | dy debnis |
| AQUATIC VEGETATION | Indicate the dominant type and record the domina Rooted emergent Floating Algae dominant species present Portion of the reach with aquatic vegetation | Rooted floating Free floating |
| WATER QUALITY | Temperature ° C Specific Conductance JJ Adde Speci | Water Odors Nermat/None • Sewage Petroleum • Chemical Fishy • Other Water Surface Oils Slick • Sheen • Globs • Flecks None • Other Turbidity (if not measured) • Clear • Slightly turbid • Turbid • Opaque • Stained |
| SEDIMENT/ SUBSTRATE | Odors Odors Chemical Other Oils Absent Sewage Petroleum None None Profuse | Deposits Sudge Sawdust Paper fiber Sand Other Looking at stones which are not deeply embedded, are the undersides black in color? Yes |

| INORGANIC SUBSTRATE COMPONENTS (should add up to 100%) | | | ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%) | | |
|---|----------------------|------------------------------------|--|----------------------------|-----------------------------------|
| Substrate Type | Diameter | % Composition in Sampling Reach | Substrate Type | Characteristic | % Composition in Sampling Area |
| Bedrock | | 10 | Detritus | sticks, wood, coarse plant | |
| Boulder | > 256 mm (10") | 30 | | materials (CPOM) | |
| Cobble | 64-256 mm (2.5"-10") | 30 | Muck-Mud | black, very fine organic | |
| Gravel | 2-64 mm (0.1"-2.5") | 25 | | (FPOM) | |
| Sand | 0.06-2mm (gritty) | 5 | Marl | grey, shell fragments | |
| Silt | 0.004-0.06 mm | | | | |
| Clay | < 0.004 mm (slick) | · | | | |

Stream 68 5-pr6/06/2012-2 HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| STREAM NAME 5-pr6/06/2012-2 | LOCATION Big Sandy Plant; Lawrence Co, WY |
|---|--|
| STATION# RIVERMILE | STREAM CLASS |
| LAT 38. 17564 LONG 82.64765 | RIVER BASIN |
| STORET# | AGENCY |
| INVESTIGATORS 4-Thomas et B.C | 9Ho |
| FORM COMPLETED BY M. ThOMMYEY, B. OHO; URS CORP | DATE 6 June 2012 REASON FOR SURVEY TIME 1227 AM PS LAND FILL |

| | Habitat | Condition Category | | | | | |
|--|---|---|---|---|--|--|--|
| | Parameter | Optimal | Suboptimal | Marginal | Poor | | |
| | 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | | |
| | SCORE /8 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | |
| n sampling reach | 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | | |
| ed in | score /8 | 20 19 (8) 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | |
| Parameters to be evaluated in sampling reach | 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow- deep, slow-shallow, fast- deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/ depth regime (usually slow-deep). | | |
| ıram | score /4 | 20 19 18 17 16 | 15 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | |
| Pa | 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | | |
| | SCORE 16 | 20 19 18 17 (6) | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | |
| | 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. | | |
| 89 | score (5 | 20 19 18 17 16 | 15 14 (13) 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | |

Stream 68 5-pr 6/06/2012-Z HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| | Uahitat | | | | |
|--|---|--|--|---|---|
| | Habitat Parameter | Optimal | Suboptimal | Marginal | Poor |
| | 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. |
| | SCORE 20 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| ling reach | 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. |
| amp | score /8 | 20 19 (8) 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| Parameters to be evaluated broader than sampling reach | 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. |
| e ev | SCORE $\frac{7}{3}$ (LB) | Left Bank 10 9 | 8 🕖 6 | 5 4 3 | 2 1 0 |
| s to b | SCORE / (RB) | Right Bank 10 9 | 8 D 6 | 5 4 3 | 2 1 0 |
| Parameters t | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. |
| | SCORE 3 (LB) | Left Bank 10 9 | 8 7 6 | 5 4 ③ | 2 1 0 |
| | score 3 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 ③ | 2 1 0 |
| | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal. | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. |
| | SCORE (LB) | Left Bank (10) 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| 78 | SCORE 10 (RB) | Right Bank (10) 9 | 8 7 6 | 5 4 3 | 2 1 0 |

Total Score 67

Stream 71 5-1245/15/2012-7 3:de PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET Channel #2 (FRONT)

| STREAM NAME 5-146f 3 | 5/15/12-7 Side #3 | LOCATION | Pig Sand | y Plant; o | Lawrence | Co. KY |
|--------------------------------------|--|---|----------------|-------------------------------------|------------------|--------------------|
| | IVERMILE | STREAM CLAS | | | | |
| LAT <u>38./8557</u> LO | ONG-82.65327 | RIVER BASIN | | | | |
| STORET# | | AGENCY | | | | |
| INVESTIGATORS M. 71 | homayer, B. Offo | 2 | | | | |
| FORM COMPLETED BY M.Thomayer, B. OHO | . UBS Corp | DATE 15 May TIME 1358 | 2012 AM PM | REASON FO | | |
| WEATHER CONDITIONS | Now | | Past 24 hours | Has there been Yes | a heavy rain i | n the last 7 days? |
| | • rain (• showers %• %c | (heavy rain) steady rain) s (intermittent) loud cover | • | Air Temperatu Other | re0 C | |
| SITE LOCATION/MAP | Draw a map of the sit | e and indicate the | e areas sample | ed (or attach a p | photograph) | 27 N |
| | | 7 | TP/ | / | J3 F | forest |
| | 7 | G | Campo 4 | |) G | 9 |
| | GP | Forest C | 7' | | 1 | \$ |
| | | ~ }) | 1 (b) | G x | | 5-Md+5/15/12-7 |
| STREAM CHARACTERIZATION | Stream Subsystem Perennial Stream Origin Glacial Non-glacial montand Swamp and bog | • Spring-fec • Mixture o | al d | Stream Type Coldwater Catchment Are | - Warmwate ea | r km² |

Stream 71

5710H 5/15/12-7 side change (BACK)

| | , year | |
|---|---|---|
| WATERSHED FEATURES | Predominant Surrounding Landuse Forest Commercial FieldPasture Industrial Agricultural Residential | Local Watershed NPS Pollution • No evidence Some potential sources • Obvious sources Local Watershed Erosion • None • Moderate • Heavy |
| RIPARIAN VEGETATION (18 meter buffer) | Indicate the dominant type and record the domina Trees Shrubs dominant species present Hive Mes Say | nt species present Grasses Herbaceous L-Maple-hickory-beech |
| INSTREAM FEATURES | Estimated Reach Length / B15 and Estimated Stream Width 4-6 and 4 Sampling Reach Area m² Area in km² (m²x1000) km² Estimated Stream Depth 2 min upd Surface Velocity (at thalweg) | Canopy Cover Partly open Partly shaded Right Water Mark Proportion of Reach Represented by Stream Morphology Types Riffle 40 % Pool 70 % Channelized Yes No |
| LARGE WOODY DEBRIS | LWDm ² lots of a Density of LWDm ² /km ² (LWD/ reach | seedy debris |
| AQUATIC VEGETATION | Indicate the dominant type and record the domina Rooted emergent Floating Algae dominant species present Portion of the reach with aquatic vegetation | Rooted floating Free floating |
| WATER QUALITY | Temperature O C Specific Conductance Dissolved Oxygen pH Turbidity WQ Instrument Used | Water Odors Normal/None • Sewage Petroleum • Chemical Fishy • Other Water Surface Oils Slick • Sheen • Globs • Flecks None Other Turbidity (if not measured) Clear • Slightly turbid • Turbid Opaque • Stained • Other |
| SEDIMENT/ SUBSTRATE | Odors Norma Sewage Petroleum Chemical Anaerobic None Other Oils Absent Slight Moderate Profuse | Deposits Sludge Sawdust Paper fiber Sand Relict shells Other Looking at stones which are not deeply embedded, are the undersides black in color? Yes |
| | | |

| INORGANIC SUBSTRATE COMPONENTS (should add up to 100%) | | | ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%) | | |
|---|----------------------|------------------------------------|--|----------------------------|-----------------------------------|
| Substrate Type | Diameter | % Composition in Sampling Reach | Substrate Type | Characteristic | % Composition in Sampling Area |
| Bedrock | | | Detritus | sticks, wood, coarse plant | |
| Boulder | > 256 mm (10") | 15 | 7 | materials (CPOM) | |
| Cobble | 64-256 mm (2.5"-10") | 30 | Muck-Mud | black, very fine organic | |
| Gravel | 2-64 mm (0.1"-2.5") | 35 | | (FPOM) | |
| Sand | 0.06-2mm (gritty) | 10 | Marl | grey, shell fragments | |
| Silt | 0.004-0.06 mm | | | | |
| Clay | < 0.004 mm (slick) | 10 | | | |

Stream + 1

S-Not 5/15/2012-75ide chunne/43

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| STREAM NAMES-nots/15/12-7 5100 #3 | LOCATION Big Sandy Plant, Lawrence Co, KY | | | |
|---|---|-------------------|--|--|
| STATION # RIVERMILE | STREAM CLASS | | | |
| LAT 38./8557 LONG 82.65327 | RIVER BASIN | | | |
| STORET# | AGENCY | | | |
| INVESTIGATORS N. Thomayer, B. Otto | | | | |
| FORM COMPLETED BY H. Thomayer B. Otto : ORS Corp | DATE 15 May 2012 TIME 1358 AM 190 | REASON FOR SURVEY | | |

| | Habitat | Condition Category | | | | |
|--|---|---|---|---|--|--|
| | Parameter | Optimal | Suboptimal | Marginal | Poor | |
| | 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | |
| | score 13 | 20 19 18 17 16 | 15 14 (13) 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| sampling reach | 2. Embeddedness | Gravel, cobble, and boulder particles are 0- 25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25- 50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50- 75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | |
| ted in | score 15 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| Parameters to be evaluated in sampling reach | 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow- deep, slow-shallow, fast- deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/ depth regime (usually slow-deep). | |
| ıram | score 7 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 🕖 6 | 5 4 3 2 1 0 | |
| Pa | 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | |
| | score 13 | 20 19 18 17 16 | 15 14 🐼 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| | 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. | |
| 55 | score / | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 🕖 6 | 5 4 3 2 1 0 | |

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| | Habitat | Condition Category | | | | |
|--|---|--|--|---|---|--|
| ing reach | Parameter | Optimal | Suboptimal | Marginal | Poor | |
| | 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | |
| | score /4 | 20 19 18 17 16 | 15 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| | 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. | |
| amp | score /3 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| Parameters to be evaluated broader than sampling reach | 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. SCORE 7 (LB) | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. Left Bank 10 9 | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | |
| o pe | SCORE 7 (RB) | Right Bank 10 9 | 8 P 6 | 5 4 3 | 2 1 0 | |
| Parameters t | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | |
| | SCORE $\frac{U}{U}$ (LB) | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | |
| | SCORE (RB) | Right Bank 10 9 | 8 7 6 | 5 (4) 3 | 2 1 0 | |
| | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal. | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. | |
| | SCORE $\frac{7}{2}$ (LB) | Left Bank 10 9 | 8 1 6 | 5 4 3 | 2 1 0 | |
| 63 | SCORE (RB) | Right Bank 10 9 | 8 🗇 6 | 5 4 3 | 2 1 0 | |

Total Score 1/8



APPENDIX E DELINEATED FEATURES PHOTOGRAPHS





E1 – WETLANDS





Wetlands

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 1

Date:

May 23, 2012

Description:

Wetland 1

Facing southwest

PEM/PSS



Photo No. 2

Date:

May 23, 2012

Description:

Wetland 2

Facing east





Wetlands

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 3

Date:

May 24, 2012

Description:

Wetland 3

Facing north

PEM



Photo No. 4

Date:

May 24, 2012

Description:

Wetland 4

Facing west





Wetlands

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 5

Date:

May 24, 2012

Description:

Wetland 5

Facing south

PEM



Photo No. 6

Date:

May 24, 2012

Description:

Wetland 6

Facing northwest

PEM/PSS





Wetlands

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 7

Date:

May 24, 2012

Description:

Wetland 7

Facing northeast

PEM



Photo No. 8

Date:

May 24, 2012

Description:

Wetland 8

Facing north





Wetlands

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 9

Date:

June 5, 2012

Description:

Wetland 9

Facing northeast

PEM/PSS



Photo No. 10

Date:

June 7, 2012

Description:

Wetland 10

Facing west





Wetlands

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 11

Date:

June 7, 2012

Description:

Wetland 11

Facing north

PEM



Photo No. 12

Date:

June 7, 2012

Description:

Wetland 12

Facing north





Wetlands

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 13

Date:

June 7, 2012

Description:

Wetland 13

Facing southeast

PEM



Photo No. 14

Date:

October 15, 2012

Description:

Wetland 14

Facing north

PEM/PSS





Wetlands

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 15

Date:

October 15, 2012

Description:

Wetland 15

Facing east

PEM



Photo No. 16

Date:

October 15, 2012

Description:

Wetland 16

Facing east

PEM/PSS





Wetlands

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 17

Date:

October 15, 2012

Description:

Wetland 17

Facing east

PFO





E2 –STREAMS





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No.

13815152

Photo No. 1

Date:

May 2, 2012

Description:

Stream 1

Facing downstream

Ephemeral stream



Photo No. 2

Date:

May 2, 2012

Description:

Stream 2

Facing upstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 3

Date:

May 2, 2012

Description:

Stream 3

Facing downstream

Ephemeral stream



Photo No. 4

Date:

October 15, 2012

Description:

Stream 4

Facing Downstream

Intermittent stream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 5

Date:

October 15, 2012

Description:

Stream 5

Facing Upstream

Ephemeral stream



Photo No. 6

Date:

May 2, 2012

Description:

Stream 6

Facing upstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 7

Date:

May 2, 2012

Description:

Stream 7

Facing upstream

Ephemeral stream



Photo No. 8

Date:

May 2, 2012

Description:

Stream 8

Facing upstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 9

Date:

May 2, 2012

Description:

Stream 9

Facing upstream

Ephemeral stream



Photo No. 10

Date:

May 3, 2012

Description:

Stream 10

Facing upstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No.

13815152

Photo No. 11

Date:

May 3, 2012

Description:

Stream 11

Facing upstream

Intermittent stream



Photo No. 12

Date:

May 3, 2012

Description:

Stream 12

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 13

Date:

May 3, 2012

Description:

Stream 13

Facing upstream

Intermittent stream



Photo No. 14

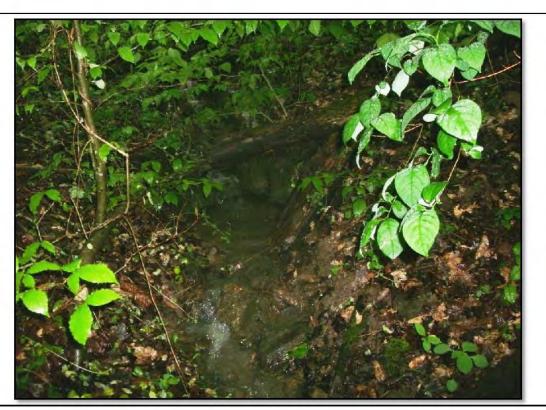
Date:

May 4, 2012

Description:

Stream 14

Facing upstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 15

Date:

May 4, 2012

Description:

Stream 15

Facing upstream

Intermittent stream



Photo No. 16

Date:

May 4, 2012

Description:

Stream 16

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 17

Date:

May 15, 2012

Description:

Stream 17

Facing upstream

Intermittent stream



Photo No. 18

Date:

May 15, 2012

Description:

Stream 18

Facing upstream

Intermittent stream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 19

Date:

May 15, 2012

Description:

Stream 19

Facing upstream

Ephemeral stream



Photo No. 20

Date:

May 15, 2012

Description:

Stream 20

Facing upstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 21

Date:

May 24, 2012

Description:

Stream 21

Facing upstream

Ephemeral stream



Photo No. 22

Date:

May 24, 2012

Description:

Stream 22

Facing downstream

Intermittent stream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 23

Date:

May 24, 2012

Description:

Stream 23

Facing downstream

Ephemeral stream



Photo No. 24

Date:

May 24, 2012

Description:

Stream 24

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 25

Date:

May 24, 2012

Description:

Stream 25

Facing downstream

Ephemeral stream



Photo No. 26

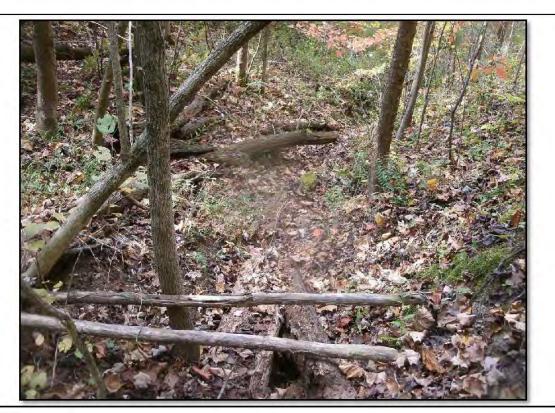
Date:

October 15, 2012

Description:

Stream 26

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 27

Date:

October 15, 2012

Description:

Stream 27

Facing upstream

Ephemeral stream



Photo No. 28

Date:

October 15, 2012

Description:

Stream 28

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 29

Date:

October 15, 2012

Description:

Stream 29

Facing downstream

Ephemeral stream



Photo No. 30

Date:

June 7, 2012

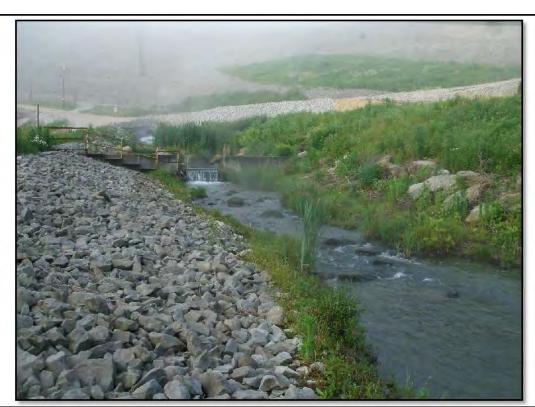
Description:

Stream 30

Landfill Outfall

Facing upstream

Perennial Stream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 31

Date:

June 7, 2012

Description:

Stream 31

Landfill Outfill

Intermittent Stream



Photo No. 32

Date:

June 7, 2012

Description:

Stream 32

Former Landfill Outfall

Facing downstream

Intermittent Stream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 33

Date:

May 3, 2012

Description:

Stream 33

Facing downstream

Ephemeral stream



Photo No. 34

Date:

May 3, 2012

Description:

Stream 34

Facing upstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 35

Date:

May 3, 2012

Description:

Stream 35

Facing downstream

Intermittent stream



Photo No. 36

Date:

May 4, 2012

Description:

Stream 36

Facing upstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 37

Date:

May 4, 2012

Description:

Stream 37

Facing upstream

Ephemeral stream



Photo No. 38

Date:

May 15, 2012

Description:

Stream 38

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 39

Date:

May 15, 2012

Description:

Stream 39

Facing downstream

Intermittent stream



Photo No. 40

Date:

May 15, 2012

Description:

Stream 40

Facing upstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 41

Date:

May 15, 2012

Description:

Stream 41

Facing upstream

Intermittent stream



Photo No. 42

Date:

May 15, 2012

Description:

Stream 42

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No.

13815152

Photo No. 43

Date:

May 15, 2012

Description:

Stream 43

Facing upstream

Ephemeral stream



Photo No. 44

Date:

May 15, 2012

Description:

Stream 44

Facing upstream

Perennial stream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 45

Date:

May 24, 2012

Description:

Stream 45

Facing upstream

Ephemeral stream



Photo No. 46

Date:

May 24, 2012

Description:

Stream 46

Facing downstream

Intermittent stream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 47

Date:

May 24, 2012

Description:

Stream 47

Facing upstream

Ephemeral stream



Photo No. 48

Date:

May 24, 2012

Description:

Stream 48

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No.

13815152

Photo No. 49

Date:

May 24, 2012

Description:

Stream 49

Facing downstream

Ephemeral stream



Photo No. 50

Date:

May 24, 2012

Description:

Stream 50

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 51

Date:

May 24, 2012

Description:

Stream 51

Ephemeral stream



Photo No. 52

Date:

June 5, 2012

Description:

Stream 52

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 53

Date:

June 5, 2012

Description:

Stream 53

Facing downstream

Ephemeral stream



Photo No. 54

Date:

June 5, 2012

Description:

Stream 54

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 55

Date:

June 5, 2012

Description:

Stream 55

Facing downstream

Ephemeral stream



Photo No. 56

Date:

June 5, 2012

Description:

Stream 56

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 57

Date:

June 6, 2012

Description:

Stream 57

Ephemeral stream



Photo No. 58

Date:

June 6, 2012

Description:

Stream 58

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 59

Date:

June 6, 2012

Description:

Stream 59

Ephemeral stream



Photo No. 60

Date:

June 6, 2012

Description:

Stream 60





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 61

Date:

June 5, 2012

Description:

Stream 61

Facing upstream

Ephemeral stream



Photo No. 62

Date:

June 5, 2012

Description:

Stream 62

Facing upstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 63

Date:

June 5, 2012

Description:

Stream 63

Facing upstream

Ephemeral stream



Photo No. 64

Date:

June 5, 2012

Description:

Stream 64

Facing upstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 65

Date:

June 5, 2012

Description:

Stream 65

Facing downstream

Ephemeral stream



Photo No. 66

Date:

June 5, 2012

Description:

Stream 66

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 67

Date:

June 6, 2012

Description:

Stream 67

Facing downstream

Ephemeral stream



Photo No. 68

Date:

June 6, 2012

Description:

Stream 68

Perennial stream





Streams

Client Name: Dames & Moore

Site Location:

Project No.

AEP

Big Sandy Pond Closure Project

13815152

Photo No. 69

Date:

June 6, 2012

Description:

Stream 69

Ephemeral stream

(no photo available)

Photo No. 70

Date:

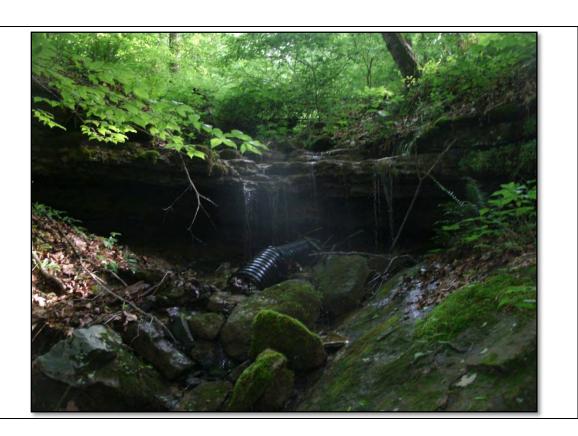
May 15, 2012

Description:

Stream 70

Facing upstream

Intermittent stream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 71

Date:

May 23, 2012

Description:

Stream 71

Facing upstream

Intermittent stream



Photo No. 72

Date:

October 15, 2012

Description:

Stream 72

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No.

13815152

Photo No. 73

Date:

October 15, 2012

Description:

Stream 73

Facing upstream

Ephemeral stream



Photo No. 74

Date:

October 15, 2012

Description:

Stream 74

Facing upstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 75

Date:

October 15, 2012

Description:

Stream 75

Facing downstream

Ephemeral stream



Photo No. 76

Date:

October 15, 2012

Description:

Stream 76

Facing upstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 77

Date:

October 15, 2012

Description:

Stream 77

Facing upstream

Ephemeral stream



Photo No. 78

Date:

October 15, 2012

Description:

Stream 78

Facing downstream





Streams

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 79

Date:

October 15, 2012

Description:

Stream 79

Facing upstream

Ephemeral stream



Photo No. 80

Date:

October 15, 2012

Description:

Stream 80

Facing downstream





E3 – PONDS





Ponds

Client Name: Dames & Moore

AEP

Site Location:

Big Sandy Pond Closure Project

Project No. 13815152

Photo No. 1

Date:

May 4, 2012

Description:

Pond 1

Facing southwest





February 6, 2015

Jill Lukehart
American Electric Power
Environmental Services – Water and Ecological Resource Services
1 Riverside Plaza
Columbus, Ohio 43215

Subject: Addendum Wetland Delineation and Stream Assessment of the Big Sandy Fly Ash Pond Closure Project; Lawrence County, Kentucky

Dear Ms. Lukehart,

URS is pleased to provide the following addendum to the Wetland Delineation and Stream Assessment Report (*Initial Report*) that was prepared in May 2013 for the Big Sandy Fly Ash Pond Closure Project ("Project") in Lawrence County, Kentucky. As described in the *Initial Report*, the purpose of this Project is to permanently close the Big Sandy Fly Ash Pond in accordance with Federal Regulations pertaining to wet ash impoundments. During the initial survey, an approximately 16-acre property north of the fly ash pond was evaluated along with the approximately 602-acre Project survey area. The 16-acre property was not included in the survey results within the *Initial Report* since the original Project design did not include this area within the limits of disturbance. Since the time of the *Initial Report*, AEP has placed an emphasis on avoiding and minimizing wetland and stream impacts throughout the Project area. The emphasis on avoidance has required adjustments to the overall cap design and borrow areas needed for fill. Within the revised limits of disturbance, the approximately 16-acre property has been designed as a new borrow area for the Project.

This addendum provides a summary of the wetland and stream evaluation conducted by URS on June 7, 2012, within the approximately 16-acre borrow area. The addendum survey boundary is illustrated on Figure 1 in Attachment A.

The ecological assessment for this Project was conducted by qualified URS biologists. The field assessment was comprised of a U.S. Army Corps of Engineers (USACE) jurisdictional wetland delineation and Ohio Rapid Assessment Method Wetlands v. 5.0 (ORAM) for wetlands, along with U.S. EPA Rapid Bioassessment (RBA) Protocols for surface drainages.





METHODS

The purpose of the field survey was to assess whether evidence of wetlands and "waters of the U.S." exist within the Project survey area. Prior to conducting field surveys, digital and published county Natural Resources Conservation Service (NRCS) soil surveys, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, and U.S. Geological Survey (USGS) 7.5-minute topographic maps were reviewed to identify the occurrence and location of potential wetland areas.

The ecological assessments on June 7, 2012, were conducted by qualified URS biologists that surveyed the addendum survey area while utilizing the methodologies described in the *Initial Report*.

The field survey results presented herein apply to the existing and reasonably foreseeable site conditions observed at the time of our assessment. They cannot apply to site changes of which URS is unaware and has not had the opportunity to review. Changes in the condition of a property may occur with time due to natural processes or human impacts at the project site or on adjacent properties. Changes in applicable standards may also occur as a result of legislation or the expansion of knowledge over time. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes beyond the control of URS which occur after the presentation of this report document.

RESULTS

During the ecological assessment, URS did not identify any wetlands, streams, or ponds within the addendum survey area. The approximately 16-acre addendum survey area was observed as an upland ridge that primarily consisted of steep slopes with an oak-hickory canopy and moderate to heavy undergrowth. Portions of the addendum survey area appeared to have been historically modified through tree removal, cut/fill material, and landslides. The following paragraphs discuss the results of the wetland delineation and stream assessment within the addendum survey area.

Preliminary Soils Evaluation

According to the online Web Soil Survey for Larwence County, Kentucky (USDA, 2015) and the NRCS Hydric Soils List of Kentucky, two soil series are mapped within addendum survey area. Four soil map units were mapped within the addendum survey area and all were listed as





not hydric (USDA, 2015). Soil map units located within the addendum survey boundary are shown on Figure 2 in Attachment A.

National Wetland Inventory (NWI) Map Review

NWI wetlands are areas of potential wetland that have been identified from USFWS aerial photograph interpretation which have typically not been field verified. Forested and heavy scrub/shrub wetlands are often not shown on NWI maps as foliage effectively hides the visual signature that indicates the presence of standing water and/or moist soils from an aerial view. The USFWS website states that the NWI maps are not intended or designed for jurisdictional wetland identification or location. As a result, NWI maps do not show all the wetlands found in a particular area nor do they necessarily provide accurate wetland boundaries. NWI maps are useful for providing indications of potential wetland areas, which are often supported by soil mapping and hydrologic predictions, based upon topographical analysis using USGS topographic maps.

According to the NWI maps of the Fallsburg and Prichard, Kentucky quadrangles, the addendum survey boundary does not contain any mapped NWI wetlands. Within the surrounding area of the addendum survey boundary, three NWI wetlands were mapped: one Palustrine Emergent Persistent Semi-permanently Flooded Diked/Impounded wetland (PEM1Fh), one Lacustrine Limnetic Unconsolidated Bottom Permanently Flooded Diked/Impounded (L1UBHh) feature, and one Palustrine Unconsolidated Bottom Permanently Flooded Diked/Impounded (PUBHh) wetland (USFWS, 2014). The locations of the surrounding area NWI mapped wetlands are presented in Figure 2 and were previously noted in the Initial Report.

Wetlands

During the delineation, no wetlands were identified by URS within the addendum survey area.

Streams

During the delineation, no steams were identified by URS within the addendum survey area.





CONCLUSION

URS conducted a wetland delineation and stream assessment of the approximately 16-acre addendum survey area for the Big Sandy Fly Ash Pond Closure Project, in Lawrence County, Kentucky on June 7, 2012 (Figure 1).

During the ecological assessment, URS did not identify any wetlands, streams, or ponds within the addendum survey area as shown in Figure 3. The approximately 16-acre addendum survey area was observed as an upland ridge that primarily consisted of steep slopes with an oak-hickory canopy and moderate to heavy undergrowth. Portions of the addendum survey area appeared to have been historically modified through tree removal, cut/fill material, and landslides.

-00000

URS appreciates the opportunity to provide AEP with this addendum to the wetland delineation and stream assessment to assist with the Big Sandy Fly Ash Pond Closure Project. Please do not hesitate to contact URS if there are any questions or comments regarding this report.

Sincerely,

URS Corporation

Benjamin Otto Senior Ecologist

Benjamin.otto@urs.com

Surge Mo

Matt Thomayer

Senior Ecologist/Project Manager

Matt.thomayer@urs.com

Matthew Stoman





References

- U.S. Department of Agriculture, Natural Resources Conservation Service. 2014. Web Soil Survey (GIS Shapefile). http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm Accessed 01/16/15
- U.S. Fish and Wildlife Service. 2014. National Wetlands Inventory Branch of Resource and Mapping Service. http://www.fws.gov/wetlands/FAQs.html Accessed 01/05/15

Attachments

Attachment A: Figures 1 through 3

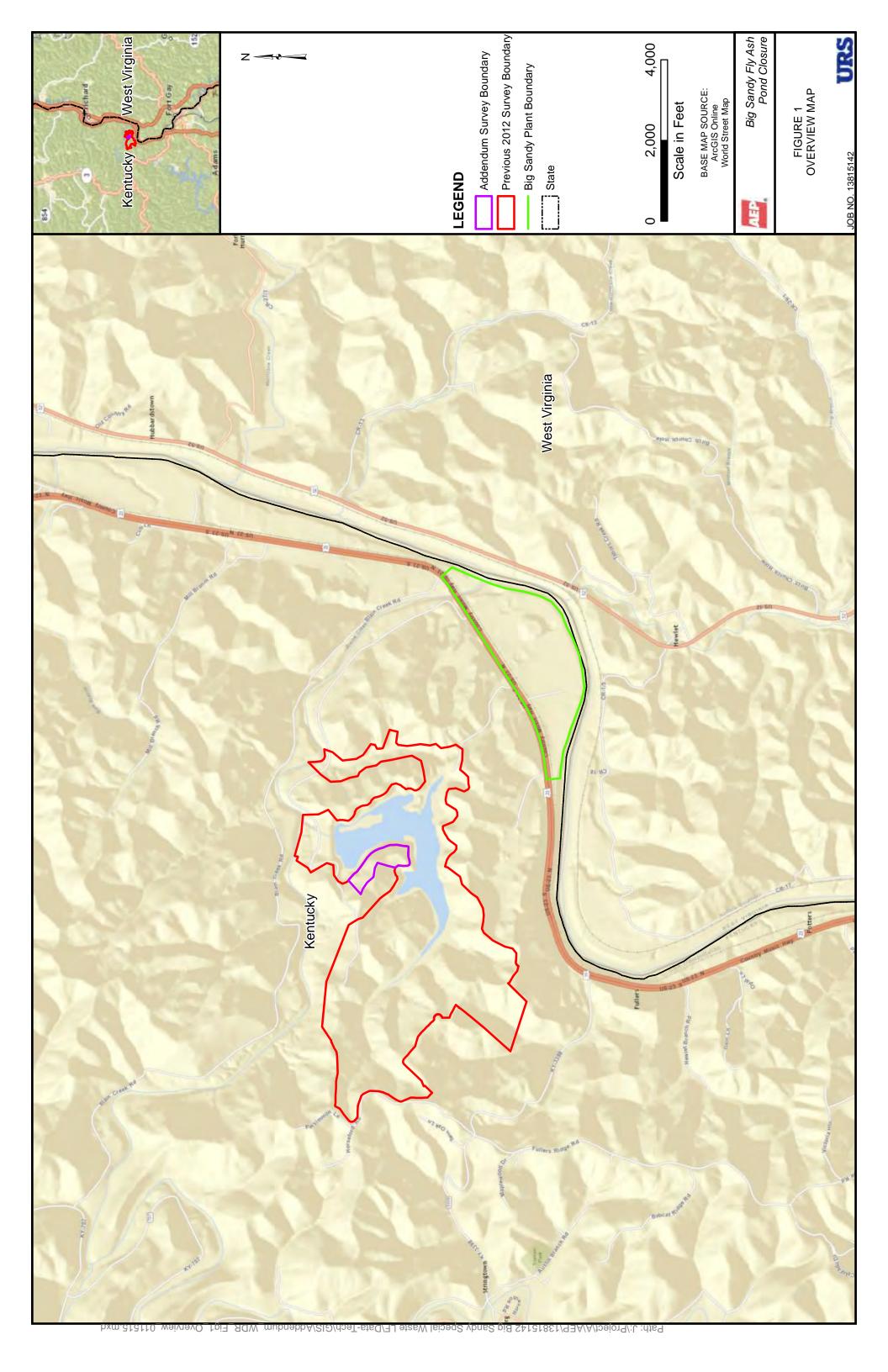
Figure 1: Overview Map

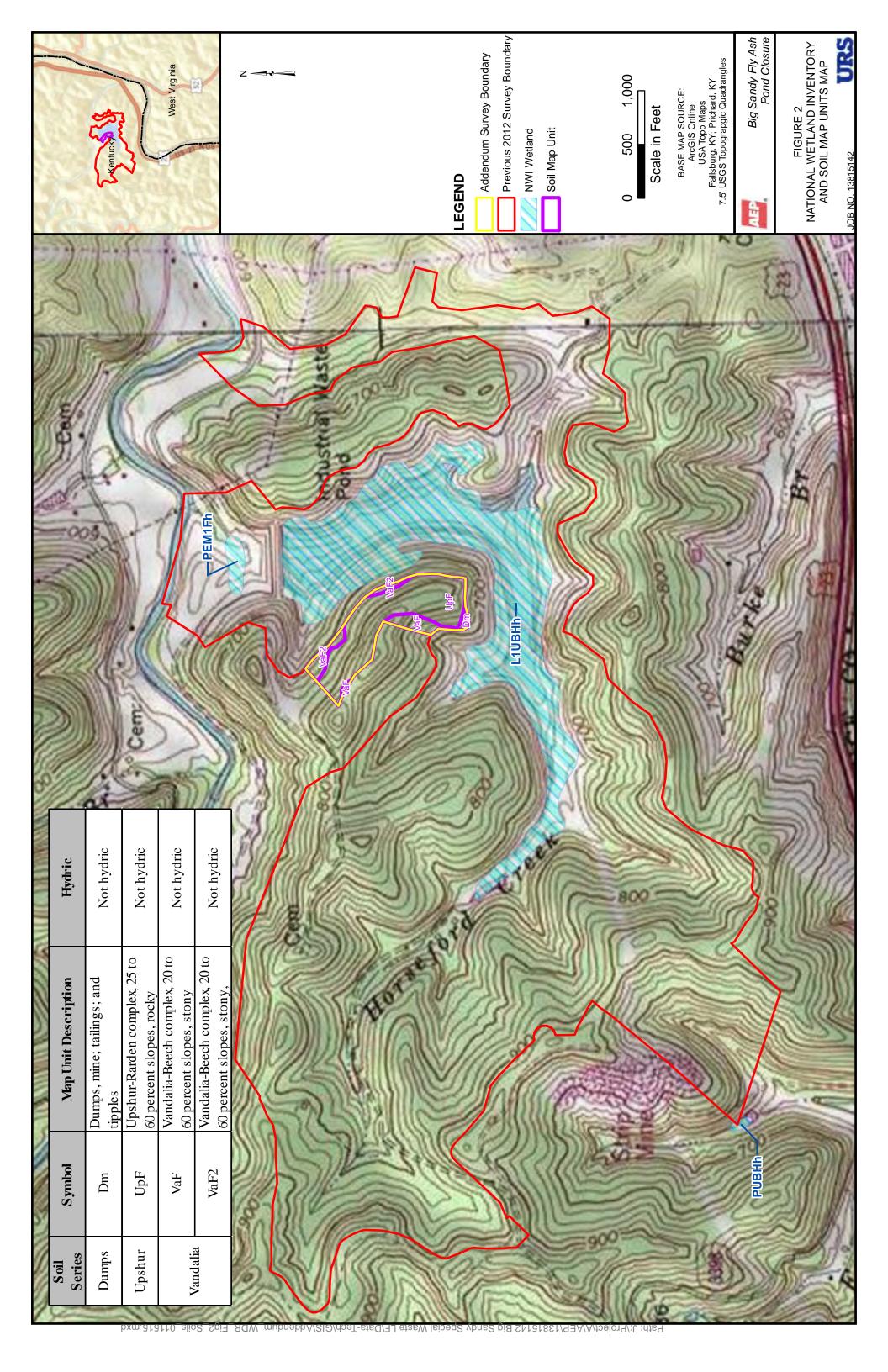
Figure 2: Soils and National Wetland Inventory Map

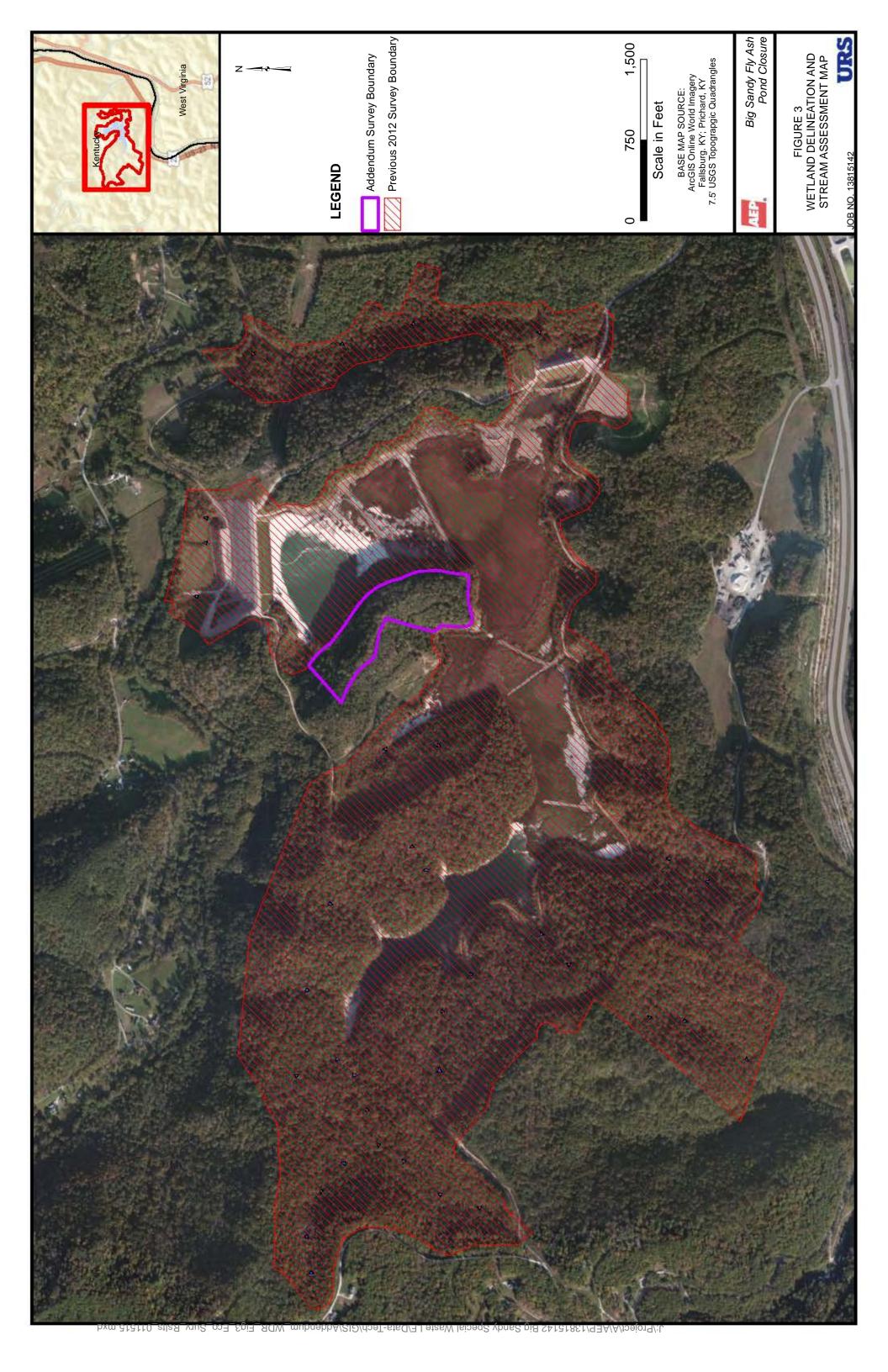
Figure 3: Wetland Delineation and Stream Assessment Map



ATTACHMENT A FIGURES







SEP 2 9 2014



U.S. ARMY ENGINEER DISTRICT, LOUISVILLE

CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE KY 40201-0059
FAX: (502) 315-6677
http://www.irl.usace.army.mil/

September 18, 2014

Operations Division Regulatory Branch (South) ID No. LRL-2014-417-mdh

Ms. Jill Lukehart American Electric Power 1 Riverside Plaza Columbus, OH 43215

Dear Ms. Lukehart:

This is in response to your request for an approved jurisdictional determination. The request was made for a 602-acre parcel, including a fly ash disposal pond associated with the Big Sandy Power Plant and adjacent lands, located near the City of Louisa in Lawrence County, Kentucky.

The U.S. Army Corps of Engineers exercises regulatory authority under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 403) and Section 404 of the Clean Water Act (33 U.S.C. § 1344) for certain activities in "waters of the United States (U.S.)." These waters include all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce.

Based on a review of the submitted information, we have verified that the one-hundred and fifty-three (153) identified tributaries (see Table 1), possess a significant nexus and as such are considered jurisdictional "waters of the U.S." In addition, the report identified twelve (12) wetlands and one (1) open water (see Table 1), which either abut or lie adjacent to one of the aforementioned tributaries. These stream channels, adjacent/abutting wetlands and open water perform numerous functions which have a substantial, or more than speculative, effect on the Big Sandy River (a traditional navigable waters).

Therefore, if construction activities would require discharges of dredged or fill material within the delineated boundaries of the twelve (12) wetlands and/or below the Ordinary High Water Mark (OHWM) of the one (1) open water or the one-hundred and fifty-three (153) stream channels (i.e., any of the Table 1 waters), then a Department of the Army (DA) permit would be required.

In addition to these waters, the report identified four (4) isolated wetlands, which lack a significant nexus (see Table 2). These waters do not appear to be used or be susceptible to use in interstate or foreign commerce. As such, these waters are not considered to be "waters of the U.S."

Further, the 130-acre Fly Ash Pond was constructed as required by other sections of the Clean Water Act to treat coal ash waste water (KPDES Permit# KY0000221). Per 33 C.F.R. § 328.3(a)(8) of our regulations, such waters are not considered to be jurisdictional "waters of the U.S." Also, since Wetland 8 lies within the Fly Ash

Pond's maximum operating pool elevation, it is also not considered jurisdictional per 33 C.F.R. § 328.3(a)(8).

Therefore, a DA permit is not required for proposed impacts to these waters (see *Table 2*). However, this determination does not relieve you of the responsibility to comply with applicable State law. We urge you to contact the Kentucky Energy & Environment Cabinet Division of Water, 200 Fair Oaks, 4th Floor Frankfort, Kentucky 40601, to determine the applicability of State law to your project.

This letter contains an approved jurisdictional determination for the 602-acre subject parcel and is valid for a period of five (5) years from the date of this letter unless new information warrants revision of the determination before the expiration date. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 C.F.R. § 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination, you must submit a completed RFA form to the Lakes and Rivers Division Office at the following address.

Appeals Review Officer Great Lakes and Ohio River Division CELRD-PD-REG 550 Main Street, Room 10032 Cincinnati, OH 45202-3222 (513) 684-6212

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 C.F.R. § 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by November 17, 2014. It is not necessary to submit an RFA form to the Division office if you do not object to the determination in this letter.

If we can be of any further assistance, please contact us by writing to the above address, ATTN: CELRL-OP-FS, or call me at (502) 315-6676. Any correspondence on this matter should refer to our ID Number LRL-2014-417-mdh.

Sincerely,

Michael Hasty

Senior Project Manager, South Section

Regulatory Branch

Enclosures

Copy Furnished:

Mr. James Bicknell Kentucky Energy & Environment Cabinet Division of Water 200 Fair Oaks, 4th Floor Frankfort, KY 40601

Mr. Matt Thomayer URS Corporation 525 Vine Street, Suite 1800 Cincinnati, OH 45202

| | | | | Size |
|--------------------------|---|------------------------|--------------------------|---------------------------------|
| ID# | Description/Tribuary Name | Latitude | Longitude | (acres= ac) (If =linear feet |
| Wetland 01 | Emergent/Scrub-Shrub Wetland | 38,185144 | -82.65042 | 0.06 ac |
| Wetland 02 | Emergent Wetland | 38.184948 | -82.650542 | 0.03 ac |
| Wetland 06 | Emergent/Scrub-Shrub Wetland | 38.185745 | -82.637086 | 0.03 ac |
| Wetland 09 | Emergent/Scrub-Shrub Wetland | 38.185936 | -82.635573 | 0.06 ac |
| Wetland 10 | Emergent Wetland | 38.187993 | -82.633528 | 0.02 ac |
| Wetland 11 | Emergent Wetland | 38.187827 | -82.632687 | 0.05 ac |
| Wetland 12 | Emergent Wetland | 38.188183 | -82.631769 | 0.02 ac |
| Wetland 13 | Emergent Wetland | 38.187824 | -82.631001 | 0.03 ac |
| Wetland 15 | Emergent Wetland | 38.179389 | -82.625917 | 0.06 ac |
| Wetland 14 | Emergent/Scrub-Shrub Wetland | 38.179076 | -82.625342 | 0.21 ac |
| Wetland 16 | Emergent/Scrub-Shrub Wetland | 38.179511 | -82.624825 | 0.08 ac |
| Wetland 17 | Forested Wetland | 38.185963 | -82.625944 | 0.55 ac |
| Pond 01 | Pond | 38.177116 | -82.641885 | 0.24 ac |
| Stream 68 | Unnamed Perennial (RPW) Tributary of Fuller's Branch | 38.176515 | -82.647681 | 1,381 If |
| Stream 30 | Unnamed Perennial (RPW) Tributary of Blaine Creek | 38,188125 | -82.633499 | 558 lf |
| Stream 44 | Horseford Creek-Perennial (RPW) Tributray of Blaine Creek | 38.18353 | -82.65165 | 2,379 lf |
| Stream 58 | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.174032 | -82.647949 | 604 lf |
| Stream 59 | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.174786 | -82.646863 | 881 If |
| Stream 59a | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.174412 | -82.646894 | 304 lf |
| Stream 60 | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38,176137 | -82.646625 | 692 lf |
| Stream 60a | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.175762 | -82.647063 | 149 lf |
| Stream 68a | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.174678 | -82.648721 | 92 lf |
| Stream 68b | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.17473 | -82.648255 | 62 lf |
| Stream 68c | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.17447 | -82.648223 | 224 lf |
| Stream 68d | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.175023 | -82.647836 | 158 If |
| Stream 68e | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.174797 | -82.648466 | 69 If |
| Stream 68f | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.175329 | -82.647784 | 68 lf |
| Stream 68g | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.174959 | -82.648427 | 130 lf |
| Stream 68h | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.17541 | -82.647479 | 200 lf |
| Stream 68i | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.17517 | -82.648242 | 104 lf |
| Stream 68j Stream 68k | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.175685 | -82.647456 -82.647476 | 102 lf 139 lf |
| Stream 681 | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.175554 38.177244 | -82.647641 | 65 lf |
| Stream 68m | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.177145 | -82.647626 | 85 If |
| Stream 68n | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.177322 | -82.647374 | 204 lf |
| Stream 680 | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.176957 | -82.647088 | 256 lf |
| Stream 68p | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.1764 | -82.647351 | 58 If |
| Stream 68q | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.176428 | -82.646887 | 251 If |
| Stream 68r | Unamed Ephemeral (Non-RPW) Tributary of Fuller's Branch | 38.176653 | -82.647099 | 266 If |
| Stream 05 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.179566 | -82.625246 | 70 lf |
| Stream 26 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.179403 | -82.624443 | 178 If |
| Stream 27 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.179562 | -82.624478 | 154 lf |
| Stream 28 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.18034 | -82.624501 | 185 lf |
| Stream 29 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.180985 | -82.624289 | 138 lf |
| Stream 72 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.181433 | -82.624959 | 175 lf |
| Stream 73 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.182305 | -82.625104 | 210 lf |
| Stream 74 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.184755 | -82.626268 | 336 If |
| Stream 75 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.185768 | -82.626399 | 108 lf |
| Stream 76 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.186226 | -82.626544 | 385 lf |
| Stream 77 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.185364 | -82,625733 | 36 lf |
| Stream 78 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.183861 | -82.624616 | 354 lf |
| Stream 78a | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.183771 | -82.624265 | 120 lf |
| | | | | |
| Stream 78b | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.183921 | -82.62445 | 61 If |
| Stream 78c | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.184067 | -82.624865 | 96 lf |
| Stream 79 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.182304 | -82.623863 | 542 If |
| Stream 79a | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.182473 | -82.623487 | 391 lf |
| Stream 79aa | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.182373 | -82.622941 | 53 lf |
| Stream 80 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.186308 | -82.626727 | 132 lf |

| | Table 1: (Jurisdictional Stream Channels, Wet | | | Size |
|------------|---|-----------|--------------------------|---------------------------------|
| ID# | Description/Tribuary Name | Latitude | Longitude | (acres= ac) (If =linear feet |
| Stream 80a | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.18624 | -82.62678 | 80 lf |
| Stream 01 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.18278 | -82.642085 | 402 lf |
| Stream 01a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.18292 | -82.642209 | 176 lf |
| Stream 02 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182358 | -82.641507 | 411 lf |
| Stream 02a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182345 | -82.641158 | 157 lf |
| Stream 03 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182731 | -82.642327 | 313 lf |
| Stream 06 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.180497 | -82.640554 | 170 lf |
| Stream 07 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.18074 | -82.64076 | 278 lf |
| Stream 08 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182257 | -82.642054 | 101 lf |
| Stream 09 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182792 | -82.64174 | 479 lf |
| Stream 09a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182594 | -82.641687 | 119 lf |
| Stream 09b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182694 | -82.64161 | 194 lf |
| Stream 10 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183665 | -82.644132 | 95 lf |
| Stream 11a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.18441 | -82.643544 | 117 If |
| Stream 11b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184944 | -82.643781 | 104 lf |
| Stream 11c | | 38.184638 | -82.64308 | 381 lf |
| | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | | -82.64252 | 129 lf |
| Stream 11d | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184545 | -82.644005 | 62 lf |
| Stream 11e | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184364 | -82.644254 | 95 lf |
| Stream 12 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184279 | | |
| Stream 13a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185804 | -82.648927 -82.648953 | 56 lf |
| Stream 13b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.186405 | | 306 lf |
| Stream 13c | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.186111 | -82.649453 | 185 lf |
| Stream 14 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.177507 | -82.639347 | 183 lf |
| Stream 15a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.176481 | -82.642261 | 47 lf |
| Stream 15b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.176163 | -82.642182 | 104 If |
| Stream 15c | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.176046 | -82.642318 | 173 lf |
| Stream 15d | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.175778 | -82.642329 | 245 lf |
| Stream 15e | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.175752 | -82.642651 | 61 lf |
| Stream 15f | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.175687 | -82.643729 | 646 lf |
| Stream 15g | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.175682 | -82.643372 | 275 lf |
| Stream 16 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.17767 | -82.642599 | 132 lf |
| Stream 17a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.179664 | -82.644962 | 1111f |
| Stream 17b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.179373 | -82.645296 | 112 lf |
| Stream 17c | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.178786 | -82.646264 | 233 lf |
| Stream 18a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182426 | -82.64647 | 93 If |
| Stream 18b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182388 | -82.646877 | 100 lf |
| Stream 18c | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182425 | -82.647548 | 1131f |
| Stream 18d | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182362 | -82.647975 | 87 lf |
| Stream 18e | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182258 | -82.648736 | 43 lf |
| Stream 18f | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182427 | -82.64916 | 114 lf |
| Stream 18g | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182275 | -82.649426 | 69 lf |
| Stream 19 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183625 | -82.646425 | 182 lf |
| Stream 20 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184248 | -82.649346 | 740 lf |
| Stream 20a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184416 | -82.648381 | 81 lf |
| Stream 20b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183988 | -82.649448 | 138 lf |
| Stream 20c | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183736 | -82.64961 | 294 lf |
| Stream 21 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183258 | -82.637508 | 84 If |
| Stream 23 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183783 | -82.638926 | 165 lf |
| Stream 23a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183776 | -82.63877 | 77 lf |
| Stream 24 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.181997 | -82.635548 | 177 If |
| Stream 25 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182203 | -82.63839 | 415 lf |
| Stream 33 | Unnamed Ephemeral (Non-RPW)Tributary to fly ash pond | 38.183828 | -82.6441 | 64 lf |
| Stream 34 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184202 | -82.643787 | 141 lf |
| Stream 34a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184134 | -82.643645 | 100 lf |

| | Table 1: (Jurisdictional Stream Channels, Wet | | | Size |
|------------|---|-----------------------|------------|--------------------------------|
| ID# | Description/Tribuary Name | Latitude | Longitude | (acres= ac) (If =linear fee |
| Stream 35a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185921 | -82.645834 | 211 lf |
| Stream 35b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185204 | -82.6465 | 78 lf |
| Stream 36 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.177545 | -82.638531 | 280 If |
| Stream 37 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.176969 38.17922 | -82.642526 | 171 lf |
| Stream 38 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | | -82.644498 | 279 lf |
| Stream 40 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.1813 | -82.645778 | 157 If |
| Stream 41a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.18117 | -82.646067 | 56 lf |
| Stream 42 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182146 | -82.648394 | 114 lf |
| Stream 43 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184011 | -82.647594 | 368 lf |
| Stream 44a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.18488 | -82.650217 | 554 If |
| Stream 44b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182484 | -82.653843 | 633 lf |
| Stream 44c | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.181227 | -82.653997 | 232 lf |
| Stream 45 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183078 | -82.637348 | 93 lf |
| Stream 47 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182258 | -82,635048 | 48 lf |
| Stream 48 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183095 | -82.638419 | 73 lf |
| Stream 49 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.181963 | -82.637701 | 109 lf |
| Stream 50 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185788 | -82.635826 | 116 lf |
| Stream 51 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185756 | -82.635877 | 75 lf |
| Stream 52 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.181211 | -82.628042 | 47 If |
| Stream 53 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182467 | -82.627866 | 64 lf |
| Stream 54 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182315 | -82.627723 | 39 lf |
| Stream 55 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184567 | -82.629622 | 88 lf |
| Stream 56 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.178126 | -82.633154 | 36 lf |
| Stream 57 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.178022 | -82.630229 | 43 lf |
| Stream 61 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.180213 | -82.627552 | 31 lf |
| Stream 62 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182122 | -82.627641 | 70 lf |
| | | - | | |
| Stream 63 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182254 | -82.627658 | 77 lf |
| Stream 64 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184825 | -82.629898 | 77 lf |
| Stream 65 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185999 | -82.630599 | 19 If |
| Stream 66 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.186103 | -82.630655 | 30 lf |
| Stream 67 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.178037 | -82.63036 | 51 lf |
| Stream 70a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183487 | -82.651216 | 75 lf |
| Stream 70b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183499 | -82.650664 | 310 lf |
| Stream 71a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185856 | -82.652998 | 262 lf |
| Stream 71b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.18583 | -82.653492 | 131 If |
| Stream 71c | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.186375 | -82.654015 | 548 lf |
| Stream 71d | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.1858 | -82.654716 | 440 lf |
| Stream 71e | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185899 | -82.655866 | 81 lf |
| Stream 71f | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185596 | -82.655933 | 222 lf |
| Stream 04 | Unnamed Intermittent (RPW) Tributary to Blaine Creek | 38.179875 | -82.625015 | 3,343 lf |
| Stream 11 | Unnamed Intermittent (RPW)Tributary to fly ash pond | 38.184825 | -82.643639 | 491 lf |
| Stream 13 | Unnamed Intermittent (RPW)Tributary to fly ash pond | 38.185593 | -82.648905 | 816 lf |
| Stream 15 | Unnamed Intermittent (RPW)Tributary to fly ash pond | 38.17573 | -82,642819 | 895 lf |
| Stream 17 | Unnamed Intermittent (RPW)Tributary to fly ash pond | 38.179089 | -82.645326 | 797 lf |
| Stream 18 | Unnamed Intermittent (RPW)Tributary to fly ash pond | 38.18225 | -82.648104 | 1,120 lf |
| Stream 22 | Unnamed Intermittent (RPW)Tributary to fly ash pond | 38.183653 | -82.63824 | 186 lf |
| Stream 35 | Unnamed Intermittent (RPW)Tributary to fly ash pond | 38.185591 | -82.646285 | 561 If |
| Stream 39 | Unnamed Intermittent (RPW)Tributary to fly ash pond | 38.181365 | -82.645372 | 169 lf |
| Stream 41 | Unnamed Intermittent (RPW)Tributary to fly ash pond | 38.181378 | -82.645992 | 652 If |
| Stream 46 | Unnamed Intermittent (RPW)Tributary to fly ash pond | 38.18363 | -82.638883 | 432 lf |
| Stream 70 | Unnamed Intermittent (RPW)Tributary to fly ash pond | 38.183888 | -82.650984 | 442 lf |
| Stream 71 | Unnamed Intermittent (RPW)Tributary to fly ash pond | 38.185572 | -82.653279 | 1,816 lf |
| Stream 31 | Unnamed Intermittent (RPW) Tributary to Blaine Creek | 38.188061 | -82.630791 | 371 lf |
| Stream 32 | Unnamed Intermittent (RPW) Tributary to Blaine Creek | 38.188102 | -82.631772 | 315 lf |

| Table 2 (Non-jurisdictional waters): | | | | | |
|--------------------------------------|---------------------------|-----------|------------|--------------|--|
| ID# | Description | Latitude | Longitude | Size (acres) | |
| Wetland 03 | Isolated Emergent Wetland | 38.184148 | -82.64005 | 0.08 | |
| Wetland 04 | Isolated Emergent Wetland | 38.184414 | -82.640347 | 0.14 | |
| Wetland 05 | Isolated Emergent Wetland | 38.18358 | -82.639877 | 0.11 | |
| Wetland 07 | Isolated Emergent Wetland | 38.182916 | -82.638806 | 0.07 | |
| Wetland 08 | Emergent Wetland | 38.18342 | -82.638723 | 0.04 | |
| Fly Ash Pond | Fly Ash Pond | 38.182151 | -82.630658 | 130 | |

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 1: BACKGROUND INFORMATION

| A | REPORT COMPLETION DATE FOR | APPROVED J | IURISDICTIONAL. | DETERMINATION (| ID): 9/16/14 |
|---|------------------------------|------------|-----------------|-----------------|--------------|
| C | KEI OKI COMI LETION DATE FOR | MILINOTEDO | UMBUILTIONAL | DELEMENT LIVING | 010110117 |

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District, LRL-2014-417-mdh, Isolated Wetlands W-3, W-4, W-5 and W-7

| | , | |
|-----------|------|--|
| C. | PRO | DJECT LOCATION AND BACKGROUND INFORMATION: |
| | | e: Kentucky County/parish/borough: Lawrence County City: Louisa ter coordinates of site (lat/long in degree decimal format): Lat. 38°-10'-49.441"N, Long 82°-38'-16.344"W. Universal Transverse Mercator: |
| | Nam | ne of nearest waterbody: Blaine Creek ne of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Big Sandy River ne of watershed or Hydrologic Unit Code (HUC): Big Sandy (05070204) |
| | V | Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request. |
| | г | 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. | REV | VIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY): |
| | Г | Office (Desk) Determination. Date: |
| | V | Field Determination. Date: August 12, 2014 |
| SE | CTIO | N II: SUMMARY OF FINDINGS |
| | | SECTION 10 DETERMINATION OF JURISDICTION. |
| | | e no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 C.F.R. part 329) in the review quired] |
| | Г | Waters subject to the ebb and flow of the tide. |
| B. The | CWA | Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: SECTION 404 DETERMINATION OF JURISDICTION. e no "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 C.F.R. part 328) in the review area. [Required] |
| | | Waters of the U.S. a. Indicate presence of waters of U.S. in review area (check all that apply): 1 |
| | Г | TNWs, including territorial seas |
| | Г | Wetlands adjacent to TNWs |
| | Г | Relatively permanent waters ² (RPWs) that flow directly or indirectly into TNWs |
| | Г | Non-RPWs that flow directly or indirectly into TNWs |
| | Г | Wetlands directly abutting RPWs that flow directly or indirectly into TNWs |
| | Г | Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs |
| | Г | Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs |
| | Г | Impoundments of jurisdictional waters |
| | F | 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: linear feet: width (ft) and/or acres. Wetlands: acres. |
| | | c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual Elevation of established OHWM (if known): |
| | 2. | Non-regulated waters/wetlands (check if applicable): Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. |

Supporting documentation is presented in Section III.F.

Explain: The four isolated wetlands, referred to as Wetlands 03, 04, 05, and 07, are physically isolated, do not lie within the 100-year floodplain, lack a hydrological connection and are not adjacent to other "waters of the U.S." and do not have any shallow subsurface flow to other waters. The wetlands are not used nor are they susceptible to use in interstate or foreign commerce. Thus, the wetlands are not considered to be "waters of the U.S."

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

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).

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:

Summarize rationale supporting determination:

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 waterbody 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.

| Characteristics of non-TNWs that flow | w directly or indirectly into INW |
|---|-----------------------------------|
|---|-----------------------------------|

| C | загаси | ristics of non-11 | was that now directly or mairectly into 118 | | | | | | |
|-----|--------|---|--|--|--|--|--|--|--|
| (i) | Wat | eral Area Condi ershed size: nage area: | tions: | | | | | | |
| | | Average annual rainfall: Average annual snowfall: | | | | | | | |
| (II | (b) | Project waters ar Project waters ar Project waters ar Project waters ar Project waters ar Project waters cr Identify flow rou Tributary stream | h TNW: ows directly into TNW. ows through tributary before entering TNW. re river miles from TNW. re river miles from RPW. re aerial (straight) miles from TNW. re aerial (straight) miles from RPW. re oss or serve as state boundaries. Explain: | | | | | | |
| | (0) | Tributary is: | Natural Artificial (man-made). Explain: Manipulated (man-altered). Explain: | | | | | | |

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

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

| | | Ave | y properties wi rage width: rage depth: rage side slope: | | to top of bank (est | timate): | | | | | |
|-------|-----|--|--|--|--|----------|---|----------------------------|--|--|--|
| | | and the second | | ite compos | sition (check all th | at appl | y): | | | | |
| | | | Silts | | Sands | | | Г | Concrete | | |
| | | - | Cobbles | | Gravel | | | F | Muck | | |
| | | LI. | Bedrock | F | Vegetation. Typ | oe/% co | veri | | | | |
| | | I | Other. Explain | : detritus | | | | | | | |
| | | Presence Tributary | of run/riffle/po geometry: | ol comple: | highly eroding, slo xes. Explain: verage slope): % | oughing | g banks]. E | Expla | in: | | |
| | (c) | Estimate Desc | provides for: average numbe cribe flow regin ormation on du | ne: | events in review ar | rea/yea | τ. | | | | |
| | | Surface f | low is: Charac | teristics: | | | | | | | |
| | | Subsurface flow: Explain findings: Dye (or other) test performed: | | | | | | | | | |
| | | [[[] | clear, natural changes in shelving vegetation | ck all indicated in the character of the | cators that apply): pressed on the ban eter of soil wn, bent, or absen r washed away | | destruction the present sediment s scour multiple o | ce of sortin | litter and debris errestrial vegetation wrack line g red or predicted flow events n plant community | | |
| | | | High Tide Lin il oil or scun il fine shell o | e indicated i line along or debris de arkings/ch | | Me | an High W survey to a physical n | ater l availa narkir | WA jurisdiction (check all that apply): Mark indicated by: able datum; ngs; s/changes in vegetation types. | | |
| (iii) | Cha | emical Characterize t Explain: | aracteristics: | vater color | is clear, discolore | d, oily | film; water | r qual | lity; general watershed characteristics, etc., | | |

⁶A 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.

Third.

| | (iv) | Bio | | el Characteristics. Channel supports (check all that apply): urian corridor. Characteristics (type, average width): | |
|----|-------|------------|------------------------|--|-----|
| | | - | | A STATE OF THE STA | |
| | | | | land fringe. Characteristics: | |
| | | Г | - | itat for: | |
| | | | | Federally Listed species. Explain findings: | |
| | | | | Fish/spawn areas. Explain findings: | |
| | | | | Other environmentally-sensitive species. Explain findings: | |
| | | | | Aquatic/wildlife diversity. Explain findings: Provides terrestrial wildlife habitat. | |
| 2. | Cha | araci | eristic | cs of wetlands adjacent to non-TNW that flow directly or indirectly into TNW | |
| | (i) | Phy (a) | Gene Prop V | Characteristics: eral Wetland Characteristics: perties: Wetland size: acres Wetland type. Explain: Wetland quality. Explain: ect wetlands cross or serve as state boundaries. Explain: | |
| | | (b) | | eral Flow Relationship with Non-TNW: v is: Explain: | |
| | | | | ace flow is: Characteristics: | |
| | | | | surface flow: Explain findings: Upe (or other) test performed: | |
| | | (c) | Wetl | land Adjacency Determination with Non-TNW: Directly abutting | |
| | | | F | Not directly abutting | |
| | | | | Discrete wetland hydrologic connection. Explain: | |
| | | | | Ecological connection. Explain: | |
| | | | | Separated by berm/barrier. Explain: | |
| | | (d) | Proje Proje Flow | cimity (Relationship) to TNW ect wetlands are river miles from TNW. ect waters are aerial (straight) miles from TNW. v is from: mate approximate location of wetland as within the floodplain. | |
| | (ii) | Cha | etc.). | I Characteristics: rize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characterist . Explain: pecific pollutants, if known: | cs, |
| | (iii) |) Bio | togica | l Characteristics. Wetland supports (check all that apply): | |
| | | Г | | parian buffer. Characteristics (type, average width): | |
| | | Г | | getation type/percent cover. Explain: | |
| | | 1 | 1000 | bitat for: | |
| | | | | Federally Listed species. Explain findings: | |
| | | | | Fish/spawn areas. Explain findings: | |
| | | | | Other environmentally-sensitive species. Explain findings: Aquatic/wildlife diversity. Explain findings: | |
| | | | | | |
| 3. | Cha | | | cs of all wetlands adjacent to the tributary (if any) nd(s) being considered in the cumulative analysis: | |

Approximately (#) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)

Size (in acres)

Directly abuts? (Y/N)

Size (in acres)

Summarize overall biological, chemical and physical functions being performed:

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:

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

-5.

| Provide estimates for jurisdictional waters within the review area (check all that apply): Titibutury waters: | | 3. | Mat Wat | Ws that flow directly or indirectly into TNWs. The third is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a wis jurisdictional. Data supporting this conclusion is provided at Section III.C. |
|---|----|-----|------------|---|
| Wetlands directly abutting an RPW that flow directly or indirectly into TNWs. | | | | |
| 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: 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: 7. Impoundments of jurisdictional wetlands in the review area: 7. Impoundments of jurisdictional wetlands in the review area: 7. Demonstrate that water meets the criteria for one of the categories presented above (1-6), or □ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or □ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or □ Demonstrate that water meets the criteria for on | | | П | |
| ributary 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: 5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs. Wetlands that do not directly abutting an RPW that flow directly or indirectly into TNWs. Wetlands that do not directly abutting an RPW that flow directly or indirectly into TNWs 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: 7. Impoundments of jurisdictional waters. As a general rule, the 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, DEGRAD OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CALL THAT APPLY); 10 which are or could be used for industrial purposes by industries in interstate or foreign commerce. Interstate isolated waters. Explain: Other factors. Explain: Other factors. Explain: Other factors. Explain: Other non-wetland waters: acres. Identify type(s) of waters: | | 4. | | tlands 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 |
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| 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 jurisidictional. 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 waters. 7. Impoundments of jurisdictional waters. As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional. □ Demonstrate that impoundment of a jurisdictional tributary remains jurisdictional. □ 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, DEGRAD OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CALL THAT APPLY): 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 commerce. which are or could be used for industrial purposes by industries in interstate commerce. which are or could be used for industrial purposes by industries in interstate commerce. Interstate isolated waters. Explain: Other factors. Explain: Other factors. Explain: Identify water body and summarize rationale supporting determination: Provide estimates for jurisdictional waters in the review area (cheek all that apply): Tributary waters: linear feet width | | | Prov | vide acreage estimates for jurisdictional wetlands in the review area: |
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| □ 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: Impoundments of jurisdictional waters.⁹ As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional. | | | Provide a | acreage estimates for jurisdictional wetlands in the review area: acres. |
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| ☐ Tributary waters: linear feet width (ft). ☐ Other non-wetland waters: acres. Identify type(s) of waters: | | Ide | ntify wate | er body and summarize rationale supporting determination: |
| Other non-wetland waters: acres. Identify type(s) of waters: | | Pro | vide estim | ates for jurisdictional waters in the review area (check all that apply): |
| Identify type(s) of waters: | | | Tributary | waters: linear feet width (ft). |
| Wetlands: acres. | | П | | |
| | | F | Wetland | s; acres. |

^{**}See Footnote # 3.

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

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**To com

| N | ON-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. | |
| V | 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). | |
| T | Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: | |
| T | Other: (explain, if not covered above): | |
| (i. | evide acreage estimates for non-jurisdictional waters in the review area, where the <u>sole</u> potential basis of jurisdiction is the MBR factors, presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment eck all that apply): | |
| | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). | |
| Г | Lakes/ponds: acres. | |
| Г | Other non-wetland waters: acres. List type of aquatic resource: . | |
| V | Wetlands: Four wetlands totaling 0.40 acres. | |
| | wide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a ding is required for jurisdiction (check all that apply): | 1 |
| Г | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). | |
| Г | Lakes/ponds: acres. | |
| Г | Other non-wetland waters: acres. List type of aquatic resource: | |
| Γ | Wetlands: | |
| ECT | ON IV: DATA SOURCES. | |
| | (consultant) May 2013 submittal | |
| - | Office concurs with data sheets/delineation report. | |
| | Office does not concur with data sheets/delineation report. | |
| Г | | |
| 10 | | |
| F | [ALM] 28 - (ALM) - (AL | |
| 11,000 | USGS NHD data. | |
| | USGS 8 and 12 digit HUC maps. | |
| F | U.S. Geological Survey map(s). Cite scale & quad name; Fallsburg, KY 1:24,000 USGS Quadrangle | |
| F | USDA Natural Resources Conservation Service Soil Survey. Citation: Lawrence County, KY soil survey | |
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B. ADDITIONAL COMMENTS TO SUPPORT JD: The four (4) wetlands have no substantial nexus to a water of the U.S as they are physically isolated, do not lie within the 100-year floodplain and lack a hydrological connection to other waters of the United States. The wetlands are also not used nor are they susceptible to use in interstate or foreign commerce. Therefore, the wetlands are not considered to be "waters of the U.S.".

POTENIAL ISOLATED WETLANDS WITHIN THE BIG SANDY POND CLOSURE PROJECT

| ID# | Description | Latitude | Longitude | Size (acre) | HUC | Quad |
|---------------|---------------------------|-----------|------------|----------------|--------------|-----------|
| Wetland 03 | Isolated Emergent Wetland | 38.184148 | -82.64005 | 0.08 | Big Sandy | Fallsburg |
| Wetland 04 | Isolated Emergent Wetland | 38.184414 | -82.640347 | 0.14 | Big Sandy | Fallsburg |
| Wetland 05 | Isolated Emergent Wetland | 38.18358 | -82.639877 | 0.11 | Big Sandy | Fallsburg |
| Wetland 07 | Isolated Emergent Wetland | 38.182916 | -82.638806 | 0.07 | Big Sandy | Fallsburg |
| Total: 4 | | | | 0.40 | | |

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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): 9/16/14
- DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District, LRL-2014-417-mdh, RPW Intermittent Stream Channels and Adjacent Wetlands (draining to Blaine Creek)

| - | BB6 1568 1 | OO I MEGAL | 1.4.750 | DI OVICONOTINE | ILLENO DE LA LONGO DE L |
|---|------------|-------------|---------|----------------|-------------------------|
| | PONTER | CHEAT INDIV | ANIS | RACKE DOUBLEST | INFORMATION: |
| | | | | | |

State: Kentucky County/parish/borough: Lawrence County City: Louisa Center coordinates of site (lat/long in degree decimal format): Lat. 38°-10'-49.441"N, Long 82°-38'-16.344"W. Universal Transverse Mercator:

Name of nearest waterbody: Blaine Creek

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

Name of watershed or Hydrologic Unit Code (HUC): Big Sandy (05070204)

- 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: July 24, 2014
- Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There are no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 C.F.R, part 329) in the review area. [Required]

- Г 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.

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

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

- - a. Indicate presence of waters of U.S. in review area (check all that apply): 1
- TNWs, including territorial seas
- Wetlands adjacent to TNWs
- Relatively permanent waters2 (RPWs) that flow directly or indirectly into TNWs 10
- 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: Two (2) intermittent stream channels totaling 686 linear feet: 5 width (ft). Wetlands: Three (3) emergent wetlands totaling 0.10 acres.

c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual and OHWM

Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable):3

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain:

³ Supporting documentation is presented in Section III.F.

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

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).

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.

I. TNW

Identify TNW:

Summarize rationale supporting determination:

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 waterbody 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: |
|-----|---------|------|-------------|
|-----|---------|------|-------------|

Watershed size: Big Sandy Watershed: 410.4 square miles.

Drainage area:

Average annual rainfall: 50 inches Average annual snowfall: 21 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through 1 tributary before entering TNW.

Project waters are 1-2 river miles from TNW.

Project waters are NA river miles from RPW.

Project waters are 1-2 aerial (straight) miles from TNW.

Project waters are NA aerial (straight) miles from RPW.

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

Identify flow route to TNW5: Streams 31 and 32 both flow into Blaine Creek (a perennial RPW). Blaine Creek flows into the Big Sandy River (a TNW).

Tributary stream order, if known: Second & Third, respectively.

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

Artificial (man-made) Explain: Streams originate at dam outfall of fly ash wastewater treatment pond.

Manipulated (man-altered). Explain: Streams contain culverts, riprap, level spreaders

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

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.

| | Ave Ave | rage wie rage de | oth: 5 feet oth: 3-18 inche e slopes: 3:1 | es | C(estimat | .e). | | | |
|-----|---|--|--|--|-------------|-------------|--|--|--|
| | Primary t | ributary | substrate con | position (check | all that ap | ply |): | | |
| | V | Silts | ſ | Sands | | | | | Concrete |
| | P | Cobble | s F | Gravel | | | | _ | Muck |
| | | Bedroo | k I | Vegetation. | Type/% | cov | er: | | |
| | V | Other. | Explain: detri | tus, boulder, ripra | ар | | | | |
| | Presence Tributary | of run/r geome | iffle/pool com try: Relatively | plexes. Explain: | Run/riffl | | | | in: Fairly stable, vegetated. were observed in both streams. |
| | Estimate Desc Other inf approxima reams are | average cribe flo ormatio ately 69 flowing | w regime: Into n on duration a nnual storm | ow events in revie ermittent and volume: Base events exceeding | ed upon c | lim of p | ate data ac | ccess | ed from Kentucky Mesonet (2011-2013), there is Lawrence County, Kentucky. Assuming that ly 138 annual flow days for the intermittent |
| | Surface f | low is: l | Discrete and C | Confined Charact | eristics: | | | | |
| | | | Unknown Ex r other) test pe | oplain findings: erformed: | | | | | |
| | F Factors | Bed an OHWN clea cha she veg leaf sed wat other th High T oil fine phy tida | ar, natural line nges in the ch lving etation matted flitter disturbe iment depositi er staining er (list): tinuous OHW ide Line indic or scum line a e shell or debri rsical marking al gauges er (list): | impressed on the aracter of soil down, bent, or a dor washed award on the aracter of soil down, bent, or a d | bank F | later | destruction the present sediment s scour multiple of abrupt cha ral extent in High W survey to a physical m | of the order order of the order o | ed or predicted flow events n plant community WA jurisdiction (check all that apply): Wark indicated by: able datum; |
| Cha | Explain: not obser | ributary Water c ved in S | (e.g., water co | 31 appeared to b | | | | | lity; general watershed characteristics, etc.). the fly ash wastewater treatment pond. Water was |

⁶A 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.

Tibid.

| (iv) | - | logical Characteristics. Channel supports (check all that apply): |
|------|-------|--|
| | V | Riparian corridor. Characteristics (type, average width): 6-12 meters |
| | V | Wetland fringe. Characteristics: Wetland 12 abuts Stream 32. Wetland 13 abuts Stream 31. |
| | V | Habitat for: |
| | | Federally Listed species. Explain findings: |
| | | Fish/spawn areas. Explain findings: |
| | | Other environmentally-sensitive species. Explain findings: |
| | | Aquatic/wildlife diversity. Explain findings: Provides terrestrial wildlife habitat. |
| Ch | aract | eristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW |
| (i) | | General Wetland Characteristics: Properties: Wetland size: 0.10 acres Wetland type. Explain: Emergent Wetland quality. Explain: Low, ORAM Category 1 |
| | | Project wetlands cross or serve as state boundaries. Explain: |
| | (b) | General Flow Relationship with Non-TNW: Flow is: Intermittent Flow Explain: |
| | | Surface flow is: Overland Sheetflow Characteristics: |
| | | Subsurface flow: Explain findings: Dye (or other) test performed: |
| | (c) | Wetland Adjacency Determination with Non-TNW: |
| | | Directly abutting |
| | | Not directly abutting |
| | | Discrete wetland hydrologic connection. Explain: Wetland 11 is located in close proximity to Stream 32 (<60 ft.) and is within the 100-year floodplain. |
| | | Ecological connection. Explain: Wetland 11 is located in close proximity to Stream 32 (<60 ft.) and provides ecological functions such as stormwater attenuation, filtering and wildlife habitat. |
| | | Separated by berm/barrier. Explain: |
| | (d) | Proximity (Relationship) to TNW Project wetlands are 1-2 river miles from TNW. Project waters are 1-2 aerial (straight) miles from TNW. Flow is from: Wetland to Navigable Waters Estimate approximate location of wetland as within the within 100-year floodplain. |
| (ii) | Cha | emical Characteristics: aracterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: ntify specific pollutants, if known: |
| (iii | | ological Characteristics. Wetland supports (check all that apply): |
| - | P | Riparian buffer. Characteristics (type, average width): The wetlands provide buffers <30°. |
| | I | Vegetation type/percent cover. Explain: herbaceous 100% |
| | 10 | Habitat for: |
| | | Federally Listed species. Explain findings: |
| | | Fish/spawn areas. Explain findings: |
| | | Other environmentally-sensitive species. Explain findings: |
| | | Aquatic/wildlife diversity. Explain findings: Provide habitat for terrestrial wildlife. |

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

All wetland(s) being considered in the cumulative analysis: 3

Approximately (0.10) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

| Directly abuts? (Y/N) | Size (in acres) | Directly abuts? (Y/N) | Size (in acres) |
|-----------------------|-----------------|-----------------------|-----------------|
| Wetland-11 N | 0.05 | | |
| Wetland-12 Y | 0.02 | | |
| Wetland-13 Y | 0.03 | | |

Summarize overall biological, chemical and physical functions being performed: Wetlands 11, 12, and 13 function as flood storage, erosion and sediment control, pollution control through filtering and providing wildlife habitat. The wetlands also have the capacity to transfer nutrients and organic carbon to support downstream food-webs.

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;

- 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:
- 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:
- 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: Based on the aforementioned findings, the three (3) emergent wetlands, totaling 0.10 acres provide flood storage, erosion and sediment control, pollution control through filtering and wildlife habitat adjacent to the two (2) identified unnamed intermittent (RPW) tributaries (Streams 31 and 32). These intermittent tributaries function as headwater stream channels providing water, nitrogen and organic matter transport functions as well as providing vertebrate habitat for deer, birds, and other small wildlife in the area. These functions have a substantial, or more than speculative, effect on the Big Sandy River (a TNW) and thus establish a significant nexus to this TNW. *See supporting scientific literature under Section IV, A.

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

| | TNWs: linear feet width (ft), Or, 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: Based upon climate data accessed from Kentucky Mesonet (2011-2013), there are approximately 69 annual storm events exceeding 0.2 inch of precipitation in Lawrence County, Kentucky. Assuming that intermittent streams are flowing for 48 hours after each storm event, there is an average of approximately 138 annual flow days for the intermittent streams in the study area. The estimated number of annual flow days exceeds three months. |
| | |

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

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

| | □ Tributary waters: Two (2) intermittent stream channels totaling 686 linear feet. □ Other non-wetland waters: acres. Identify type(s) of waters: | |
|-----|---|------|
| 3. | Non-RPWs 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. rovide estimates for jurisdictional waters within the review area (check all that apply): Tributary waters: | |
| | Other non-wetland waters: acres. Identify type(s) of waters: | |
| 4. | Vetlands directly abutting an RPW that flow directly or indirectly into TNWs. 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: Wetland 12 is physically proximate to Stream 32. Wetland 13 is physically proximate to Stream 31. | |
| acr | Provide acreage estimates for jurisdictional wetlands in the review area: Two wetlands (Wetland 12 and Wetland 13) totaling | 0.05 |
| 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 jurisidictional. Data supporting this conclusion is provided at Section III.C. | |
| | Provide acreage estimates for jurisdictional wetlands in the review area: One wetland (Wetland 11) totaling 0.05 acres is adjacent to stream 32. | 0 |
| 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: | |
| 7. | mpoundments 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). | |
| OF | ATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADA'DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHITHAT 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. | |
| - [| nterstate isolated waters. Explain: Other factors. Explain: | |
| | ify water body and summarize rationale supporting determination: | |
| | de estimates for jurisdictional waters in the review area (check all that apply): | |
| Г | Fributary waters: linear feet width (ft). | |
| Г | Other non-wetland waters: acres. | |
| | | |

E.

^{*}See Footnote # 3.

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

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**To comp

| | Identify type(s) of waters: Wetlands: acres. |
|-------|--|
| F. N | ON-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 |
| T | Wetland Delineation Manual and/or appropriate Regional Supplements. Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce. |
| -1 | 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). |
| T | Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: |
| Г | Other: (explain, if not covered above): |
| (i. | rovide acreage estimates for non-jurisdictional waters in the review area, where the <u>sole</u> potential basis of jurisdiction is the MBR factors e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment heck all that apply): |
| | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| 1 | Lakes/ponds: acres. |
| 4 | Other non-wetland waters: acres. List type of aquatic resource: |
| T | Wetlands: acres. |
| | rovide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a nding is required for jurisdiction (check all that apply): |
| Г | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| T | Lakes/ponds: acres. |
| | Other non-wetland waters: acres. List type of aquatic resource: |
| E | Wetlands: acres. |
| SECT | ION IV: DATA SOURCES, |
| 10000 | |
| re | PPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and quested, appropriately reference sources below): Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: American Electric Power (applicant), URS Corporation (consultant) May 2013 submitted |
| 1. | Data sheets prepared/submitted by or on behalf of the applicant/consultant. |
| | ✓ Office concurs with data sheets/delineation report. |
| | Office does not concur with data sheets/delineation report. |
| 12 | Data sheets prepared by the Corps: |
| | |
| 1. | U.S. Geological Survey Hydrologic Atlas: |
| | □ USGS NHD data. □ USGS 8 and 12 digit HUC maps. |
| | |
| - | |
| IV. | THE PROPERTY OF THE PROPERTY O |
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| I. | |
| | Mitsch, William J., and Gosselink, James G. (1993). Wetlands, Van Nosttrand Reinhold Company, New York, New York |
| | Kusler, Jon, and Opheim, Teresa (1996). Our National Wetland Heritage, Environmental Law Institute, Washington, D.C. |
| | Mary C. Freeman, Catherine M. Pringle, C Rhett Jackson (2007) |
| | |

Hydrologic connectivity and the contribution of stream headwaters to ecological integrity at regional scales. Journal of the American Water Resources Association 43 (1), 5-14. doi:10.1111/j.1752-1688.2007.00002.x

Richard B. Alexander, Elizabeth W. Boyer, Richard A. Smith, Gregory E. Schwarz, Richard B. Moore (2007)

The role of headwater streams in downstream water quality.

Journal of the American Water Resources Association 43 (1), 41-59.

doi:10.1111/j.1752-1688.2007.00005.x

Mark S. Wipfli, John S. Richardson, Robert J. Naiman (2007)

Ecological linkages between headwaters and downstream ecosystems: transport of organic matter, invertebrates, and wood down headwater channels.

Journal of the American Water Resources Association 43 (1), 72-85.

doi:10.1111/j.1752-1688.2007.00007.x

Judy L. Meyer, David L. Strayer, J. Bruce Wallace, Sue L. Eggert, Gene S. Helfman, Norman E. Leonard (2007)

The contribution of headwater stream to biodiversity in river networks

Journal of the American Water Resources Association 43 (1), 86-103.

doi:10.1111/j.1752-1688.2007.00008.x

Other information (please specify): Climate data accessed from Kentucky Mesonet (2011-2013)

B. ADDITIONAL COMMENTS TO SUPPORT JD: The three (3) wetlands, totaling 0.10 acres provide flood storage, erosion and sediment control, pollution control through filtering and wildlife habitat adjacent to two unnamed intermittent (RPW) tributaries of Blaine Creek (Streams 31 and 32). Blaine Creek flows into the Big Sandy River (a TNW). The two intermittent stream channels function as headwater tributaries.

INTERMITTENT STREAMS AND WETLANDS DRAINING TO BLAINE CREEK BELOW HORSEFORD CREEK DAM WITHIN THE BIG SANDY POND CLOSURE PROJECT

| ID# | Description/Tributary Name | Latitude | Longitude | Size (linear feet or acres) | HUC | Quad |
|---------------|--|-----------|------------|-----------------------------------|-----------------|--------------|
| Stream 31 | Unnamed Intermittent (RPW) Tributary to Blaine Creek | 38.188061 | -82.630791 | 371 | Big Sandy | Fallsburg |
| Stream 32 | Unnamed Intermittent (RPW) Tributary to Blaine Creek | 38.188102 | -82.631772 | 315 | Big Sandy | Fallsburg |
| Wetland 11 | PEM Wetland | 38.187827 | -82.632687 | 0.05 | Big Sandy | Fallsburg |
| Wetland 12 | PEM Wetland | 38.188183 | -82.631769 | 0.02 | Big Sandy | Fallsburg |
| Wetland 13 | PEM Wetland | 38.187824 | -82.631001 | 0.03 | Big Sandy | Fallsburg |
| tal: 2 stream | s, 3 wetlands | | | Streams: 686 | linear feet; We | tlands: 0.10 |

-8-

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 | BA | CKGROUND | INFORMATION |
|-----------|----|----------|-------------|
|-----------|----|----------|-------------|

- A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 9/16/14
- DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District, LRL-2014-417-mdh, Fly Ash Pond and Wetland 8
- PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Kentucky

County/parish/borough: Lawrence County

City: Louisa Center coordinates of site (lat/long in degree decimal format): Lat. 38.182151 N, Long -82.630658 W.

Universal Transverse Mercator:

Name of nearest waterbody: Blaine Creek

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

Name of watershed or Hydrologic Unit Code (HUC): Big Sandy (05070204)

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 ID form

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

Office (Desk) Determination. Date: August 1, 2014

Г Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There are no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 C.F.R. 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.

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There are no "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 C.F.R. 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

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: linear feet: width (ft) and/or acres.

Wetlands: acres.

c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual

Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable):3

The 130-acre Fly Ash Pond was constructed as required by other sections of the Clean Water Act to treat coal ash waste water. Per 33 C.F.R. § 328.3(a)(8) of our regulations, such waters are not considered to be jurisdictional "waters of the United States." In addition, one (1) emergent wetland (Wetland 08) totaling 0.04 acre is located within the limits of the maximum operating pool elevation (e.g., 705 feet) for the fly ash waste water treatment pond. Since the wetland falls within the permitted limits of this water, it is also not considered to be a jurisdictional water of the United States per 33 C.F.R. § 328.3(a)(8).

³ Supporting documentation is presented in Section III.F.

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

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 Sect

1. TNW

Identify TNW:

Summarize rationale supporting determination:

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 waterbody 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: Watershed size: Drainage area: |
|------|---|
| | Average annual rainfall: Average annual snowfall: |
| (ii) | (a) Relationship with TNW: Tributary flows directly into TNW. Tributary flows through tributary before entering TNW. Project waters are river miles from TNW. Project waters are river miles from RPW. Project waters are aerial (straight) miles from TNW. Project waters are aerial (straight) miles from RPW. Project waters cross or serve as state boundaries. Explain: Identify flow route to TNW ⁵ : Tributary stream order, if known: |
| | (b) General Tributary Characteristics (check all that apply): Tributary is: Natural Artificial (man-made). Explain: Manipulated (man-altered). Explain: |
| | |

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

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.

| | Ave Ave | y properties with rage width: rage depth; rage side slopes: | respect | to top of bank (esti | mate) |): | | |
|----|--|---|---|--|---------|--|--|---|
| | Primary 1 | | compos | sition (check all tha | t app | ly): | 1 | |
| | 1 | Silts | T | Sands | | | | Concrete |
| | F | Cobbles | | Gravel | | | | Muck |
| | E | Bedrock | F | Vegetation. Type | e/% c | over: | | |
| | | Other, Explain: | detritus | | | | | |
| | Presence Tributary | condition/stabili of run/riffle/pool geometry: gradient (approx | comple | | ughin | g banks] | . Expla | ins |
| (c | Tributary Estimate Des | provides for: average number or cribe flow regime formation on dura | 2 | events in review are | ea/yea | ur: | | |
| | Surface f | low is: Characte | ristics: | | | | | |
| | The second secon | ce flow: Explain Dye (or other) te | | | | | | |
| | רכ | clear, natural changes in th shelving vegetation m leaf litter dis sediment dep water stainin other (list): | all indicine impercharacted do turbed of position g | cators that apply): pressed on the bank eter of soil wn, bent, or absent r washed away | בבבבב | destruct the pres sediment scour multiple abrupt of | tion of t sence of nt sortin e observ change i | errestrial vegetation wrack line |
| | - 5 | High Tide Line | indicate | d by: | M | ean High | Water | Mark indicated by: |
| | | oil or scum l | | | - | | | able datum; |
| | | | | eposits (foreshore) | | physica | | ngs; s/changes in vegetation types. |
| | | Ti tidal gauges | KHIBBICI | iai acter iotics | 4.0 | vegetat | ion nne: | orenanges in regulation types. |
| | | other (list): | | | | | | |
| C | haracterize (Explain: | | | is clear, discolored | d, oily | film; wa | ater qua | lity; general watershed characteristics, etc.). |

⁶A 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.

Tibid.

| | (iv) | Bio | _ | of Characteristics. Channel supports (check all that apply): arian corridor. Characteristics (type, average width): |
|----|------|-------|---------------------|--|
| | | - | 1000 | land fringe. Characteristics: |
| | | - | | |
| | | | Hab | itat for: |
| | | | | Federally Listed species. Explain findings: |
| | | | Е | Fish/spawn areas. Explain findings: |
| | | | ,E | Other environmentally-sensitive species. Explain findings: |
| | | | | Aquatic/wildlife diversity. Explain findings: Provides terrestrial wildlife habitat. |
| 2. | Cha | aract | eristi | cs of wetlands adjacent to non-TNW that flow directly or indirectly into TNW |
| | (i) | | Gen Prop | Characteristics: eral Wetland Characteristics: perties: Wetland size: acres Wetland type. Explain: Wetland quality. Explain: |
| | | | | ect wetlands cross or serve as state boundaries. Explain: |
| | | (b) | | eral Flow Relationship with Non-TNW: v is: Explain: |
| | | | | ace flow is: Characteristics: |
| | | | | surface flow: Explain findings: |
| | | (c) | Wet | land Adjacency Determination with Non-TNW: Directly abutting |
| | | | П | Not directly abutting |
| | | | | Discrete wetland hydrologic connection. Explain: |
| | | | | Ecological connection. Explain: |
| | | | | Separated by berm/barrier. Explain: |
| | | (d) | Proj Proj Flo | cimity (Relationship) to TNW ect wetlands are river miles from TNW. ect waters are aerial (straight) miles from TNW. w is from; mate approximate location of wetland as within the floodplain. |
| | (ii) | Cha | aracte etc. | al Characteristics: rize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics;). Explain: specific pollutants, if known: |
| | (iii | | | al Characteristics. Wetland supports (check all that apply): parian buffer. Characteristics (type, average width): |
| | | r | 300 | egetation type/percent cover. Explain: |
| | | Г | | abitat for: |
| | | | | Federally Listed species. Explain findings: |
| | | | П | Fish/spawn areas. Explain findings: |
| | | | П | Other environmentally-sensitive species. Explain findings: |
| | | | | Aquatic/wildlife diversity. Explain findings: |
| 3. | Ch | All | wetla | ics of all wetlands adjacent to the tributary (if any) and(s) being considered in the cumulative analysis: mately (#) acres in total are being considered in the cumulative analysis. |

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For each wetland, specify the following:

Directly abuts? (Y/N)

Size (in acres)

Directly abuts? (Y/N)

Size (in acres)

Summarize overall biological, chemical and physical functions being performed:

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:

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

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| 3. | Non-RPWs ⁸ 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): Tibutary waters: |
| | Other non-wetland waters: acres. Identify type(s) of waters: |
| 4. | Wetlands directly abutting an RPW that flow directly or indirectly into TNWs. |
| | □ 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: |
| 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 jurisidictional. 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; |
| 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). |
| OR | DLATED (INTERSTATE OR INTRA-STATE) WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK L THAT APPLY): ¹⁰ |
| 100 | which are or could be used by interstate or foreign travelers for recreational or other purposes. |
| П | from which fish or shellfish are or could be taken and sold in interstate or foreign commerce. |
| П | which are or could be used for industrial purposes by industries in interstate commerce. |
| П | Interstate isolated waters. Explain: |
| Γ | Other factors. Explain: |
| Ide | ntify water body and summarize rationale supporting determination: |
| Pro | vide estimates for jurisdictional waters in the review area (check all that apply): |
| П | |
| | Other non-wetland waters: acres. Identify type(s) of waters: |
| Г | Wetlands: acres. |
| | Winners and |

E.

^{*}See Footnote # 3.

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

**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.

| F. | NO | N-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). |
| | L | Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: |
| | N. | Other: (explain, if not covered above): The 130-acre Fly Ash Pond was constructed as required by other sections of the Clean Water Act to treat coal ash waste water. Per 33 C.F.R. § 328.3(a)(8), such waters are not considered to be considered jurisdictional "waters of the United States." In addition, one (1) emergent wetland (Wetland 08) totaling 0.04 acre is located within the limits of the maximum operating pool elevation (e.g., 705 feet) for the fly ash waste water treatment pond. Since the wetland falls within the permitted limits of this water, it is also not considered to be a jurisdictional water of the United States per 33 C.F.R. § 328.3(a)(8). |
| | (i.e. | vide acreage estimates for non-jurisdictional waters in the review area, where the <u>sole</u> potential basis of jurisdiction is the MBR factors, presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment eck all that apply): |
| | Г | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| | Г | Lakes/ponds: acres. |
| | Г | Other non-wetland waters: acres. List type of aquatic resource: |
| | Е | Wetlands: Four wetlands totaling . |
| | | |
| | | vide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a ing is required for jurisdiction (check all that apply): |
| | | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| | T. | Lakes/ponds: acres. |
| | Г | Other non-wetland waters: acres. List type of aquatic resource: |
| | Г | Wetlands: |
| SE | CTIC | ON IV: DATA SOURCES. |
| | | PORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and |
| A | | lested, appropriately reference sources below): |
| | | Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: American Electric Power (applicant), URS Corporation (consultant) May 2013 submittal |
| | | |
| | | Office concurs with data sheets/delineation report. |
| | | Office does not concur with data sheets/delineation report. |
| | | Data sheets prepared by the Corps: |
| | | Corps navigable waters' study: |
| | 1-1 | U.S. Geological Survey Hydrologic Atlas: |
| | | USGS NHD data. |
| | - | USGS 8 and 12 digit HUC maps. |
| | 14 | U.S. Geological Survey map(s), Cite scale & quad name: Fallsburg, KY 1:24,000 USGS Quadrangle |
| | P | USDA Natural Resources Conservation Service Soil Survey. Citation: Lawrence County, KY soil survey |
| | 1 | National wetlands inventory map(s). Cite name: Fallsburg, KY 1:24,000 USGS Quadrangle |
| | | State/Local wetland inventory map(s): |
| | 17 | FEMA/FIRM maps: 21127C0120D |
| | 1 | 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929) |
| | P | Photographs: Aerial (Name & Date): |
| | | or Other (Name & Date): Photos taken by URS Corporation during 2012 field inspections. Previous determination(s). File no. and date of response letter: |
| | | |
| | | Applicable/supporting case law: |
| | | Applicable/supporting scientific literature: Other information (please specify): |
| | 1.1 | Office intomation (picase specify). |

B. ADDITIONAL COMMENTS TO SUPPORT JD: The 130-acre Fly Ash Pond was constructed as required by other sections of the Clean Water Act to treat coal ash waste water. Per 33 C.F.R. § 328.3(a)(8), such waters are not considered to be considered jurisdictional "waters of the United States." In addition, one (1) emergent wetland (Wetland 08) totaling 0.04 acre is located within the limits of the maximum operating pool

elevation (e.g., 705 feet) for the fly ash waste water treatment pond. Since the wetland falls within the permitted limits of this water, it is also not considered to be a jurisdictional water of the United States per 33 C.F.R. § 328.3(a)(8).

Fly Ash Pond, 130 acres, Lat. 38.182151 N, Long -82.630658 W W8 (Emergent), 0.04 acres, Lat. 38.18342 N, Lon. -82.638723 W

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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. 1 | REPORT COMPL | ETION DATE FOR | APPROVED | JURISDICTIONAL | DETERMINATION (JE | D: 9/16/14 |
|------|--------------|----------------|----------|----------------|-------------------|------------|
|------|--------------|----------------|----------|----------------|-------------------|------------|

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District, LRL-2014-417-mdh, Perennial RPW Stream Channel S-68

| C. | PR | OJECT LOCATION AND BACKGROUND INFORMATION: | | | | | | | |
|-----|--|---|--|--|--|--|--|--|--|
| | State: Kentucky County/parish/borough: Lawrence County City: Louisa Center coordinates of site (lat/long in degree decimal format): Lat. 38.175615 °, Long82.647681 ° Universal Transverse Mercator: | | | | | | | | |
| | Nar | me of nearest waterbody: Fuller's Branch me of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Big Sandy River me of watershed or Hydrologic Unit Code (HUC): Big Sandy (05070204) | | | | | | | |
| | V | Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request. | | | | | | | |
| | V | Check if other sites (e.g., offsite mitigation sites, disposal sites, etc) are associated with this action and are recorded on a differer JD form | | | | | | | |
| D. | RE | VIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY): | | | | | | | |
| | V | Office (Desk) Determination. Date: July 24, 2014 | | | | | | | |
| | Г | Field Determination. Date(s): | | | | | | | |
| SE | CTIC | ON II: SUMMARY OF FINDINGS | | | | | | | |
| _ | | A SECTION 10 DETERMINATION OF JURISDICTION. | | | | | | | |
| The | ere ar | re no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 C.F.R. part 329) in the review equired. | | | | | | | |
| | Г | Waters subject to the ebb and flow of the tide. | | | | | | | |
| | Г | Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: | | | | | | | |
| В. | CW | A SECTION 404 DETERMINATION OF JURISDICTION. | | | | | | | |
| The | ere at | re "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 C.F.R. 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 | | | | | | | |
| | F | TNWs, including territorial seas | | | | | | | |
| | Г | Wetlands adjacent to TNWs | | | | | | | |
| | V | Relatively permanent waters2 (RPWs) that flow directly or indirectly into TNWs | | | | | | | |
| | T | Non-RPWs that flow directly or indirectly into TNWs | | | | | | | |
| | Г | Wetlands directly abutting RPWs that flow directly or indirectly into TNWs | | | | | | | |
| | Г | Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs | | | | | | | |
| | Г | Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs | | | | | | | |
| | F | 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: One (1) perennial stream channel totaling 1,381 linear feet: 14 width (ft). Wetlands: acres. | | | | | | | |
| | | c. Limits (boundaries) of jurisdiction based on: Established by OHWM | | | | | | | |

Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable):3

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

3 Supporting documentation is presented in Section III.F.

Explain:

Г

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

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).

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.

I. TNW

Identify TNW:

Summarize rationale supporting determination:

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 waterbody 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:

Watershed size:

Drainage area: Big Sandy River: 410.4 square miles

Average annual rainfall: 50.0 inches Average annual snowfall: 21.0 inches

(ii) Physical Characteristics:

| (a) | Relations | hip | with | TN | W: |
|-----|-----------|-----|------|----|----|
| | | | | | |

Tributary flows directly into TNW.

Tributary flows through 1 tributaries before entering TNW.

Project waters are 1-2 river miles from TNW.

Project waters are NA river miles from RPW.

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

Project waters are NA aerial (straight) miles from RPW.

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

Identify flow route to TNW5: S-68 (Perennial RPW) flows into Fuller's Branch (RPW), which flows into the Big Sandy River (a TNW).

Tributary stream order, if known:

| (b) General Tri | ibutary Characteristic | s (check al | I that app | ly): |
|-----------------|------------------------|-------------|------------|------|
|-----------------|------------------------|-------------|------------|------|

| Tributary is: | V | Natural |
|---------------|---|------------------------------------|
| | Г | Artificial (man-made). Explain: |
| | Г | Manipulated (man-altered). Explain |

¹ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

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.

| | Primary tributary substrate composition (check all that apply): | | | | | | | | | | |
|-----|---|--------|--|----------------------|-----------------|----------|------|------------|--------|---|--|
| | Г | Silts | | | Sands | | | | - | Concrete | |
| | V | Cobb | oles | V | Gravel | | | | Г | Muck | |
| | V | Bedr | rock | Г | Vegetation. | Type/% | cov | er: | | | |
| | F | Othe | r. Explain: B | oulders | 3 | | | | | | |
| | Presence Tributary | of rui | n/riffle/pool onetry: Relativ | complex vely stra | xes. Explain: | Run/riff | | | | in: Moderately stable, partially vegetated present: Riffle 45%, Run: 30%, Pool: 25% | |
| (c) | Tributary Estimate Des | avera | ides for: Pere ge number o flow regime: tion on durat | f flow o | events in revie | w area/y | ear: | 20 (or g | reater | | |
| | Surface f | low is | : Confined | Charact | eristics: | | | | | | |
| | | | w: Unknown (or other) tes | | | | | | | | |
| | the second second | | check all tha and banks | t apply |): | | | | | | |
| | [ব | OHV | VM ⁶ (check | all indi | cators that app | oly): | | | | | |
| | | [] c | lear, natural | line im | pressed on the | bank F | 1 1 | he preser | ice of | litter and debris | |
| | 1 | rl c | hanges in the | charac | ter of soil | 1× | 1 0 | lestructio | n of t | errestrial vegetation | |
| | 3 | II s | helving | | | Г | t | he preser | nce of | wrack line | |
| | 1 | TI v | egetation ma | itted do | wn, bent, or a | bsent [| s | ediment | sortin | g | |
| | 3 | T 16 | eaf litter dist | urbed o | r washed awa | у Г | 1 5 | cour | | | |
| | 1 | TI s | ediment depe | osition | | T | 7 0 | nultiple o | bserv | ved or predicted flow events | |
| | 3 | | vater staining | 3 | | Г | a | brupt ch | ange i | in plant community | |
| | | | ther (list): | ق باساست. | 1 | | | | | | |
| | Discontinuous OHWM. Explain: | | | | | | | | | | |
| | | | than the OF | | | | | | | WA jurisdiction (check all that apply): Mark indicated by: | |
| | | [o | il or scum li | ne alon | g shore object | s T | 1 s | survey to | avail | able datum; | |
| | 13 | TI f | ine shell or d | ebris d | eposits (foresh | nore) [| 1 1 | hysical 1 | marki | ngs; | |
| | 11 | TI p | hysical mark | cings/ch | aracteristics | Г | 1 1 | vegetatio | n line | s/changes in vegetation types. | |
| | TI tidal gauges | | | | | | | | | | |
| | 1 | T 0 | ther (list): | | | | | | | | |
| | | | | | | | | | | | |

⁶A 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.

Tibid.

| | (iv) | Bio | | racteristics. Channel supports (check all that apply): orridor. Characteristics (type, average width): Mixed mesic forest >50' |
|----|------|-------|--|---|
| | | _ | | |
| | | | | inge. Characteristics: |
| | | V | Habitat for | |
| | | | Feder | ally Listed species. Explain findings: |
| | | | Fish/s | spawn areas. Explain findings: |
| | | | Other | environmentally-sensitive species. Explain findings: |
| | | | Aqua habita | tic/wildlife diversity. Explain findings: These waters and their buffers provide aquatic and terrestrial wildlife at. |
| 2. | Cha | ract | eristics of v | vetlands adjacent to non-TNW that flow directly or indirectly into TNW |
| | (i) | | Properties Wetlar Wetlar Wetlar | etland Characteristics: |
| | | (b) | | ow Relationship with Non-TNW: |
| | | | Surface flo | |
| | | | | e flow: Explain findings: ye (or other) test performed: |
| | | (c) | Samuel Asia | diacency Determination with Non-TNW: |
| | | | T Not | directly abutting |
| | | | | Discrete wetland hydrologic connection. Explain: |
| | | | | Ecological connection. Explain: |
| | | | | Separated by berm/barrier. Explain: |
| | | (d) | Project wa Project wa Flow is fro | (Relationship) to TNW tlands are river miles from TNW. ters are aerial (straight) miles from TNW. om: pproximate location of wetland as within the floodplain. |
| | (II) | Cha | etc.). Exp | racteristics: etland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; lain: c pollutants, if known: |
| | (iii | Bio C | | racteristics. Wetland supports (check all that apply): buffer. Characteristics (type, average width): |
| | | E | Vegetatio | on type/percent cover. Explain; or: |
| | | | □ Feder | ally Listed species. Explain findings: |
| | | | | spawn areas. Explain findings: |
| | | | | environmentally-sensitive species. Explain findings: |
| | | | T Aqua | tic/wildlife diversity. Explain findings: |
| 3. | Cha | | | Il wetlands adjacent to the tributary (if any) being considered in the cumulative analysis: |

Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)

Size (in acres)

Directly abuts? (Y/N)

Size (in acres)

Summarize overall biological, chemical and physical functions being performed;

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:

- 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:
- 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:
- 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. | NWs and Adjacent Wetlands. Check all that apply and provide size estimates in review area: | | | | | | | |
|----|---|--|--|--|--|--|--|--|
| | TNWs: linear feet width (ft), Or, acres. | | | | | | | |
| | Wetlands adjacent to TNWs: acres. | | | | | | | |
| 2. | PWs 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: Water fills >75% of available area, originates from steep slope. | | | | | | | |
| | Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are | | | | | | | |
| | 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: one perennial stream totaling 1,381 linear feet; 14 (ft) width. | | | | | | | |
| | Other non-wetland waters: acres. | | | | | | | |
| | Identify type(s) of waters: | | | | | | | |
| | | | | | | | | |

| 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 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): Tibutary waters: linear feet 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. 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 jurisidictional. 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: acres. | | | | |
| | 7. | Impoundments of jurisdictional waters. 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). | | | | |
| | OR | LATED (INTERSTATE OR INTRA-STATE) WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK L THAT APPLY): ¹⁰ | | | | |
| | LI | which are or could be used by interstate or foreign travelers for recreational or other purposes. | | | | |
| | П | from which fish or shellfish are or could be taken and sold in interstate or foreign commerce. | | | | |
| | Γ. | which are or could be used for industrial purposes by industries in interstate commerce. | | | | |
| | | Interstate isolated waters. Explain: | | | | |
| | 1.4 | Other factors. Explain: | | | | |
| | Ide | ntify water body and summarize rationale supporting determination: | | | | |
| | Pro | vide 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: | | | | |
| | 1 | Wetlands: acres. | | | | |
| | | | | | | |

E.

^{*}See Footnote # 3.

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

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

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**To compl

| F. | NO | N-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. |
| | T | 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). |
| | Г | Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: |
| | Г | Other: (explain, if not covered above): |
| | (i.e., | ride acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment ck all that apply): |
| | Г | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| | | Lakes/ponds: acres, |
| | Г | Other non-wetland waters: acres. List type of aquatic resource: . |
| | Г | Wetlands: acres. |
| | | ride acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a ing is required for jurisdiction (check all that apply): |
| | | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| | | Lakes/ponds: acres. |
| | Г | Other non-wetland waters: acres. List type of aquatic resource:. |
| | Г | Wetlands: acres. |
| SEC | CTIO | N IV: DATA SOURCES. |
| A. : | requ | PORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and lested, appropriately reference sources below): Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: American Electric Power (applicant), URS Corporation (consultant) May 2013 submitted Data sheets prepared/submitted by or on behalf of the applicant/consultant. |
| | | Office concurs with data sheets/delineation report. |
| | | Office does not concur with data sheets/delineation report. |
| | П | Data sheets prepared by the Corps: |
| | П | Corps navigable waters' study: |
| | 17 | U.S. Geological Survey Hydrologic Atlas: |
| | | USGS NHD data. |
| | | USGS 8 and 12 digit HUC maps. |
| | 17 | U.S. Geological Survey map(s). Cite scale & quad name: Fallsburg, KY 1:24,000 USGS Quadrangle |
| | 17 | USDA Natural Resources Conservation Service Soil Survey. Citation: Lawrence County, KY soil survey |
| | 17 | National wetlands inventory map(s). Cite name: Fallsburg, KY 1:24,000 USGS Quadrangle |
| | П | State/Local wetland inventory map(s): |
| | 171 | FEMA/FIRM maps: 21127C0120D |
| | П | 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929) |
| | 17 | Photographs: Aerial (Name & Date): |
| | TI | or Other (Name & Date): Photos taken by URS Corporation during 2012 field inspections |
| | TI | Previous determination(s). File no. and date of response letter: |
| | FI | Applicable/supporting case law: |
| | FI | Applicable/supporting scientific literature: |
| | П | Other information (please specify): |
| | | ITIONAL COMMENTS TO SUPPORT JD: One (1) perennial stream channel, totaling 1,381 feet, functions as a headwater tributary Stream 68 flows to Fuller's Branch (RPW), which flows into the Big Sandy River (a TNW). |

Louisville District, LRL-2014-417-mdh, Perennial RPW Stream Channel S-68

PERENNIAL STREAMS DRAINING TO FULLER'S BRANCH WITHIN THE BIG SANDY POND CLOSURE PROJECT

| ID# | Description/Tribuary Name | Latitude | Longitude | Size (linear feet) | HUC | Quad | |
|-----------|--|-----------|------------|-----------------------|-----------|-----------|--|
| Stream 68 | Unamed Perennial Tributary of Fuller's Branch | 38.175615 | -82.647681 | 1,381 | Big Sandy | Fallsburg | |
| Total: 1 | | | | 1,381 linear fee | et | | |

-8-

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

8.0

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 9/16/14

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District, LRL-2014-417-mdh, Perennial RPW Stream Channel (S-30) and Abutting Wetland (W-10)

| 20) | anu | Additing Wending (W-10) |
|-----|----------|---|
| C. | PR | DJECT LOCATION AND BACKGROUND INFORMATION: |
| | | e: Kentucky County/parish/borough: Lawrence County City: Louisa ter coordinates of site (lat/long in degree decimal format): Lat. 38.188125 °, Long82.633499 ° Universal Transverse Mercator: |
| | Nar | ne of nearest waterbody: Blaine Creek ne of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows; Big Sandy River ne of watershed or Hydrologic Unit Code (HUC): Big Sandy (05070204) |
| | V | Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request. |
| | Þ | 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. | RE | VIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY): |
| | V | Office (Desk) Determination. Date: June 9, 2014 |
| | Г | Field Determination. Date(s): |
| SE | CTIC | ON II: SUMMARY OF FINDINGS |
| | | SECTION 10 DETERMINATION OF JURISDICTION. |
| | | e no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 C.F.R. part 329) in the review quired] |
| | Г | Waters subject to the ebb and flow of the tide. |
| | Г | 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. | CW | SECTION 404 DETERMINATION OF JURISDICTION. |
| The | re ar | e "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 C.F.R. 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): ' |
| | Γ | TNWs, including territorial seas |
| | Г | Wetlands adjacent to TNWs |
| | V | Relatively permanent waters2 (RPWs) that flow directly or indirectly into TNWs |
| | Г | Non-RPWs that flow directly or indirectly into TNWs |
| | V | Wetlands directly abutting RPWs that flow directly or indirectly into TNWs |
| | T | Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs |
| | F | Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs |
| | | Impoundments of jurisdictional waters |
| | Г | 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: One (1) perennial stream channel totaling 558 linear feet: 8 width (ft). Wetlands: One (1) PEM wetland totaling 0.02 acres. |
| | | c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual |
| | | Elevation of established OHWM (if known): |

2. Non-regulated waters/wetlands (check if applicable):3

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

³ Supporting documentation is presented in Section III.F.

Explain:

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

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).

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.

I. TNW

Identify TNW:

Summarize rationale supporting determination:

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 waterbody 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:

Watershed size:

Drainage area: Big Sandy River: 410.4 square miles

Average annual rainfall: 50.0 inches Average annual snowfall: 21.0 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through I tributaries before entering TNW.

Project waters are 2-3 river miles from TNW.

Project waters are NA river miles from RPW.

Project waters are 1-2 aerial (straight) miles from TNW.

Project waters are NA aerial (straight) miles from RPW.

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

Identify flow route to TNW⁵: Stream-30 flows into Blaine Creek (RPW), which flows into the Big Sandy River (a TNW). Tributary stream order, if known: 1st

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

Manipulated (man-altered). Explain: Flows from dam outfall, rip rap on streambanks, multiple dams and a culvert on stream

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

³ 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.

| | ₽ I | tributary substr | | | un that ann | (v)- | | | |
|----------|--|--|---------------|-----------------|--------------|--------------|------|---|--|
| | | Silts | V | Sands | in mar upp | Γ. | - | Concrete | |
| | V | Cobbles | V | Gravel | | r | - | Muck | |
| | г | Bedrock | г | Vegetation. | Type/% c | over: | | | |
| | V | Other, Explain | n: Boulder | | 22,679,101.0 | | | | |
| | | | | | | v - 5-2 | | | |
| egetatio | | condition/stab | oility [e.g., | highly eroding | g, sloughin | g banks]. Ex | pla | ain: Banks shored by rip rap, some herbaceo | |
| | Presence Tributary | of run/riffle/po geometry: Re gradient (appr | latively str | aight | | pool comple | xes | present: Riffle 40%, Run: 50%, Pool: 10% | |
| (c) | Flow: Tributary provides for: Perennial flow Estimate average number of flow events in review area/year; 20 (or greater) Describe flow regime: Perennial Other information on duration and volume: | | | | | | | | |
| | Surface t | low is: Confin | ed Charact | teristics | | | | | |
| | Subsurface flow: Unknown Explain findings: Dye (or other) test performed: | | | | | | | | |
| | Tributary has (check all that apply): Bed and banks | | | | | | | | |
| | | clear, natu | ral line im | pressed on the | bank 🔽 | the presence | of | f litter and debris | |
| | | changes in | the charac | cter of soil | T) | destruction | oft | terrestrial vegetation | |
| | | shelving | | | | the presence | of | f wrack line | |
| | | vegetation | matted do | wn, bent, or a | bsent [| sediment so | rtir | ng. | |
| | | leaf litter | disturbed o | r washed awa | y FI | scour | | | |
| | | sediment of | deposition | | - | multiple obs | er | ved or predicted flow events | |
| | | water stain | ning | | П | abrupt chan | ge | in plant community | |
| | _ | other (list) | | 7 | | | | | |
| | Discontinuous OHWM. Explain: | | | | | | | | |
| | If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply): Fighther Time indicated by: Mean High Water Mark indicated by: | | | | | | | | |
| | | oil or scur | n line alon | g shore object | s [| survey to av | ail | able datum; | |
| | | fine shell | or debris d | eposits (foresh | nore) | physical ma | rki | ngs; | |
| | | physical n | narkings/ch | naracteristics | | vegetation l | ine | s/changes in vegetation types. | |
| | | tidal gaug | es | | | | | | |
| | | other (list) |): | | | | | | |
| | | aracteristics: | ,. | | | | | | |

⁶A 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.

Tibid.

| | | Riparian corridor. Characteristics (type, average width): Herbaceous <20 ft. | | | | | | |
|-------|--|--|--|--|--|--|--|--|
| | Г | Wetland fringe. Characteristics: Wetland-10 Emergent wetland abutting stream. | | | | | | |
| | Habitat for: | | | | | | | |
| | | Federally Listed species. Explain findings: | | | | | | |
| | | Fish/spawn areas. Explain findings: | | | | | | |
| | | Other environmentally-sensitive species. Explain findings: | | | | | | |
| | | Aquatic/wildlife diversity. Explain findings: These waters and their buffers provide aquatic and terrestrial wildlife habitat. | | | | | | |
| Cha | ract | eristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW | | | | | | |
| (i) | Physical Characteristics: (a) General Wetland Characteristics: Properties: Wetland size: 0.02 acres Wetland type. Explain: Emergent vegetation Wetland quality. Explain: Low-quality, ORAM Category 1 wetland Project wetlands cross or serve as state boundaries. Explain: | | | | | | | |
| | (b) | General Flow Relationship with Non-TNW: Flow is: Perennial Flow Explain: | | | | | | |
| | | Surface flow is: Confined Characteristics: | | | | | | |
| | | Subsurface flow: Unknown Explain findings: Dye (or other) test performed: | | | | | | |
| | (c) | Wetland Adjacency Determination with Non-TNW: Directly abutting | | | | | | |
| | | Not directly abutting | | | | | | |
| | | ☐ Discrete wetland hydrologic connection. Explain: | | | | | | |
| | | ☐ Ecological connection. Explain: | | | | | | |
| | | Separated by berm/barrier. Explain: | | | | | | |
| | (d) | Proximity (Relationship) to TNW | | | | | | |
| | | Project wetlands are 2-5 river miles from TNW. | | | | | | |
| | | Project waters are 1-2 aerial (straight) miles from TNW. Flow is from: Wetland to Navigable Waters | | | | | | |
| | | Estimate approximate location of wetland is within the 50 - 100-year floodplain. | | | | | | |
| (ii) | Cha | emical Characteristics: racterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics etc.). Explain: Surface water not observed in wetland. httfy specific pollutants, if known: | | | | | | |
| (iii) | | logical Characteristics. Wetland supports (check all that apply): | | | | | | |
| | | Riparian buffer. Characteristics (type, average width): Emergent, <20 ft width | | | | | | |
| | | Vegetation type/percent cover. Explain: Herbaceous/pem type >100% cover. | | | | | | |
| | 10 | Habitat for: | | | | | | |
| | | Figh/course ages Explain findings: | | | | | | |
| | | Fish/spawn areas. Explain findings: | | | | | | |
| | | Other environmentally-sensitive species. Explain findings: Aquatic/wildlife diversity. Explain findings: The wetlands and adjacent stream provide terrestrial and aquatic | | | | | | |

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

2.

All wetland(s) being considered in the cumulative analysis: I

Approximately (0.02) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N) Wetland-10 Y Size (in acres) 0.02 Directly abuts? (Y/N)

Size (in acres)

Summarize overall biological, chemical and physical functions being performed: This wetland performs multiple functions including streambank stability, pollution control through filtering, and a source of wildlife habitat. The wetland has the capacity to transfer nutrients and organic carbon to support downstream foodwebs.

C. SIGNIFICANT NEXUS DETERMINATION

1

7

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;

- 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:
- 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:
- 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):

| TN | Ws and Adjacent Wetlands. Check all that apply and provide size estimates in review area: |
|----|--|
| F | TNWs: linear feet width (ft), Or, acres. |
| П | Wetlands adjacent to TNWs: acres. |
| RP | Ws that flow directly or indirectly into TNWs. |
| लि | Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: Water fills >75% of available area, originates from fly ash wastewater treatment pond discharge. |
| П | 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: One (1) perennial stream totaling 558 linear feet; 6.5 width (ft). |
| | Other non-wetland waters: acres. |
| | Identify type(s) of waters: |
| | |

| 3. | Non-RPWs ⁸ that flow directly or indirectly into TNWs. [7] 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. | | | | | | | | | |
|-----|---|--------|--|--|--|--|--|--|--|--|
| | rovide estimates for jurisdictional waters within the review area (check all that apply): Tributary waters: linear feet width (ft). | | | | | | | | | |
| | Other non-wetland waters: acres, Identify type(s) of waters: | | | | | | | | | |
| 4. | Vetlands directly abutting an RPW that flow directly or indirectly into TNWs. | | | | | | | | | |
| | 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: Boundaries of Wetland-10 include streambank of Stream-30. | | | | | | | | | |
| | 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: 0.02 acres. | | | | | | | | | |
| 5, | Vetlands 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 jurisidictional. Data supporting this conclusion is provided at Section III.C. | | | | | | | | | |
| | rovide acreage estimates for jurisdictional wetlands in the review area: acres. | | | | | | | | | |
| 6. | Vetlands 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 with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C. | nt | | | | | | | | |
| | rovide estimates for jurisdictional wetlands in the review area: acres. | | | | | | | | | |
| 7. | s a general rule, the impoundment of a jurisdictional tributary remains jurisdictional. Demonstrate that impoundment was created from "waters of the U.S.," or | | | | | | | | | |
| | 그는 그래픽 그리고 있다면 전에 이 경기에 있는 경기에 가지 않는 아니라 이 나는 아니라 아니라 아니라 아니라 그를 먹다는 그 나를 그는 것이다. | | | | | | | | | |
| | 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). | | | | | | | | | |
| | | 9.34. | | | | | | | | |
| OR | ATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGR. ESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS THAT APPLY): ¹⁰ | ADATIO | | | | | | | | |
| L | hich are or could be used by interstate or foreign travelers for recreational or other purposes. | | | | | | | | | |
| | om which fish or shellfish are or could be taken and sold in interstate or foreign commerce. | | | | | | | | | |
| П | hich are or could be used for industrial purposes by industries in interstate commerce. | | | | | | | | | |
| | nterstate isolated waters. Explain: | | | | | | | | | |
| П | ther factors. Explain: | | | | | | | | | |
| Ide | fy water body and summarize rationale supporting determination: | | | | | | | | | |
| Pro | e estimates for jurisdictional waters in the review area (check all that apply): | | | | | | | | | |
| | ributary waters: linear feet width (ft). | | | | | | | | | |
| | ther non-wetland waters: acres. | | | | | | | | | |
| | Identify type(s) of waters: | | | | | | | | | |
| | etlands: acres. | | | | | | | | | |
| | | | | | | | | | | |

E.

^{*}See Footnote # 3.

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

*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.

| F, | NO | N-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. |
| | Г | 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). |
| | Г | Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: |
| | Г | Other: (explain, if not covered above): |
| | (i.e. | vide acreage estimates for non-jurisdictional waters in the review area, where the <u>sole</u> potential basis of jurisdiction is the MBR factors, presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment ock all that apply): |
| | | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| | T | Lakes/ponds: acres. |
| | Г | Other non-wetland waters: acres. List type of aquatic resource: |
| | Г | Wetlands: acres. |
| | | vide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a ing is required for jurisdiction (check all that apply): |
| | | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| | Г | Lakes/ponds: acres. |
| | Г | Other non-wetland waters: acres. List type of aquatic resource: . |
| | Г | Wetlands: acres. |
| SE | CTIC | N IV: DATA SOURCES. |
| A. | requ | PORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and sested, appropriately reference sources below): Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: American Electric Power (applicant), URS Corporation (consultant) May 2013 submitted Data sheets prepared/submitted by or on behalf of the applicant/consultant. |
| | 18.1 | Office concurs with data sheets/delineation report. |
| | | Office does not concur with data sheets/delineation report. |
| | П | Data sheets prepared by the Corps: |
| | ri | Corps navigable waters' study: |
| | 17 | U.S. Geological Survey Hydrologic Atlas: |
| | 2.4 | USGS NHD data. |
| | | USGS 8 and 12 digit HUC maps. |
| | F | U.S. Geological Survey map(s). Cite scale & quad name: Fallsburg, KY 1:24,000 USGS Quadrangle |
| | V | USDA Natural Resources Conservation Service Soil Survey. Citation: Lawrence County, KY soil survey |
| | 17 | National wetlands inventory map(s). Cite name: Fallsburg, KY 1:24,000 USGS Quadrangle |
| | П | State/Local wetland inventory map(s): |
| | IV | FEMA/FIRM maps: 21127C0110D |
| | | 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929) |
| | V | Photographs: |
| | П | or [7] Other (Name & Date): Photos taken by URS Corporation during 2012 field inspections |
| | П | Previous determination(s). File no. and date of response letter: |
| | П | Applicable/supporting case law: |
| | | Applicable/supporting scientific literature: |
| | П | Other information (please specify): |
| | | |

B. ADDITIONAL COMMENTS TO SUPPORT JD: The one (1) emergent wetland, totaling 0.02 acres, provides flood storage, erosion and sediment control, pollution control through filtering and wildlife habitat adjacent to an unnamed perennial (RPW) tributary of Blaine Creek. Blaine Creek flows into the Big Sandy River (a TNW). Stream 30 (RPW) is a perennial stream channel, totaling 558 linear feet, that functions as a headwater tributary to Blaine Creek.

PERENNIAL STREAMS AND WETLANDS DRAINING TO BLAINE CREEK WITHIN THE BIG SANDY POND CLOSURE PROJECT

| ID# | Description/Tribuary Name | Latitude | Longitude | Size (linear feet - stream, acres - wetland) | HUC | Quad | |
|---------------------------------|----------------------------------|-----------|------------|--|-----------|------------|--|
| Stream 30 | Unamed tributary to Blaine Creek | 38.188125 | -82.633499 | 558 | Big Sandy | Falls burg | |
| Wetland 10 | PEM wetland | 38.187993 | -82.633528 | 0.02 | Big Sandy | Fallsburg | |
| Total: 1 Stream 1 Wetland | | | | Stream: 558 linear feet Wetland: 0.02 acre | | | |

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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

| Α. | REPORT COMPLETION | DATE FOR APPROV | ED JURISDICTIONAL | DETERMINATION | (JD): 9/16/14 |
|----|-------------------|-----------------|-------------------|---------------|---------------|
|----|-------------------|-----------------|-------------------|---------------|---------------|

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District, LRL-2014-417-mdh, Perennial RPW Stream Channel S-44

| C. | PRO | JECT LOCATION AND BACKGROUND INFORMATION: |
|-----|---------|---|
| | | e: Kentucky County/parish/borough: Lawrence County City: Louisa er coordinates of site (lat/long in degree decimal format): Lat. 38.18355 °, Long82.65165 ° Universal Transverse Mercator: |
| | Nam | e of nearest waterbody: Fly Ash wastewater treatment pond te of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Big Sandy River via fly ash wastewater ment pond |
| | | e of watershed or Hydrologic Unit Code (HUC): Big Sandy (05070204) |
| | V | Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request. |
| | P | 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. | REV | IEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY): |
| | V | Office (Desk) Determination. Date: July 24, 2014 |
| | Г | Field Determination. Date(s): |
| SE | CTIO | N II: SUMMARY OF FINDINGS |
| A. | RHA | SECTION 10 DETERMINATION OF JURISDICTION. |
| | | no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 C.F.R. part 329) in the review [uired] |
| | Г | Waters subject to the ebb and flow of the tide. |
| | Γ | 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. |
| The | ere are | "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 C.F.R. part 328) in the review area. [Required] |
| | 1. 1 | Waters of the U.S. Indicate presence of waters of U.S. in review area (check all that apply): 1 |
| | T | TNWs, including territorial seas |
| | Г | Wetlands adjacent to TNWs |
| | V | Relatively permanent waters ² (RPWs) that flow directly or indirectly into TNWs |
| | Г | Non-RPWs that flow directly or indirectly into TNWs |
| | Г | Wetlands directly abutting RPWs that flow directly or indirectly into TNWs |
| | Г | 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 |
| | V | Impoundments of jurisdictional waters |
| | Г | Isolated (interstate or intrastate) waters, including isolated wetlands |
| | 1 | b. Identify (estimate) size of waters of the U.S. in the review area: Non-wetland waters: One (1) perennial stream channel totaling 2,379 linear feet: 12 width (ft). |

Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable):3

c. Limits (boundaries) of jurisdiction based on: Established by OHWM

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain:

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

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).

Supporting documentation is presented in Section III.F.

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.

I. TNW

Identify TNW:

Summarize rationale supporting determination:

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 waterbody 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:

Watershed size:

Drainage area: Big Sandy River: 410.4 square miles

Average annual rainfall: 50.0 inches Average annual snowfall: 21.0 inches

(ii) Physical Characteristics:

| (| (a) | Relationship with TNW |
|---|-----|-----------------------|
| | | |

Tributary flows directly into TNW.

Tributary flows through 1 tributaries before entering TNW.

Project waters are 2-5 river miles from TNW.

Project waters are NA river miles from RPW.

Project waters are 1-2 aerial (straight) miles from TNW.

Project waters are NA aerial (straight) miles from RPW.

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

Identify flow route to TNW⁵: Stream-44 (Horseford Creek) flows into the fly ash wastewater treatment pond, which flows into Blaine Creek (RPW), which flows into the Big Sandy River (a TNW).

Tributary stream order, if known:

| (b) General Trib | utary Characteristics | (check all that apply) |
|------------------------------------|-----------------------|------------------------|
|------------------------------------|-----------------------|------------------------|

Tributary is:

Natural

Artificial (man-made). Explain:

Manipulated (man-altered). Explain: Stream-44 drains into fly ash wastewater treatment pond.

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

¹ 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.

| | | Ave | erage | roperties with e width: 6 feet e depth: 6 inch e side slopes: | | to top of bank | (estimate | e): | | | | |
|-------|-----|---|--------------|---|-----------------------|------------------------|--------------|-----|---------------|--------|---|--------|
| | | | | itary substrate | - | | ill that app | ply | /): | | | |
| | | V | Sil | ts | V | Sands | | | | | Concrete | |
| | | V | Co | bbles | V | Gravel | | | 1 | | Muck | |
| | | V | Be | drock | Г | Vegetation. | Type/% | co | ver: | | | |
| | | V | Ot | her. Explain: E | Boulders | | | | | | | |
| | | Presence Tributar | of r | | complex vely stra | kes. Explain: hight | Run/riffle | | | | in: Moderately stable, partially vegetate present: Riffle 60%, Run: 30%, Pool: I | |
| | (c) | Tributar Estimate Des | ave scrib | ovides for: Per rage number of the flow regime nation on durat | of flow e : Perenn | vents in revie | w area/ye | ear | : 20 (or gre | ater) | | |
| | | Surface | flow | is: Confined | Characti | eristics: | | | | | | |
| | | | | low: Unknown e (or other) te | | | | | | | | |
| | | | 7 | s (check all the | at apply) |); | | | | | | |
| | | [7] | OF | HWM ⁶ (check | all indic | cators that app | ly): | | | | | |
| | | | V | clear, natural | line imp | oressed on the | bank 🔽 | | the presenc | e of | litter and debris | |
| | | | | changes in th | e charac | ter of soil | | | destruction | of te | errestrial vegetation | |
| | | | | shelving | | | П | L. | the presenc | e of | wrack line | |
| | | | LI | vegetation m | atted dov | wn, bent, or a | bsent [| k | sediment so | orting | g | |
| | | | П | leaf litter dist | turbed or | washed awa | у П | | scour | | | |
| | | | V | sediment dep | osition | | | | multiple ob | serv | ed or predicted flow events | |
| | | | | water staining | g | | | L | abrupt char | ige i | n plant community | |
| | | | 100 | other (list): | | | | | | | | |
| | | 15 | Di | scontinuous O | HWM. | Explain: Str | eam 44 fl | ov | vs directly i | nto f | fly ash wastewater treatment pond. | |
| | | If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply): High Tide Line indicated by: Mean High Water Mark indicated by: | | | | | | | | | | |
| | | | П | oil or scum li | ine along | shore object | s F | 1 | survey to a | vaila | able datum; | |
| | | | LI | fine shell or | debris de | eposits (forest | nore) [| Ĺ | physical m | arkir | ngs; | |
| | | | | physical mar | kings/ch | aracteristics | | 1 | vegetation | lines | s/changes in vegetation types. | |
| | | | FI | tidal gauges | | | | | | | | |
| | | | Γ | other (list): | | | | | | | | |
| (iii) | Ch | emical Cl | hara | cteristics: | | | | | | | | |
| ASC. | Cha | aracterize Explain | tribu | | ghtly tur | | | | film; water | qual | lity; general watershed characteristics, e | etc.). |

⁶A 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.

7Ibid.

| | (iv) | - | cal Characteristics. Channel su | |
|----|------|-------|--|--|
| | | 14 | | ype, average width): Mixed mesic forest >50* |
| | | Г | etland fringe. Characteristics: | |
| | | V | abitat for: | |
| | | | Federally Listed species. Expl | ain findings: |
| | | | Fish/spawn areas. Explain find | ings: |
| | | | Other environmentally-sensitiv | e species. Explain findings: |
| | | | Aquatic/wildlife diversity. Exphabitat. | plain findings: These waters and their buffers provide aquatic and terrestrial wildlife |
| 2. | Chi | aract | stics of wetlands adjacent to non | -TNW that flow directly or indirectly into TNW |
| | (i) | | al Characteristics: eneral Wetland Characteristics: operties: Wetland size: acres Wetland type, Explain: Wetland quality. Explain: oject wetlands cross or serve as st | ate boundaries. Explain: |
| | | (b) | eneral Flow Relationship with No ow is: Explain: | n-TNW: |
| | | | urface flow is: Characteristics: | |
| | | | ubsurface flow: Explain findings: | |
| | | (c) | 'etland Adjacency Determination of Directly abutting Not directly abutting Discrete wetland hydro Ecological connection. Separated by berm/barn | ologic connection. Explain: Explain: |
| | | (d) | roximity (Relationship) to TNW roject wetlands are river miles fro roject waters are aerial (straight) row is from: stimate approximate location of w | niles from TNW. |
| | (ii) | Cha | ical Characteristics: terize wetland system (e.g., water c.). Explain: y specific pollutants, if known: | color is clear, brown, oil film on surface; water quality; general watershed characteristics |
| | (iii | | ical Characteristics. Wetland su Riparian buffer. Characteristics (t | |
| | | Г | Vegetation type/percent cover. Ex | oplain: |
| | | Г | Habitat for: | |
| | | | Federally Listed species. Expl | ain findings: |
| | | | Fish/spawn areas. Explain find | |
| | | | Other environmentally-sensitive | |
| | | | Aquatic/wildlife diversity. Ex | plain findings: |
| 3. | Ch | | stics of all wetlands adjacent to | |

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

Directly abuts? (Y/N)

Size (in acres)

Directly abuts? (Y/N)

Size (in acres)

Summarize overall biological, chemical and physical functions being performed:

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:

- 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:
- 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:
- 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: linear feet width (ft), Or, 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: Water fills >75% of available area, originates from steep slope. 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: 2,379 linear feet; 6 (ft) width. | | | | | | | |
| | Other non-wetland waters: acres. Identify type(s) of waters: | | | | | | | |

| 3 | Non-RPWs ⁸ 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: linear feet 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. | |
| | 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 jurisidictional. 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: 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). | |
| (| PLATED (INTERSTATE OR INTRA-STATE) WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATI DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHEC L THAT APPLY): ¹⁰ | |
| | which are or could be used by interstate or foreign travelers for recreational or other purposes. | |
| ı | from which fish or shellfish are or could be taken and sold in interstate or foreign commerce. | |
| ſ | which are or could be used for industrial purposes by industries in interstate commerce. | |
| ſ | Interstate isolated waters. Explain: | |
| ſ | Other factors. Explain: | |
| 1 | ntify water body and summarize rationale supporting determination: | |
| F | vide estimates for jurisdictional waters in the review area (check all that apply): | |
| ſ | Tributary waters: linear feet width (ft). | |
| 1 | Other non-wetland waters: acres. Identify type(s) of waters: | |
| ı | Wetlands: acres. | |
| | | |

E.

 ^{*}See Footnote # 3.
 To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
 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.

| F, | NO | N-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. |
| | T | 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: Stream 44 drains |
| | - | directly into manmade fly ash wastewater treatment pond that does not drain into TNWs. |
| | 4 | Other: (explain, if not covered above): |
| | (i.e. | vide acreage estimates for non-jurisdictional waters in the review area, where the <u>sole</u> potential basis of jurisdiction is the MBR factors, presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment ck all that apply): |
| | Г | Non-wetland waters (i.e., rivers, streams): |
| | Г | Lakes/ponds: |
| | Г | Other non-wetland waters: acres. List type of aquatic resource: |
| | Г | Wetlands: acres. |
| | | vide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a ing is required for jurisdiction (check all that apply): |
| | Г | Non-wetland waters (i.e., rivers, streams): linear feet width (ft), |
| | Г | Lakes/ponds: acres. |
| | Г | Other non-wetland waters: acres. List type of aquatic resource: |
| | F | Wetlands: acres. |
| SE. | CTIC | ON IV: DATA SOURCES. |
| A. | requ [기 | Office concurs with data sheets/delineation report. Office does not concur with data sheets/delineation report. |
| | П | Data sheets prepared by the Corps: |
| | | Corps navigable waters' study: |
| | ल | U.S. Geological Survey Hydrologic Atlas: |
| | | USGS NHD data. |
| | | USGS 8 and 12 digit HUC maps. |
| | 1 | U.S. Geological Survey map(s). Cite scale & quad name: Fallsburg, KY 1:24,000 USGS Quadrangle. |
| | 1 | USDA Natural Resources Conservation Service Soil Survey. Citation: Lawrence County, KY soil survey. |
| | V | National wetlands inventory map(s). Cite name: Fallsburg, KY 1:24,000 USGS Quadrangle. |
| | LI | State/Local wetland inventory map(s): |
| | V | FEMA/FIRM maps: 21127C0120D |
| | FI | 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929) |
| | P | Photographs: Aerial (Name & Date): |
| | П | or [7] Other (Name & Date): Photos taken by URS Corporation during 2012 field inspections. |
| | П | Previous determination(s). File no. and date of response letter: |
| | П | Applicable/supporting case law: |
| | - | Applicable/supporting scientific literature: |
| | | Other information (please specify): |
| | | Other intermediate (prease special). |

B. ADDITIONAL COMMENTS TO SUPPORT JD: One (1) perennial stream channel, totaling 2,379 feet, functions as a headwater tributary (RPW). Stream 44 flows into Fly Ash Wastewater Treatment Pond, which flows into Blaine Creek (RPW), which flows into the Big Sandy River (a TNW).

PERENNIAL STREAMS DRAINING TO FLY ASH WASTEWATER TREATMENT POND WITHIN THE BIG SANDY POND CLOSURE PROJECT

| ID# | Description/Tributary Name | Latitude | Longitude | Size (linear feet) | HUC | Quad |
|--------------|----------------------------|----------|-----------|--------------------|--------------|-----------|
| Stream 44 | Horseford Creek | 38.18353 | -82.65165 | 2,379 | Big Sandy | Fallsburg |
| Total: 1 | | | | 2,379 linear feet | | |

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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): 9/16/14

DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District, LRL-2014-417-mdh, 23 Non-RPW Ephemeral Stream Channels (draining to Fuller's Branch)

| C. | PR | OJECT LOCATION AND BACKGROUND INFORMATION: |
|-----|--------|---|
| Cer | | te: Kentucky County/parish/borough: Lawrence County City: Louisa oordinates of site (lat/long in degree decimal format): Lat. 38.174032°, Long82.647949 ° Universal Transverse Mercator: |
| | Na | me of nearest waterbody: Fuller's Branch me of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Big Sandy River me of watershed or Hydrologic Unit Code (HUC): Big Sandy (05070204) |
| | V | Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request. |
| | P | 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. | RE | VIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY): |
| | V | Office (Desk) Determination. Date: June 9, 2014 |
| | г | |
| er. | CTIO | ON II: SUMMARY OF FINDINGS |
| _ | | A SECTION 10 DETERMINATION OF JURISDICTION. |
| The | ere ai | re no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 C.F.R. part 329) in the review equired |
| | Г | Waters subject to the ebb and flow of the tide. |
| | Г | 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. | CW | A SECTION 404 DETERMINATION OF JURISDICTION. |
| The | ere ai | re "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 C.F.R. 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 |
| | Г | TNWs, including territorial seas |
| | T | Wetlands adjacent to TNWs |
| | Г | Relatively permanent waters2 (RPWs) that flow directly or indirectly into TNWs |
| | V | Non-RPWs that flow directly or indirectly into TNWs |
| | T | Wetlands directly abutting RPWs that flow directly or indirectly into TNWs |
| | F | 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 |
| | T | 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: Twenty-three (23) ephemeral stream channels totaling 5,163 linear feet. Wetlands: acres. |
| | | c. Limits (boundaries) of jurisdiction based on: Established by OHWM |
| | | Elevation of established OHWM (if known): |
| | 2. | Non-regulated waters/wetlands (check if applicable): ³ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: |

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

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).

Supporting documentation is presented in Section III.F.

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.

I. TNW

Identify TNW:

Summarize rationale supporting determination:

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 waterbody 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) C | eneral | Area | Conditions: |
|-------|--------|------|-------------|
|-------|--------|------|-------------|

Watershed size: Big Sandy River: 410.4 square miles

Drainage area:

Average annual rainfall: 50.0 inches Average annual snowfall: 21.0 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through 2-3 tributaries before entering TNW.

Project waters are 1-2 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 TNW⁵: Stream 59a flows to Stream 59 (unnamed ephemeral tribs), which flows to Stream 68 (perennial RPW). Stream 60a flows to Stream 60 (unnamed ephemeral tribs), which flows to Stream 68. Stream 68, Stream 69, and Streams 68a flow through Stream 68r which flows into Stream 68. Stream-68 (RPW) flows into Fuller's Branch (RPW), which flows into the Big Sandy River (a TNW).

Tributary stream order, if known:

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

| Tributary is: | V | Natural |
|---------------|---|-------------------------------------|
| | Г | Artificial (man-made). Explain: |
| | Г | Manipulated (man-altered). Explain: |

¹ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West,

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.

| | | Ave | erage erage | width: I foot depth: <1 foo side slopes: 2 | t | to top of ball | (estimate | ,. | | | |
|---|---------|--------------------------|----------------|---|-------------------|------------------------|------------------|---------------|---------|---|--------------|
| | | Primary | tribut | tary substrate | compos | ition (check | all that app | ly): | | | |
| | | V | Silt | | V | Sands | | *** | | Concrete | |
| | | V | Cob | bles | V | Gravel | | | | Muck | |
| | | Г | Bed | lrock | Г | Vegetation. | Type/% c | over: | | | |
| | | V | Oth | er. Explain: d | etritus | | | | | | |
| | | Presence Tributar | of ruy geo | | ely Str | kes. Explain: aight | High grad | | | in: High gradient, highly eroding, prun/riffle/pool complex | artially veg |
| | (6 | Estimate Des | aver scribe | vides for: Eph age number o flow regime: ation on durati | f flow e Ephem | vents in revie eral | ew area/yea | ar: 20 (or g | reater |) | |
| | | Surface | flow | is: Discrete an | d Conf | ined Charact | eristics: | | | | |
| | | | | ow: Unknown e (or other) tes | | | | | | | |
| | | ান | Bed | (check all that and banks WM6 (check a | | | ply); | | | | |
| | | | | | | | bank [| | | litter and debris | |
| | | | 200 | changes in the | charac | ter of soil | П | | | errestrial vegetation | |
| | | | | shelving | | | П | | | wrack line | |
| | | | | vegetation ma | | | | sediment | sortin | g | |
| | | | | leaf litter disti | | washed awa | | | | | |
| | | | | sediment depo | | | 12 | P - 1 - 1 - 1 | | ved or predicted flow events | |
| | | | | water staining | | | 1 | abrupt ch | ange i | in plant community | |
| | | _ | | other (list): | | S. M. | | | | | |
| | | [7] | Dis | continuous Ol | HWM. | Explain: | | | | | |
| | | Comment of | | er than the OH th Tide Line in | | | Townson Williams | | | WA jurisdiction (check all that apply Mark indicated by: | у): |
| | | | | oil or scum lin | ne along | shore object | is [| survey to | availa | able datum; | |
| | | | | fine shell or d | ebris de | posits (forest | hore) | physical r | marki | ngs; | |
| | | | | physical mark | ings/ch | aracteristics | П | vegetation | n line: | s/changes in vegetation types. | |
| | | | L | tidal gauges | | | | | | | |
| | | | | other (list): | | | | | | | |
| - | (iii) (| Chemical Ch | пагас | teristics: | | | | | | | |
| | (| Characterize Explain: | tribut Les | | f water | | | film; water | er qua | lity; general watershed characteristic | cs, etc.). |

⁶A 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.

Tibid.

| | (iv) | Bio | | Characteristics. Channel supports (check all that apply): an corridor. Characteristics (type, average width): Mixed mesic forest, >50' | |
|----|------|------|----------------------|--|----|
| | | Г | | nd fringe. Characteristics: | |
| | | V | | | |
| | | 10 | _ | at for: | |
| | | | | dederally Listed species. Explain findings: | |
| | | | Г | ish/spawn areas. Explain findings: | |
| | | | Г | other environmentally-sensitive species. Explain findings: | |
| | | | V | equatic/wildlife diversity. Explain findings: Provides terrestrial wildlife habitat. | |
| 2. | Cha | ract | eristi | of wetlands adjacent to non-TNW that flow directly or indirectly into TNW | |
| | (i) | | Gen Prop | haracteristics: al Wetland Characteristics: rties: etland size: acres etland type. Explain: etland quality. Explain: et wetlands cross or serve as state boundaries. Explain: | |
| | | (b) | Gen | al Flow Relationship with Non-TNW: | |
| | | | Surf | is: Explain: te flow is: te paracteristics: | |
| | | | Sub | rface flow: Explain findings: Dye (or other) test performed: | |
| | | (c) | Wet | nd Adjacency Determination with Non-TNW: Directly abutting Not directly abutting Discrete wetland hydrologic connection. Explain: Ecological connection. Explain: | |
| | | | | Separated by berm/barrier. Explain: | |
| | | (d) | Proj Proj Flov | nity (Relationship) to TNW It wetlands are river miles from TNW. It waters are aerial (straight) miles from TNW. It is from: It is approximate location of wetland as within the floodplain. | |
| | (ii) | Cha | etc. | Characteristics: ze wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristi Explain: ecific pollutants, if known: | cs |
| | (iii | | - 121 | Characteristics. Wetland supports (check all that apply): | |
| | | Γ | Ri | rian buffer. Characteristics (type, average width): | |
| | | Г | 1 Ve | etation type/percent cover. Explain: | |
| | | - | | itat for: | |
| | | | | Federally Listed species. Explain findings: | |
| | | | G. | ish/spawn areas. Explain findings: | |
| | | | | Other environmentally-sensitive species. Explain findings: | |
| | | | F | Aquatic/wildlife diversity. Explain findings: | |
| 3. | Ch | All | wetla | of all wetlands adjacent to the tributary (if any) d(s) being considered in the cumulative analysis: ately () acres in total are being considered in the cumulative analysis. | |

For each wetland, specify the following:

Directly abuts? (Y/N)

Size (in acres)

Directly abuts? (Y/N)

Size (in acres)

Summarize overall biological, chemical and physical functions being performed:

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: Based on the aforementioned findings, the twenty-three (23) ephemeral tributaries function as headwater stream channels providing water, nitrogen, and organic matter transport functions as well as providing vertebrate habitat for deer, birds, and other small wildlife in the area. These functions have a substantial effect on the Big Sandy River (TNW) and thus establish a significant nexus to this TNW. *See supporting scientific literature under Section IV. A.
- 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.
- 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: linear feet width (ft), Or, 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-RPWs ⁸ 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: Twenty-three (23) ephemeral stream channels totaling 5,163 linear feet. |
| | Other non-wetland waters: acres. |
| | Identify type(s) of waters: |
| 4. | Wetlands directly abutting an RPW that flow directly or indirectly into TNWs. |
| | 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 jurisidictional. 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: 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). |
| | |
| OF | DLATED INTERSTATE OR INTRA-STATE WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATIO DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHEC L 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. |
| П | which are or could be used for industrial purposes by industries in interstate commerce. |
| | Interstate isolated waters. Explain: |
| П | Other factors. Explain: |
| Ide | entify water body and summarize rationale supporting determination: |
| | HET HETEL 아이지는 영어의 성급은 이번에 대해 전혀 전혀 있는 사람들이 없는 것. |
| - | vide estimates for jurisdictional waters in the review area (check all that apply): |
| | |
| () | Other non-wetland waters: acres. Identify type(s) of waters: |
| _ | |
| i i | Wetlands: acres. |
| | |

E.

[&]quot;See Footnote # 3.
"To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
"To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
"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

| F. | NO | N-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. |
| | Г | 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). |
| | F | Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: |
| | Г | Other: (explain, if not covered above): |
| | (i.e., | vide acreage estimates for non-jurisdictional waters in the review area, where the <u>sole</u> potential basis of jurisdiction is the MBR factors presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment ck all that apply): Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| | - | Lakes/ponds: acres. |
| | - | |
| | _ | Other non-wetland waters: acres. List type of aquatic resource: |
| | 1 | Wetlands: acres. |
| | | vide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a ing is required for jurisdiction (check all that apply): Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| | - | |
| | 5 | Lakes/ponds: acres. |
| | _ | Other non-wetland waters: acres. List type of aquatic resource: |
| | 1 | Wetlands: acres. |
| SEC | TIO | N IV: DATA SOURCES. |
| A. 5 | | PORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and lested, appropriately reference sources below): Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: American Electric Power (applicant), URS Corporatio (consultant) May 2013 submittal. Data sheets prepared/submitted by or on behalf of the applicant/consultant. |
| | | Office concurs with data sheets/delineation report. |
| | | Office does not concur with data sheets/delineation report. |
| | П | Data sheets prepared by the Corps: |
| | П | Corps navigable waters' study: |
| | 17 | U.S. Geological Survey Hydrologic Atlas: |
| | | USGS NHD data. |
| | | USGS 8 and 12 digit HUC maps. |
| | 1 | U.S. Geological Survey map(s). Cite scale & quad name: Fallsburg, KY 1:24,000 USGS Quadrangle. |
| | | USDA Natural Resources Conservation Service Soil Survey. Citation: Lawrence County, KY soil survey. |
| | 17 | National wetlands inventory map(s). Cite name: Fallsburg, KY 1:24,000 USGS Quadrangle. |
| | TI | State/Local wetland inventory map(s): |
| | 1 | FEMA/FIRM maps: 21127C0120D |
| | | 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929) |
| | V | Photographs: Aerial (Name & Date): |
| | | or Other (Name & Date): Photos taken by URS Corporation during 2012 field inspections |
| | П | Previous determination(s). File no. and date of response letter: |
| | P | Applicable/supporting case law: U.S. v. Cundiff, 555 F.3d 200 (6th Cir. 2009). |
| | ारा | Applicable/supporting scientific literature: Mary C. Freeman, Catherine M. Pringle, C Rhett Jackson (2007) Hydrologic connectivity and the contribution of stream headwaters to ecological integrity at regional scales. Journal of the American Water Resources Association 43 (1), 5-14. doi:10.1111/j.1752-1688.2007.00002.x |
| | | Richard B. Alexander, Elizabeth W. Boyer, Richard A. Smith, Gregory E. Schwarz, Richard B. Moore (2007) The role of headwater streams in downstream water quality. Journal of the American Water Resources Association 43 (1), 41-59. doi:10.1111/j.1752-1688.2007.00005.x |

F.

Mark S. Wipfli, John S. Richardson, Robert J. Naiman (2007)

Ecological linkages between headwaters and downstream ecosystems: transport of organic matter, invertebrates, and wood down headwater channels.

Journal of the American Water Resources Association 43 (1), 72-85. doi:10.1111/j.1752-1688.2007.00007.x

Judy L. Meyer, David L. Strayer, J. Bruce Wallace, Sue L. Eggert, Gene S. Helfman, Norman E. Leonard (2007) The contribution of headwater stream to biodiversity in river networks Journal of the American Water Resources Association 43 (1), 86-103. doi:10.1111/j.1752-1688.2007.00008.x

Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD: The twenty (23) ephemeral stream channels, totaling 5,163 feet, function as headwater tributaries (Non-RPW) which flow into a perennial stream (Stream 68), which flow into Fuller's Branch (RPW), which flow into the Big Sandy River (TNW).

EPHEMERAL STREAMS DRAINING TO FULLER'S BRANCH WITHIN THE BIG SANDY POND CLOSURE PROJECT

| ID# | Description/Tribuary Name | Latitude | Longitude | Size (linear feet) | HUC | Quad |
|---------------|--|-----------|------------|-----------------------|-----------|-----------|
| Stream 58 | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.174032 | -82.647949 | 604 | Big Sandy | Fallsburg |
| Stream 59 | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.174786 | -82.646863 | 881 | Big Sandy | Fallsburg |
| Stream 59a | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.174412 | -82.646894 | 304 | Big Sandy | Fallsburg |
| Stream 60 | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.176137 | -82.646625 | 692 | Big Sandy | Fallsburg |
| Stream 60a | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.175762 | -82.647063 | 149 | Big Sandy | Fallsburg |
| Stream 68a | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.174678 | -82.648721 | 92 | Big Sandy | Fallsburg |
| Stream 68b | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.17473 | -82.648255 | 62 | Big Sandy | Fallsburg |
| Stream 68c | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.17447 | -82.648223 | 224 | Big Sandy | Fallsburg |
| Stream 68d | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.175023 | -82.647836 | 158 | Big Sandy | Fallsburg |
| Stream 68e | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.174797 | -82.648466 | 69 | Big Sandy | Fallsburg |
| Stream 68f | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.175329 | -82.647784 | 68 | Big Sandy | Fallsburg |
| Stream 68g | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.174959 | -82.648427 | 130 | Big Sandy | Fallsburg |
| Stream 68h | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.17541 | -82.647479 | 200 | Big Sandy | Fallsburg |
| Stream 68i | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.17517 | -82.648242 | 104 | Big Sandy | Fallsburg |
| Stream 68j | Unamed Ephemeral (Non- RPW) Tributary of Fuller's | 38.175685 | -82.647456 | 102 | Big Sandy | Fallsburg |

EPHEMERAL STREAMS DRAINING TO FULLER'S BRANCH WITHIN THE BIG SANDY POND CLOSURE PROJECT

| ID# | Description/Tribuary Name | Latitude | Longitude | Size | HUC | Quad |
|---------------|--|-----------|------------|---------------|-------------|-----------|
| 10# | Description Producty (value | Latitude | Longitude | (linear feet) | noc | Quau |
| | Branch | | | | | |
| Stream 68k | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.175554 | -82.647476 | 139 | Big Sandy | Fallsburg |
| Stream 681 | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.177244 | -82.647641 | 65 | Big Sandy | Fallsburg |
| Stream 68m | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.177145 | -82.647626 | 85 | Big Sandy | Fallsburg |
| Stream 68n | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.177322 | -82.647374 | 204 | Big Sandy | Fallsburg |
| Stream 680 | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.176957 | -82.647088 | 256 | Big Sandy | Fallsburg |
| Stream 68p | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.1764 | -82.647351 | 58 | Big Sandy | Fallsburg |
| Stream 68q | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.176428 | -82.646887 | 251 | Big Sandy | Fallsburg |
| Stream 68r | Unamed Ephemeral (Non- RPW) Tributary of Fuller's Branch | 38.176653 | -82.647099 | 266 | Big Sandy | Fallsburg |
| otal: 23 S | treams | | | 5,163 | Linear Feet | |

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); 9/16/14

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District, LRL-2014-417-mdh, 20 Non-RPW Ephemeral Stream Channels and 2 Adjacent Wetlands (draining to Blaine Creek)

| C. | PR | OJECT LOCATION AND BACKGROUND INFORMATION: |
|-----|--------|---|
| | | te: Kentucky County/parish/borough: Lawrence County City: Louisa nter coordinates of site (lat/long in degree decimal format): Lat. 38.179566°, Long -82.625246° Universal Transverse Mercator: |
| | Nar | me of nearest waterbody: Blaine Creek me of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Big Sandy River me of watershed or Hydrologic Unit Code (HUC): Big Sandy (05070204) |
| | V | Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request. |
| | D | 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. | RE | VIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY): |
| | V | Office (Desk) Determination. Date: June 9, 2014 |
| | Г | Field Determination. Date(s): |
| SE | CTIC | ON II: SUMMARY OF FINDINGS |
| | | A SECTION 10 DETERMINATION OF JURISDICTION. |
| | | re no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 C.F.R. part 329) in the review equired] |
| | Г | Waters subject to the ebb and flow of the tide. |
| | Г | 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. | CW | A SECTION 404 DETERMINATION OF JURISDICTION. |
| The | ere ar | re "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 C.F.R. 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 |
| | Г | TNWs, including territorial seas |
| | F | Wetlands adjacent to TNWs |
| | Г | Relatively permanent waters ² (RPWs) that flow directly or indirectly into TNWs |
| | V | 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 |
| | V | Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs |
| | Г | 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: Twenty (20) ephemeral stream channels totaling 3,804 linear feet. Wetlands: Two (2) (one emergent and one emergent/scrub-shrub) wetlands totaling 0.14 acres. |
| | | c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual and OHWM |
| | | Elevation of established OHWM (if known): |
| | 2. | Non-regulated waters/wetlands (check if applicable): Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: |

Supporting documentation is presented in Section III.F.

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).

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:

Summarize rationale supporting determination:

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 waterbody 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:

Watershed size: Big Sandy Watershed: 410.4 square miles.

Drainage area:

Average annual rainfall: 50 inches Average annual snowfall: 21 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through 2-3 tributary before entering TNW.

Project waters are 1-2 river miles from TNW.

Project waters are 1 (or less) river miles from RPW.

Project waters are 1-2 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 TNW⁵: Streams 78a, 78b, 78c flow into Stream 78 (an ephemeral trib, which flows into Stream 4). Streams 79a and 79aa flow into Stream 79 (an ephemeral trib), which flows into Stream 4. Stream 80 (an ephemeral trib), which flows into Stream 4. Stream 4. Stream 4. Stream 4. Stream 4 (a perennial RPW) flows into Blaine Creek (RPW), which flows into the Big Sandy River (a TNW). (see sheet 7 for information on Stream 4).

Tributary stream order, if known:

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

Tributary is: Natural

Artificial (man-made). Explain: Stream originates at dam outfall.

Manipulated (man-altered). Explain:

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

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.

| | Primary | tributary substr | | | | | | | | |
|----|---|--|------------------------------|------------------------|-------------|----------------|------|---|--|--|
| | 32 | mit. | 22 | | II that app | ly): | | C | | |
| | 100 | Silts | V | Sands | | 1 | | Concrete | | |
| | 14 | Cobbles | V | Gravel | | Г | | Muck | | |
| | | Bedrock | F | Vegetation. | Type/% c | over: | | | | |
| | V | Other, Explain | n: detritus | | | | | | | |
| | Presence Tributar | | ool complex latively Stra | ces. Explain: aight | High grad | | | in: High gradient, highly eroding. run/riffle/pool complexes. | | |
| (0 | Estimate De | Flow: Tributary provides for: Ephemeral Flow Estimate average number of flow events in review area/year: 20 (or greater) Describe flow regime: Ephemeral Other information on duration and volume: | | | | | | | | |
| | Surface | flow is: Discret | e and Confi | ined Characte | eristics: | | | | | |
| | Subsurface flow: Unknown Explain findings: [] Dye (or other) test performed: | | | | | | | | | |
| | | y has (check all Bed and bank | | : | | | | | | |
| | 12 | OHWM ⁶ (che | ck all indic | ators that app | ly): | | | | | |
| | | clear, natu | ral line imp | ressed on the | bank [| the presence | of | litter and debris | | |
| | | Changes in | the charac | ter of soil | 1 | destruction o | fte | errestrial vegetation | | |
| | | □ shelving | | | | the presence | of | wrack line | | |
| | | r vegetation | matted do | wn, bent, or a | bsent [| sediment sor | in | g | | |
| | | leaf litter | disturbed or | washed away | y F | scour | | | | |
| | | sediment | deposition | | 1 | multiple obse | rv | red or predicted flow events | | |
| | | water stain | ning | | | abrupt chang | e i | n plant community | | |
| | | other (list | | | | | | | | |
| | Discontinuous OHWM. Explain: | | | | | | | | | |
| | | | | | | | | WA jurisdiction (check all that apply): | | |
| | | | | | | ean High Wate | er l | Mark indicated by: | | |
| | | oil or scur | | | 2000 | survey to ava | | | | |
| | | | | posits (foresh | ore) | physical mar | | | | |
| | | physical n | narkings/ch | aracteristics | | vegetation li | ies | s/changes in vegetation types. | | |
| | | T tidal gaug | | | | | | | | |
| | | other (list |): | | | | | | | |
| C | haracterize Explain | haracteristics: tributary (e.g., : Acid Mine Dra ific pollutants, | ainage (AM | D) appeared | to be prese | nt (orange col | | lity; general watershed characteristics, etc.). ation in water). | | |

⁶A 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.

Thid.

| (iv) | S. mar | logical Characteristics. Channel supports (check all that apply): |
|------|--------|--|
| | V | Riparian corridor. Characteristics (type, average width): Mixed Mesic forest, 6-20 meters |
| | V | Wetland fringe. Characteristics: Wetland 15 is adjacent to Str. 5; and Wetland 16 abutting Str. 26 and 27. |
| | V | Habitat for: |
| | | Federally Listed species. Explain findings: |
| | | Fish/spawn areas. Explain findings: |
| | | Other environmentally-sensitive species. Explain findings: |
| | | Aquatic/wildlife diversity. Explain findings: Provides terrestrial wildlife habitat. |
| Cha | ract | eristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW |
| (i) | | Sical Characteristics: General Wetland Characteristics: Properties: |
| | | Wetland size: 0,14 acres Wetland type, Explain: Emergent and Emergent/Scrub-Shrub Wetland quality. Explain: low to medium (ORAM Cat. 1 and 2) Project wetlands cross or serve as state boundaries. Explain: |
| | (b) | |
| | | Surface flow is: Overland Sheetflow Characteristics: |
| | | Subsurface flow: Explain findings: Dye (or other) test performed: |
| | (c) | Wetland Adjacency Determination with Non-TNW: ▼ Directly abutting |
| | | Not directly abutting |
| | | Discrete wetland hydrologic connection. Explain: Wetland 15 was created from hydrology from dam outfall. |
| | | Ecological connection. Explain: |
| | | Separated by berm/barrier. Explain: |
| | (d) | Proximity (Relationship) to TNW Project wetlands are 1-2 river miles from TNW. Project waters are 1-2 aerial (straight) miles from TNW. Flow is from: Wetland to Navigable Waters Estimate approximate location of wetland as within the floodplain. |
| (ii) | Cha | emical Characteristics: aracterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics etc.). Explain: Wetland appeared to be impacted by AMD. |
| | | ntify specific pollutants, if known: AMD appeared to be present |
| (iii | 1 | logical Characteristics. Wetland supports (check all that apply): Riparian buffer. Characteristics (type, average width): The wetlands provide buffers <30'. |
| | | Vegetation type/percent cover. Explain: herbaceous 80-100%; scrub-shrub 20-30%. |
| | 10 | Habitat for: |
| | | Fleehally Listed species. Explain findings: |
| | | □ Fish/spawn areas. Explain findings: □ Other environmentally-sensitive species. Explain findings: |
| | | Aquatic/wildlife diversity. Explain findings: Provide habitat for terrestrial wildlife. |
| | | Aquatio whente diversity. Explain infuligs, Flovide habitat for terrestrial whente. |
| | | |

2.

3. Characteristics of all wetlands adjacent to the tributary (if any)
All wetland(s) being considered in the cumulative analysis: 2
Approximately (0.14) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

| Directly abuts? (Y/N) | Size (in acres) | Directly abuts? (Y/N) | Size (in acres) |
|-----------------------|-----------------|-----------------------|-----------------|
| W-15 N | 0.06 | | |
| W-16 Y | 0.08 | | |

Summarize overall biological, chemical and physical functions being performed: These wetlands perform numerous functions such as flood storage, erosion and sediment control, pollution control through filtering and providing wildlife habitat. The wetlands have the capacity to transfer nutrients and organic carbon to support downstream food-webs. The wetlands have a direct relationship on the physical, chemical and biological integrity of the Big Sandy 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:

- 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: Based on the aforementioned findings, the two (2) emergent and emergent/scrub shrub wetlands, totaling 0.14 acres provide flood storage, erosion and sediment control, pollution control through filtering and wildlife habitat adjacent to Streams 5, 26, and 27. The twenty (20) ephemeral tributaries function as headwater stream channels providing water, nitrogen, and organic matter transport functions as well as providing vertebrate habitat for deer, birds, and other small wildlife in the area. These functions have a substantial effect on the Big Sandy River (a TNW) and thus establish a significant nexus to this TNW. *See supporting scientific literature under Section IV, A.
- 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):

| □ TNWs: linear feet width (ft), Or, 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: | 1. | TNWs and Adjacent Wetlands. Check all that apply and provide size estimates in review area: |
|---|----|---|
| 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. | | TNWs: linear feet width (ft), Or, acres. |
| □ 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. | | Wetlands adjacent to TNWs: acres. |
| 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. | 2. | RPWs that flow directly or indirectly into TNWs. |
| Tributary waters: linear feet width (ft). Other non-wetland waters: acres. | | tributary is perennial: Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. |
| | | |
| | | |

| 3, | Non-RPWs ⁸ 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: Twenty (20) ephemeral stream channels totaling 3,804 linear feet. |
| | Other non-wetland waters: acres. Identify type(s) of waters: |
| 4. | Wetlands directly abutting an RPW that flow directly or indirectly into TNWs. |
| | 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 jurisidictional. 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: Two (2) wetlands totaling 0.14 acres. |
| 7. | Impoundments of jurisdictional waters. 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). |
| OR | DLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK IL THAT APPLY): ¹⁰ |
| 1000 | which are or could be used by interstate or foreign travelers for recreational or other purposes. |
| П | 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: |
| Ide | entify water body and summarize rationale supporting determination: |
| Pro | vide 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: |
| 1 | Wetlands: acres. |

E.

 ^{*}See Footnote # 3.
 *To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
 *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

| F. | NO | N-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. |
| | Г | 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). |
| | Г | Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: |
| | Г | Other: (explain, if not covered above): |
| | (i.e., | vide acreage estimates for non-jurisdictional waters in the review area, where the <u>sole</u> potential basis of jurisdiction is the MBR factors presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment ck all that apply): |
| | Г | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| | | Lakes/ponds: acres. |
| | Г | Other non-wetland waters: acres. List type of aquatic resource: |
| | Г | Wetlands: acres. |
| | | vide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a ing is required for jurisdiction (check all that apply): Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| | - | Lakes/ponds: acres. |
| | - | Other non-wetland waters: acres. List type of aquatic resource: |
| | - | Wetlands: acres. |
| cno | TIO | |
| | 7 | N IV: DATA SOURCES. |
| | requ | PORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and tested, appropriately reference sources below): Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: American Electric Power (applicant), URS Corporation (consultant) May 2013 submittal. Data sheets prepared/submitted by or on behalf of the applicant/consultant. |
| | | Office concurs with data sheets/delineation report. |
| | | Office does not concur with data sheets/delineation report. |
| | | Data sheets prepared by the Corps: |
| | П | Corps navigable waters' study: |
| | F | U.S. Geological Survey Hydrologic Atlas: |
| | 7 | USGS NHD data. |
| | | USGS 8 and 12 digit HUC maps. |
| | 17 | U.S. Geological Survey map(s). Cite scale & quad name: Fallsburg and Pritchard, KY 1:24,000 USGS Quadrangles. |
| | 17 | USDA Natural Resources Conservation Service Soil Survey. Citation: Lawrence County, KY soil survey. |
| | 17 | National wetlands inventory map(s). Cite name: Fallsburg and Pritchard, KY 1:24,000 USGS Quadrangles. |
| | | State/Local wetland inventory map(s): |
| | 1 | FEMA/FIRM maps: 21127C0120D |
| | | 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929) |
| | | Photographs: |
| | | or Other (Name & Date): Photos taken by URS Corporation during 2012 field inspections. |
| | | Previous determination(s). File no. and date of response letter: |
| | V | Applicable/supporting case law: U.S. v. Cundiff, 555 F.3d 200 (6th Cir. 2009). |
| | 미 | Applicable/supporting scientific literature: National Research Council (1995). Wetlands: Characteristics and Boundaries, National Academy Press, Washington, D.C. |
| | | Mitsch, William J., and Gosselink, James G. (1993). Wetlands, Van Nosttrand Reinhold Company, New York, New York |
| | | Kusler, Jon, and Opheim, Teresa (1996), Our National Wetland Heritage, Environmental Law Institute, Washington, D.C. |
| | | Mary C. Freeman, Catherine M. Pringle, C Rhett Jackson (2007) Hydrologic connectivity and the contribution of stream headwaters to ecological integrity at regional scales. Journal of the American Water Resources Association 43 (1), 5-14. |

doi:10.1111/j.1752-1688.2007.00002.x

Richard B. Alexander, Elizabeth W. Boyer, Richard A. Smith, Gregory E. Schwarz, Richard B. Moore (2007) The role of headwater streams in downstream water quality.

Journal of the American Water Resources Association 43 (1), 41-59.

doi:10.1111/j.1752-1688.2007.00005.x

Mark S. Wipfli, John S. Richardson, Robert J. Naiman (2007)

Ecological linkages between headwaters and downstream ecosystems: transport of organic matter, invertebrates, and wood down headwater channels.

Journal of the American Water Resources Association 43 (1), 72-85. doi:10.1111/j.1752-1688.2007.00007.x

Judy L. Meyer, David L. Strayer, J. Bruce Wallace, Sue L. Eggert, Gene S. Helfman, Norman E. Leonard (2007) The contribution of headwater stream to biodiversity in river networks Journal of the American Water Resources Association 43 (1), 86-103. doi:10.1111/j.1752-1688.2007.00008.x

Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD: The two (2) wetlands, totaling 0.14 acres provide flood storage, erosion and sediment control, pollution control through filtering and wildlife habitat adjacent to an unnamed ephemeral (Non-RPW) tributaries of Blaine Creek. Twenty (20) ephemeral stream channels, totaling 3,084 feet, function as headwater tributaries (Non-RPW), which flow into a perennial stream (Stream 4), which flow into Blaine Creek (RPW), which flow into the Big Sandy River (TNW).

EPHEMERAL STREAMS AND WETLANDS DRAINING TO BLAINE CREEK WITHIN THE BIG SANDY POND CLOSURE PROJECT

| ID# | Description/Tribuary Name | Latitude | Longitude | Size (linear feet or acres) | HUC | Quad |
|------------|---|-----------|------------|--------------------------------|--------------|--------------------|
| Stream 05 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.179566 | -82.625246 | 70 | Big Sandy | Fallsburg |
| Stream 26 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.179403 | -82,624443 | 178 | Big Sandy | Pritchard |
| Stream 27 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.179562 | -82,624478 | 154 | Big Sandy | Pritchard |
| Stream 28 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.18034 | -82.624501 | 185 | Big Sandy | Pritchard |
| Stream 29 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.180985 | -82.624289 | 138 | Big Sandy | Pritchard |
| Stream 72 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.181433 | -82.624959 | 175 | Big Sandy | Fallsburg/Prichard |
| Stream 73 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.182305 | -82.625104 | 210 | Big Sandy | Fallsburg/Prichard |
| Stream 74 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.184755 | -82,626268 | 336 | Big Sandy | Fallsburg |
| Stream 75 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.185768 | -82.626399 | 108 | Big Sandy | Fallsburg |
| Stream 76 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.186226 | -82.626544 | 385 | Big Sandy | Fallsburg |
| Stream 77 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.185364 | -82.625733 | 36 | Big Sandy | Fallsburg |
| Stream 78 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.183861 | -82.624616 | 354 | Big Sandy | Pritchard |
| Stream 78a | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.183771 | -82.624265 | 120 | Big Sandy | Pritchard |
| Stream 78b | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.183921 | -82.62445 | 61 | Big Sandy | Pritchard |
| Stream 78c | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.184067 | -82.624865 | 96 | Big Sandy | Pritchard |

| Total: 20 streams, 2 wetlands | | | | Stream: 3,804 linear feet ; Wetlands: 0.14 acre | | |
|-------------------------------|---|-----------|------------|---|--------------|-----------|
| Wetland 16 | PEM/PSS Wetland | 38.179511 | -82.624825 | 0.08 | Big Sandy | Pritchard |
| Wetland 15 | PEM Wetland | 38.179389 | -82.625917 | 0.06 | Big Sandy | Fallsburg |
| Stream 80a | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.18624 | -82.62678 | 80 | Big Sandy | Fallsburg |
| Stream 80 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.186308 | -82.626727 | 132 | Big Sandy | Fallsburg |
| Stream 79aa | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38,182373 | -82.622941 | 53 | Big Sandy | Pritchard |
| Stream 79a | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.182473 | -82.623487 | 391 | Big Sandy | Pritchard |
| Stream 79 | Unamed Ephemeral (Non-RPW) Tributary of Blaine Creek | 38.182304 | -82.623863 | 542 | Big Sandy | Pritchard |

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): 9/16/14

DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District, LRL-2014-417-mdh, 92 Non-RPW Ephemeral Stream Channels and 3 Adjacent Wetlands (draining to Fly Ash Pond)

| C. | PRO | JECT LOCATION AND BACKGROUND INFORMATION: | | | | | | | | |
|-----|--|---|--|--|--|--|--|--|--|--|
| | State: Kentucky County/parish/borough: Lawrence County City: Louisa Center coordinates of site (lat/long in degree decimal format): Lat. 38.18278°, Long82.642085° Universal Transverse Mercator: Name of nearest waterbody: Blaine Creek Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Big Sandy River Name of watershed or Hydrologic Unit Code (HUC): Big Sandy (05070204) | | | | | | | | | |
| | | | | | | | | | | |
| | V | Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request. | | | | | | | | |
| | P | 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): | | | | | | | | | |
| | V | Office (Desk) Determination. Date: July 24, 2014 | | | | | | | | |
| | Г | Field Determination. Date(s): | | | | | | | | |
| SE | CTIO | N II: SUMMARY OF FINDINGS | | | | | | | | |
| | | SECTION 10 DETERMINATION OF JURISDICTION. | | | | | | | | |
| | re are | no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 C.F.R. part 329) in the review ruired] | | | | | | | | |
| | Г | Waters subject to the ebb and flow of the tide. | | | | | | | | |
| | Γ | 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. | | | | | | | | |
| The | re are | "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 C.F.R. part 328) in the review area. [Required] | | | | | | | | |
| | | Vaters of the U.S. Indicate presence of waters of U.S. in review area (check all that apply): 1 | | | | | | | | |
| | T | TNWs, including territorial seas | | | | | | | | |
| | | Wetlands adjacent to TNWs | | | | | | | | |
| | | Relatively permanent waters2 (RPWs) that flow directly or indirectly into TNWs | | | | | | | | |
| | V | Non-RPWs that flow directly or indirectly into TNWs | | | | | | | | |
| | T | 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 | | | | | | | | |
| | V | Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs | | | | | | | | |
| | F | Impoundments of jurisdictional waters | | | | | | | | |
| | _ | Isolated (interstate or intrastate) waters, including isolated wetlands | | | | | | | | |
| | b | Non-wetland waters: Ninety-two (92) ephemeral stream channels, totaling 16,319 feet linear feet. Wetlands: Three (3) wetlands totaling 0.15 acres. | | | | | | | | |
| | c | Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual and OHWM | | | | | | | | |
| | E | Elevation of established OHWM (if known): | | | | | | | | |
| | 2. N | lon-regulated waters/wetlands (check if applicable): 3 Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: | | | | | | | | |

³ Supporting documentation is presented in Section III.F.

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

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).

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.

I. TNW

Identify TNW:

Summarize rationale supporting determination:

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 waterbody 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:

Watershed size: Big Sandy Watershed: 410.4 square miles

Drainage area:

Average annual rainfall: 50 inches Average annual snowfall: 21 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

▼ Tributary flows through 3-4 tributary before entering TNW.

Project waters are 2-5 river miles from TNW.

Project waters are 1-2 river miles from RPW.

Project waters are 1-2 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 TNW⁵: All of the 92 ephemeral streams listed either directly flow into the fly ash wastewater treatment pond or are a tributary to a stream that flows into the wastewater treatment pond. The fly ash pond flows into Stream 30 (a perennial RPW), which flows into Blaine Creek (a perennial RPW), which flows into the Big Sandy River (a TNW). Tributary stream order, if known:

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

| Tributary is: | V | Natural |
|---------------|---|-------------------------------------|
| | | Artificial (man-made). Explain: |
| | F | Manipulated (man-altered). Explain: |

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

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.

| | | 100 | ide slopes: 3: | | SATE OF A | 0.56 | | | | | | |
|--------|--|------------------|--------------------------|---------|-----------------|--------------|-------|-------------|------|--|--|--|
| | Primary | Silts | ary substrate o | ompo | Sands | all that app | oly): | - | - | Concrete | | |
| | V | Cobb | | V | Gravel | | | | | The second second | | |
| | - | | | 10 | | 65 x 33 x | | , | | Muck | | |
| | 1.15 | Bedr | | 1 | Vegetation. | Type/% | ove | r; | | | | |
| | С | Othe | r. Explain: | | | | | | | | | |
| | Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: variable, see forms Presence of run/riffle/pool complexes. Explain: High gradient streams, no run/riffle/pool complex Tributary geometry: variable, see forms Tributary gradient (approximate average slope): 45 % | | | | | | | | | | | |
| (c) | Flow: Tributary provides for: Ephemeral Flow Estimate average number of flow events in review area/year: 20 (or greater) Describe flow regime: Ephemeral Other information on duration and volume: | | | | | | | | | | | |
| | Surface | flow is | : Characteri | stics: | | | | | | | | |
| | Subsurface flow: Unknown Explain findings: Dye (or other) test performed: | | | | | | | | | | | |
| | Fributary has (check all that apply): ☐ Bed and banks | | | | | | | | | | | |
| | 12 | OHV | VM ⁶ (check a | ll indi | cators that app | oly): | | | | | | |
| | | V c | lear, natural l | ine im | pressed on the | bank [| th | e presence | of | litter and debris | | |
| | | TI c | hanges in the | charac | ter of soil | | de | struction o | ft | errestrial vegetation | | |
| | | II s | helving | | | П | th | e presence | of | wrack line | | |
| | | TI V | egetation mat | ted do | wn, bent, or a | bsent [| se | diment sor | tin | g | | |
| | | TI le | eaf litter distu | rbed o | r washed awa | y F | sc | our | | | | |
| | | II s | ediment depo | sition | | 1 | m | ultiple obs | erv | ved or predicted flow events | | |
| | | LI M | vater staining | | | | ab | rupt chang | e i | in plant community | | |
| | | | ther (list): | | in a fire | | | | | | | |
| | Discontinuous OHWM. Explain: | | | | | | | | | | | |
| | If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply): | | | | | | | | | | | |
| | | 110 | il or scum lin | e alon | g shore object | s F | su | rvey to ava | aile | able datum; | | |
| | | FI f | ine shell or de | bris d | eposits (foresh | nore) [| ph | ysical mar | kir | ngs; | | |
| | | II p | hysical marki | ngs/ch | aracteristics | | ve | getation li | nes | s/changes in vegetation types. | | |
| | | □ ti | idal gauges | | | | | | | | | |
| | | TI o | ther (list): | | | | | | | | | |
| i) Cho | emical Ch | aract | eristics: | | | | | | | | | |
| N. S. | aracterize Explain: | tributa Water | | ed wa | | | y fil | m; water q | ual | lity; general watershed characteristics, etc | | |

⁶A 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.

Tibid.

| | (iv) | Bio | logical Cha | aracteristics. Channel supports (check all that apply): | | | | | | | |
|----|------|---------------------------|-----------------------|---|--|--|--|--|--|--|--|
| | | V | Riparian o | corridor. Characteristics (type, average width): Mixed mesic forest >50' | | | | | | | |
| | | V | | fringe. Characteristics: Stream 44a has two (2) abutting wetlands (Wetland 01 and 02). Stream 50 has one (1) wetland (Wetland 09). | | | | | | | |
| | | V | Habitat fo | r: | | | | | | | |
| | | | ☐ Fede | erally Listed species. Explain findings: | | | | | | | |
| | | | Fish. | spawn areas. Explain findings: | | | | | | | |
| | | | | er environmentally-sensitive species. Explain findings: | | | | | | | |
| | | | - | atic/wildlife diversity. Explain findings: Provides terrestrial wildlife habitat | | | | | | | |
| 2. | Cha | ract | | wetlands adjacent to non-TNW that flow directly or indirectly into TNW | | | | | | | |
| | (i) | Physical Characteristics: | | | | | | | | | |
| | W | | General V | Vetland Characteristics: | | | | | | | |
| | | | Properties | s: nd size: 0.15 acres | | | | | | | |
| | | | | nd type. Explain: Emergent/Scrub-Shrub | | | | | | | |
| | | | Wetla | nd quality. Explain: Low | | | | | | | |
| | | | | etlands cross or serve as state boundaries. Explain: | | | | | | | |
| | | (b) | | Tow Relationship with Non-TNW: No Flow Explain: | | | | | | | |
| | | | Surface fl | | | | | | | | |
| | | | Subsurfac | te flow: Explain findings: | | | | | | | |
| | | | | Dye (or other) test performed: | | | | | | | |
| | | (c) | Wetland | Adjacency Determination with Non-TNW: | | | | | | | |
| | | | and the second second | rectly abutting | | | | | | | |
| | | | TI No | t directly abutting | | | | | | | |
| | | | | Discrete wetland hydrologic connection. Explain: | | | | | | | |
| | | | | | | | | | | | |
| | | | | Separated by berm/barrier. Explain: | | | | | | | |
| | | (d) | | (Relationship) to TNW | | | | | | | |
| | | | | etlands are 2-5 river miles from TNW. aters are 1-2 aerial (straight) miles from TNW. | | | | | | | |
| | | | Flow is fr | rom: No Flow | | | | | | | |
| | | | Estimate | approximate location of wetland as within the 500-year or greater floodplain. | | | | | | | |
| | (ii) | aracteristics: | | | | | | | | | |
| | | Cha | | vetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; plain: Water was not noted on wetland forms. | | | | | | | |
| | | Ide | | ic pollutants, if known: | | | | | | | |
| | (iii |) Bio | logical Ch | aracteristics. Wetland supports (check all that apply): | | | | | | | |
| | | 10 | Riparia | buffer. Characteristics (type, average width): The wetlands provide narrow buffers < 50'. | | | | | | | |
| | | 1 | Vegetat | ion type/percent cover. Explain: herbaceous: 50%, sapling/shrub: 50%. | | | | | | | |
| | | 1- | Habitat | | | | | | | | |
| | | | | erally Listed species. Explain findings: | | | | | | | |
| | | | | /spawn areas. Explain findings: | | | | | | | |
| | | | | er environmentally-sensitive species. Explain findings: | | | | | | | |
| | | | Aqu | atic/wildlife diversity. Explain findings: Provide habitat for terrestrial wildlife. | | | | | | | |
| 3, | Ch | arac | teristics of | all wetlands adjacent to the tributary (if any) | | | | | | | |
| | | | | | | | | | | | |

All wetland(s) being considered in the cumulative analysis: 3

Approximately (0.15) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

| Directly abuts? (Y/N) | Size (in acres) | Directly abuts? (Y/N) | Size (in acres) |
|-----------------------|-----------------|---|-----------------|
| W-01 Y | 0.06 | 100000000000000000000000000000000000000 | |
| W-02 Y | 0.03 | | |
| W-09 Y | 0.06 | | |

Summarize overall biological, chemical and physical functions being performed: These wetlands perform limited functions including erosion and sediment control, pollution control through filtering and providing wildlife habitat.

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:

- 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: Based on the aforementioned findings, the three (3) emergent and emergent/scrub shrub wetlands (W1, W2 & W9), totaling 0.15 acres, provide flood storage, erosion and sediment control, pollution control through filtering and wildlife habitat adjacent to Streams 44a and Stream 50. The ninety-two (92) ephemeral tributaries (see Table 1 under Section IV, B for list) function as headwater stream channels providing water, nitrogen, and organic matter transport functions as well as providing vertebrate habitat for deer, birds, and other small wildlife in the area. These functions have a substantial effect on the Big Sandy River (a TNW) and thus establish a significant nexus to this TNW. *See supporting scientific literature under Section IV, A.
- 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):

TNWs and Adjacent Wetlands. Check all that apply and provide size actimates in review reas-

| | 111115 and Adjacent Frenancis. Check an that apply and provide size estimates in review area. |
|----|--|
| | TNWs: linear feet width (ft), Or, 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-RPWs ⁸ 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: Ninety-two (92) ephemeral stream channels, totaling 16,319 feet linear feet. |
| | | Other non-wetland waters: acres. |
| | | Identify type(s) of waters: |
| | 4. | Wetlands directly abutting an RPW that flow directly or indirectly into TNWs. 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 jurisidictional. Data supporting this conclusion is provided at Section III.C. |
| | | Provide acreage estimates for jurisdictional wetlands in the review area: 3 wetlands totaling 0.15 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: 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. | OR | DLATED INTERSTATE OR INTRA-STATE WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHEC L THAT APPLY): ¹⁰ |
| | П | 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: |
| | Ide | ntify water body and summarize rationale supporting determination: |
| | Pro | vide estimates for jurisdictional waters in the review area (check all that apply): Tributary waters: linear feet width (ft). |
| | П | Other non-wetland waters: acres. |
| | | Identify type(s) of waters: |
| | Г | 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. |
| | Г | Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce. |
| | | |

⁸See 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

| | 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: |
| F | Other: (explain, if not covered above): |
| Dec | vide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors |
| (i.e. | ride acreage estimates for non-jurisdictional waters in the review area, where the some potential basis of jurisdiction is the MBR factors of presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment eck all that apply): |
| Г | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| | Lakes/ponds: acres. |
| | Other non-wetland waters: acres. List type of aquatic resource: |
| | Wetlands: acres. |
| | vide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a |
| tino | ling is required for jurisdiction (check all that apply): |
| - | Non-wetland waters (i.e., rivers, streams): |
| 1 | Lakes/ponds: acres. |
| Г | Other non-wetland waters: acres. List type of aquatic resource: |
| | Wetlands: |
| SECTIO | ON IV: DATA SOURCES. |
| | PORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and |
| | uested, appropriately reference sources below): |
| 14 | Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: American Electric Power (applicant), URS Corporation (consultant) May 2013 submittal. |
| 171 | Data sheets prepared/submitted by or on behalf of the applicant/consultant. |
| | Office concurs with data sheets/delineation report. |
| | Office does not concur with data sheets/delineation report. |
| П | |
| Fi | Corps navigable waters' study: |
| V | 30.00 to 30. |
| 141 | USGS NHD data. |
| | USGS 8 and 12 digit HUC maps. |
| | 110 0 1 1 1 0 1 1 0 1 1 0 1 1 0 1 1 1 1 |
| ार। | [2] 가입이 있는 TAN 시마일에 가입하는 것이 되었다면 하면 이 아이들은 이 이 사람들이 되었다면 하는데 되었다면 하는데 되었다면 다른데 |
| (-) | |
| (र) | 사람들이 가장에 된 지난 부모를 가고 있다. 즐거워 수 있는데 이번에 가장 하는데 |
| | |
| 17 | |
| | |
| 10 | |
| | |
| | Previous determination(s). File no. and date of response letter: |
| 1 | 아들이 내용 없어. 하다는 집에 없는데 그 사람이 다른다는 그를 다시 아름다면 하는데 |
| [7] | Applicable/supporting scientific literature: National Research Council (1995), Wetlands: Characteristics and Boundaries, National Academy Press, Washington, D.C. |
| | Mitsch, William J., and Gosselink, James G. (1993). Wetlands, Van Nosttrand Reinhold Company, New York, New York |
| | Kusler, Jon, and Opheim, Teresa (1996). Our National Wetland Heritage, Environmental Law Institute, Washington, D.C. |
| | Mary C. Freeman, Catherine M. Pringle, C Rhett Jackson (2007) Hydrologic connectivity and the contribution of stream headwaters to ecological integrity at regional scales. Journal of the American Water Resources Association 43 (1), 5-14. doi:10.1111/j.1752-1688.2007.00002.x |
| | Richard B. Alexander, Elizabeth W. Boyer, Richard A. Smith, Gregory E. Schwarz, Richard B. Moore (2007) The role of headwater streams in downstream water quality. Journal of the American Water Resources Association 43 (1), 41-59. |

doi:10.1111/j.1752-1688.2007.00005.x

Mark S. Wipfli, John S. Richardson, Robert J. Naiman (2007)

Ecological linkages between headwaters and downstream ecosystems: transport of organic matter, invertebrates, and wood down headwater channels.

Journal of the American Water Resources Association 43 (1), 72-85. doi:10.1111/j.1752-1688.2007.00007.x

Judy L. Meyer, David L. Strayer, J. Bruce Wallace, Sue L. Eggert, Gene S. Helfman, Norman E. Leonard (2007) The contribution of headwater stream to biodiversity in river networks Journal of the American Water Resources Association 43 (1), 86-103. doi:10.1111/j.1752-1688.2007.00008.x

Other information (please specify): Climate data accessed from Kentucky Mesonet (2011-2013).

B. ADDITIONAL COMMENTS TO SUPPORT JD: The three (3) emergent and emergent/scrub shrub wetlands (W1, W2 & W9), totaling 0.15 acres, provide flood storage, erosion and sediment control, pollution control through filtering and wildlife habitat adjacent to Streams 44a and Stream 50. The ninety-two (92) ephemeral tributaries (see Table 1 under Section IV, B for list) function as headwater stream channels providing water, nitrogen, and organic matter transport functions as well as providing vertebrate habitat for deer, birds, and other small wildlife in the area. These functions have a substantial effect on the Big Sandy River (a TNW) and thus establish a significant nexus to this TNW.

TABLE 1
EPHEMERAL STREAMS AND WETLANDS DRAINING TO FLY ASH WASTEWATER TREATMENT POND WITHIN THE BIG
SANDY POND CLOSURE PROJECT

| 1D# | Description/Tributary Name | Latitude | Longitude | Size (linear feet - stream, acres - wetland) | HUC | Quad |
|------------|---|-----------|------------|---|-----------|-----------|
| Stream 01 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.18278 | -82.642085 | 402 | Big Sandy | Fallsburg |
| Stream 01a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.18292 | -82.642209 | 176 | Big Sandy | Fallsburg |
| Stream 02 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182358 | -82.641507 | 411 | Big Sandy | Fallsburg |
| Stream 02a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182345 | -82.641158 | 157 | Big Sandy | Fallsburg |
| Stream 03 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182731 | -82.642327 | 313 | Big Sandy | Fallsburg |
| Stream 06 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.180497 | -82.640554 | 170 | Big Sandy | Fallsburg |
| Stream 07 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.18074 | -82.64076 | 278 | Big Sandy | Fallsburg |
| Stream 08 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182257 | -82.642054 | 101 | Big Sandy | Fallsburg |
| Stream 09 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182792 | -82.64174 | 479 | Big Sandy | Fallsburg |
| Stream 09a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182594 | -82.641687 | 119 | Big Sandy | Fallsburg |
| Stream 09b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38,182694 | -82.64161 | 194 | Big Sandy | Fallsburg |
| Stream 10 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183665 | -82.644132 | 95 | Big Sandy | Fallsburg |
| Stream 11a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.18441 | -82.643544 | 117 | Big Sandy | Fallsburg |
| Stream 11b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184944 | -82.643781 | 104 | Big Sandy | Fallsburg |
| Stream 11c | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184638 | -82.64308 | 381 | Big Sandy | Fallsburg |
| Stream 11d | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184545 | -82.64252 | 129 | Big Sandy | Fallsburg |
| Stream 11e | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38,184364 | -82.644005 | 62 | Big Sandy | Fallsburg |
| Stream 12 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184279 | -82.644254 | 95 | Big Sandy | Fallsburg |

TABLE 1
EPHEMERAL STREAMS AND WETLANDS DRAINING TO FLY ASH WASTEWATER TREATMENT POND WITHIN THE BIG
SANDY POND CLOSURE PROJECT

| ID# | Description/Tributary Name | Latitude | Longitude | Size (linear feet - stream, acres - wetland) | нис | Quad |
|------------|--|-----------|------------|---|-----------|-----------|
| Stream 13a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185804 | -82.648927 | 56 | Big Sandy | Fallsburg |
| Stream 13b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.186405 | -82.648953 | 306 | Big Sandy | Fallsburg |
| Stream 13c | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.186111 | -82.649453 | 185 | Big Sandy | Fallsburg |
| Stream 14 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.177507 | -82.639347 | 183 | Big Sandy | Fallsburg |
| Stream 15a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.176481 | -82.642261 | 47 | Big Sandy | Fallsburg |
| Stream 15b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.176163 | -82,642182 | 104 | Big Sandy | Fallsburg |
| Stream 15c | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.176046 | -82.642318 | 173 | Big Sandy | Fallsburg |
| Stream 15d | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.175778 | -82.642329 | 245 | Big Sandy | Fallsburg |
| Stream 15e | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.175752 | -82.642651 | 61 | Big Sandy | Fallsburg |
| Stream 15f | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.175687 | -82.643729 | 646 | Big Sandy | Fallsburg |
| Stream 15g | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.175682 | -82.643372 | 275 | Big Sandy | Fallsburg |
| Stream 16 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.17767 | -82.642599 | 132 | Big Sandy | Fallsburg |
| Stream 17a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.179664 | -82.644962 | 111 | Big Sandy | Fallsburg |
| Stream 17b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.179373 | -82.645296 | 112 | Big Sandy | Fallsburg |
| Stream 17c | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.178786 | -82.646264 | 233 | Big Sandy | Fallsburg |
| Stream 18a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182426 | -82.64647 | 93 | Big Sandy | Fallsburg |
| Stream 18b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182388 | -82.646877 | 100 | Big Sandy | Fallsburg |
| Stream 18c | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182425 | -82.647548 | 113 | Big Sandy | Fallsburg |
| Stream 18d | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182362 | -82.647975 | 87 | Big Sandy | Fallsburg |
| Stream 18e | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182258 | -82.648736 | 43 | Big Sandy | Fallsburg |
| Stream 18f | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182427 | -82.64916 | 114 | Big Sandy | Fallsburg |
| Stream 18g | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182275 | -82.649426 | 69 | Big Sandy | Fallsburg |
| Stream 19 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183625 | -82.646425 | 182 | Big Sandy | Fallsburg |
| Stream 20 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184248 | -82.649346 | 740 | Big Sandy | Fallsburg |
| Stream 20a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184416 | -82.648381 | 81 | Big Sandy | Fallsburg |
| Stream 20b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183988 | -82.649448 | 138 | Big Sandy | Fallsburg |
| Stream 20c | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183736 | -82.64961 | 294 | Big Sandy | Fallsburg |

TABLE 1
EPHEMERAL STREAMS AND WETLANDS DRAINING TO FLY ASH WASTEWATER TREATMENT POND WITHIN THE BIG

| ID# | Description/Tributary Name | Latitude | Longitude | Size (linear feet - stream, acres - wetland) | HUC | Quad |
|------------|--|-----------|------------|---|-----------|-----------|
| Stream 21 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183258 | -82.637508 | 84 | Big Sandy | Fallsburg |
| Stream 23 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183783 | -82.638926 | 165 | Big Sandy | Fallsburg |
| Stream 23a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183776 | -82.63877 | 77 | Big Sandy | Fallsburg |
| Stream 24 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.181997 | -82.635548 | 177 | Big Sandy | Fallsburg |
| Stream 25 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182203 | -82.63839 | 415 | Big Sandy | Fallsburg |
| Stream 33 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183828 | -82.6441 | 64 | Big Sandy | Fallsburg |
| Stream 34 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184202 | -82.643787 | 141 | Big Sandy | Fallsburg |
| Stream 34a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184134 | -82.643645 | 100 | Big Sandy | Fallsburg |
| Stream 35a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185921 | -82.645834 | 211 | Big Sandy | Fallsburg |
| Stream 35b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185204 | -82.6465 | 78 | Big Sandy | Fallsburg |
| Stream 36 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.177545 | -82.638531 | 280 | Big Sandy | Fallsburg |
| Stream 37 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.176969 | -82.642526 | 171 | Big Sandy | Fallsburg |
| Stream 38 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.17922 | -82.644498 | 279 | Big Sandy | Fallsburg |
| Stream 40 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.1813 | -82.645778 | 157 | Big Sandy | Fallsburg |
| Stream 41a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.18117 | -82.646067 | 56 | Big Sandy | Fallsburg |
| Stream 42 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182146 | -82.648394 | 114 | Big Sandy | Fallsburg |
| Stream 43 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184011 | -82,647594 | 368 | Big Sandy | Fallsburg |
| Stream 44a | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.18488 | -82,650217 | 554 | Big Sandy | Fallsburg |
| Stream 44b | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182484 | -82.653843 | 633 | Big Sandy | Fallsburg |
| Stream 44c | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.181227 | -82.653997 | 232 | Big Sandy | Fallsburg |
| Stream 45 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183078 | -82.637348 | 93 | Big Sandy | Fallsburg |
| Stream 47 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182258 | -82.635048 | 48 | Big Sandy | Fallsburg |
| Stream 48 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183095 | -82.638419 | 73 | Big Sandy | Fallsburg |
| Stream 49 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.181963 | -82.637701 | 109 | Big Sandy | Fallsburg |
| Stream 50 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185788 | -82.635826 | 116 | Big Sandy | Fallsburg |
| Stream 51 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185756 | -82.635877 | 75 | Big Sandy | Fallsburg |
| Stream 52 | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.181211 | -82.628042 | 47 | Big Sandy | Fallsburg |

TABLE 1
EPHEMERAL STREAMS AND WETLANDS DRAINING TO FLY ASH WASTEWATER TREATMENT POND WITHIN THE BIG
SANDY POND CLOSURE PROJECT

| Description/Tributary Name Latitude | | Longitude | Size (linear feet - stream, acres - wetland) | нис | Quad | |
|---|---|--|---|----------------------------|---|--|
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182467 | -82.627866 | 64 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182315 | -82.627723 | 39 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184567 | -82.629622 | 88 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.178126 | -82.633154 | 36 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.178022 | -82.630229 | 43 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.180213 | -82.627552 | 31 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182122 | -82.627641 | 70 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.182254 | -82.627658 | 77 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.184825 | -82.629898 | 77 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185999 | -82.630599 | 19 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.186103 | -82.630655 | 30 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.178037 | -82.63036 | 51 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183487 | -82.651216 | 75 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.183499 | -82.650664 | 310 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185856 | -82.652998 | 262 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.18583 | -82.653492 | 131 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.186375 | -82.654015 | 548 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38,1858 | -82.654716 | 440 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185899 | -82.655866 | 81 | Big Sandy | Fallsburg | |
| Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | 38.185596 | -82.655933 | 222 | Big Sandy | Fallsburg | |
| PEM/PSS Wetland | 38.185144 | -82.65042 | 0.06 | Big Sandy | Fallsburg | |
| PEM Wetland | 38.184948 | -82.650542 | 0,03 | Big Sandy | Fallsburg | |
| PEM/PSS Wetland | 38.185936 | -82.635573 | 0.06 | Big Sandy | Fallsburg | |
| | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond Unnamed Ephemeral (Non-RPW) Tributary to fly ash | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond 38.182467 -82.627866 Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond 38.182315 -82.627723 Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond 38.184567 -82.629622 Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond 38.178126 -82.633154 Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond 38.178022 -82.630229 Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond 38.180213 -82.627552 Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond 38.182122 -82.627658 Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond 38.184825 -82.627658 Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond 38.185999 -82.630599 Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond 38.186103 -82.630655 Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond 38.183487 -82.650655 Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond 38.183487 -82.651216 Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond 38.18586 -82.652998 Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond 38.18583 -82.653492 | Description/Tributary Name | Unnamed Ephemeral (Non-RPW) Tributary to fly ash pond | |

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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): 9/16/14

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District, LRL-2014-417-mdh, RPW Intermittent Stream Channel and Abutting Wetlands (draining to Blaine Creek)

| C. | PRC | DJECT LOCATION AND BACKGROUND INFORMATION: | | | | | | | | |
|-------|--|--|--|--|--|--|--|--|--|--|
| | State: Kentucky County/parish/borough: Lawrence County City: Louisa Center coordinates of site (lat/long in degree decimal format): Lat, 38.179875°, Long -82.625015° Universal Transverse Mercator: | | | | | | | | | |
| | Nam | Name of nearest waterbody: Blaine Creek Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Big Sandy River Name of watershed or Hydrologic Unit Code (HUC): Big Sandy (05070204) | | | | | | | | |
| | V | Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request. | | | | | | | | |
| | V | 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. | REV | EVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY): | | | | | | | | |
| | V | Office (Desk) Determination. Date: July 24, 2014 | | | | | | | | |
| | Г | Field Determination. Date(s): | | | | | | | | |
| SF | CTIO | N II: SUMMARY OF FINDINGS | | | | | | | | |
| 4-1-1 | | SECTION 10 DETERMINATION OF JURISDICTION. | | | | | | | | |
| The | re are | e no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 C.F.R. part 329) in the review quired] | | | | | | | | |
| | Γ | Waters subject to the ebb and flow of the tide. | | | | | | | | |
| | Γ | 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. | | | | | | | | |
| The | re are | "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 C.F.R. part 328) in the review area. [Required] | | | | | | | | |
| | | Waters of the U.S. Indicate presence of waters of U.S. in review area (check all that apply): 1 | | | | | | | | |
| | F | TNWs, including territorial seas | | | | | | | | |
| | T | Wetlands adjacent to TNWs | | | | | | | | |
| | V | Relatively permanent waters2 (RPWs) that flow directly or indirectly into TNWs | | | | | | | | |
| | F | Non-RPWs that flow directly or indirectly into TNWs | | | | | | | | |
| | V | 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 | | | | | | | | |
| | T | Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs | | | | | | | | |
| | L | Impoundments of jurisdictional waters | | | | | | | | |
| | L | Isolated (interstate or intrastate) waters, including isolated wetlands | | | | | | | | |
| | t | Non-wetland waters: One (1) intermittent stream channel totaling 3,343 linear feet: 1' width (ft). Wetlands: Two (2) emergent/scrub-shrub and forested wetlands totaling 0.76 acres. | | | | | | | | |
| | | Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual and OHWM | | | | | | | | |
| | E | Elevation of established OHWM (if known): | | | | | | | | |
| | 2. M | Non-regulated waters/wetlands (check if applicable): Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: | | | | | | | | |

³ Supporting documentation is presented in Section III.F.

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).

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:

Summarize rationale supporting determination:

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 waterbody 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 Condi Watershed size: Big S Drainage area: | tions: Sandy Watershed: 410.4 square miles. | | | | | | |
|------|---|--|--|--|--|--|--|--|
| | Average annual rainfa Average annual snow | | | | | | | |
| (ii) | (a) Relationship wit | ical Characteristics: Relationship with TNW: Tributary flows directly into TNW. | | | | | | |
| | Tributary fl | ows through 1 tributary before entering TNW. | | | | | | |
| | Project waters as Project waters as Project waters as | Project waters are 1-2 river miles from TNW. Project waters are NA river miles from RPW. Project waters are 1-2 aerial (straight) miles from TNW. Project waters are NA aerial (straight) miles from RPW. Project waters cross or serve as state boundaries. Explain: NA | | | | | | |
| | the Big Sandy R | Identify flow route to TNW ⁵ : Stream 4 (an intermittent RPW) flows into Blaine Creek (a perennial RPW), which flows in the Big Sandy River (a TNW). Tributary stream order, if known: Second | | | | | | |
| | (b) General Tributar | y Characteristics (check all that apply): | | | | | | |
| | Tributary is: | Natural | | | | | | |
| | | Artificial (man-made). Explain: | | | | | | |
| | | Manipulated (man-altered). Explain: Culvert and access road over Stream 4 near Blaine Creek. | | | | | | |

Stream 4 begins from a wetland that was created from a dam outfall.

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.

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

Louisville District, LRL-2014-417-mdh, RPW Intermittent Stream Channel and Abutting Wetlands (draining to Blaine Creek)

| | Ave Ave | ry propertion rage width rage deptherage side s | : 3 inches | to top of bank | c (estimate | e): | | | | |
|--------------------------------|---|---|--|------------------------|--------------|------|-------------|-------|---|---------|
| | _ | | ibstrate compos | | all that app | ply) | 1 | | | |
| | V | Silts | 1 | Sands | | | I | | Concrete | |
| | V | Cobbles | V | Gravel | | | Γ | | Muck | |
| | | Bedrock | F | Vegetation. | Type/% | cov | er: | | | |
| | V | Other, Ex | plain: detritus | | | | | | | |
| | Presence Tributary | of run/riff geometry | /stability [e.g., le/pool comple: Relatively Str approximate av | xes. Explain: aight | No run/ri | | | | in: Fairly stable, vegetated. ces. | |
| approximatel streams are fl | Flow: Tributary provides for: Seasonal Flow Estimate average number of flow events in review area/year: 20 (or greater) Describe flow regime: Intermittent Other information on duration and volume: Based upon climate data accessed from Kentucky Mesonet (2011-2013), there are 69 annual storm events exceeding 0.2 inches of precipitation in Lawrence County, Kentucky. Assuming that intermittent owing for 48 hours after each storm event, there are approximately 138 annual flow days for the intermittent streams in the ne estimated number of annual flow days exceed three months. | | | | | | | | | nittent |
| | Surface f | flow is: Dis | screte and Conf | ined Charact | eristics: | | | | | |
| | Subsurface flow: Unknown Explain findings: Dye (or other) test performed: | | | | | | | | | |
| | Tributary has (check all that apply): | | | | | | | | | |
| | OHWM ⁶ (check all indicators that apply): | | | | | | | | | |
| | | clear, | natural line im | pressed on the | e bank | l th | ne presence | e of | litter and debris | |
| | | Chang | es in the charac | cter of soil | [구 | de | estruction | of te | errestrial vegetation | |
| | | shelvi | ng | | П | l th | ne presence | e of | wrack line | |
| | | □ vegeta | ation matted do | wn, bent, or a | bsent [| St | ediment so | rtin | ng . | |
| | | | tter disturbed o | r washed awa | y [| 1 | cour | | | |
| | | | ent deposition | | 15 | | | | ved or predicted flow events | |
| | | | staining | | Г | a | brupt chan | ge i | in plant community | |
| | - | other | | Fuelsie | | | | | | |
| | 11 | | uous OHWM. | | | | | | | |
| | | | the OHWM w E Line indicated | | | | | | WA jurisdiction (check all that apply): Mark indicated by: | |
| | | [oil or | scum line along | g shore object | ts T | SI | urvey to av | vaila | able datum; | |
| | | [fine si | hell or debris de | eposits (foresl | hore) | p | hysical ma | arkir | ngs; | |
| | | physic | cal markings/ch | naracteristics | Г | V | egetation l | ines | s/changes in vegetation types. | |
| | □ tidal gauges | | | | | | | | | |
| | | other | (list): | | | | | | | |
| (iii) Che | emical Characteristics: | | | | | | | | | |
| Cha | racterize (Explain: | tributary (e Acid Mine | .g., water color | (D) appeared | to be pres | ent | (orange co | | lity; general watershed characteristics, ation in water). | etc.). |

⁶A 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.

Third.

| | (iv) | Bio | gical Characteristics. Channel supports (check all that apply): | |
|----|------|-------|--|-----|
| | | V | Riparian corridor. Characteristics (type, average width): >18 meters | |
| | | V | Wetland fringe. Characteristics: Wetlands 14 and 17 abut Stream 4. | |
| | | V | Habitat for: | |
| | | | Federally Listed species. Explain findings: | |
| | | | Fish/spawn areas, Explain findings: | |
| | | | Other environmentally-sensitive species. Explain findings: | |
| | | | ▼ Aquatic/wildlife diversity. Explain findings: Provides terrestrial wildlife habitat. | |
| 2. | Cha | iract | ristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW | |
| | (i) | Phy | Cal Characteristics: General Wetland Characteristics: Properties: Wetland size: 0.76 acres Wetland type. Explain: Emergent/Scrub-Shrub and Forested Wetland quality. Explain: Low to Medium, ORAM Category 1 and 2 Project wetlands cross or serve as state boundaries. Explain: | |
| | | (b) | General Flow Relationship with Non-TNW: Flow is: Intermittent Flow Explain: | |
| | | | Surface flow is: Overland Sheetflow Characteristics: | |
| | | | Subsurface flow: Explain findings: [Dye (or other) test performed: | |
| | | (c) | Wetland Adjacency Determination with Non-TNW: ☐ Directly abutting | |
| | | | Not directly abutting | |
| | | | Discrete wetland hydrologic connection. Explain: | |
| | | | Figure 1 Ecological connection. Explain: | |
| | | | Separated by berm/barrier. Explain: | |
| | | (d) | Proximity (Relationship) to TNW Project wetlands are 1-2 river miles from TNW. Project waters are 1-2 aerial (straight) miles from TNW. Flow is from: Wetland to Navigable Waters Estimate approximate location of wetland as within the floodplain. | |
| | (ii) | Cha | nical Characteristics: acterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characterist etc.). Explain: Wetland appeared to be impacted by AMD. Ify specific pollutants, if known: AMD appeared to be present | ics |
| | (iii |) Bio | gical Characteristics. Wetland supports (check all that apply): | |
| | | 1 | Riparian buffer. Characteristics (type, average width): The wetlands provide buffers <30'. | |
| | | 17 | Vegetation type/percent cover. Explain: herbaceous 80-100%; scrub-shrub 20-30% and forested 80-100%. | |
| | | 14 | Habitat for: | |
| | | | Federally Listed species. Explain findings: Fish/spawn areas. Explain findings: | |
| | | | 그리고 하는 이렇게 살아가 있다면서 살아가 하는데 있는데 되는데 되었다. | |
| | | | Other environmentally-sensitive species. Explain findings: Aquatic/wildlife diversity. Explain findings: Provide habitat for terrestrial wildlife. | |
| | | | 21 Aquano whome diversity. Explain thinings, Floride habitat for terresular whome. | |
| 3. | Ch | araci | ristics of all wetlands adjacent to the tributary (if any) | |

3.

All wetland(s) being considered in the cumulative analysis: 2
Approximately (0.76) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

| Directly abuts? (Y/N) | Size (in acres) | Directly abuts? (Y/N) | Size (in acres) |
|-----------------------|-----------------|-----------------------|-----------------|
| W-14 Y | 0.21 | | |
| W-17 Y | 0.55 | | |

Summarize overall biological, chemical and physical functions being performed: These wetlands perform numerous functions such as flood storage, erosion and sediment control, pollution control through filtering and providing wildlife habitat. The wetlands have the capacity to transfer nutrients and organic carbon to support downstream food-webs. The wetlands have a direct relationship on the physical, chemical and biological integrity of the Big Sandy River.

C. SIGNIFICANT NEXUS DETERMINATION

1.

2.

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:

- 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:
- 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):

| 11/1 | ws and Adjacent Wetlands. Check all that apply and provide size estimates in review area: |
|------|--|
| FI | TNWs: linear feet width (ft), Or, acres. |
| П | Wetlands adjacent to TNWs: acres. |
| RPV | Ws that flow directly or indirectly into TNWs. |
| П | 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: Based upon climate data accessed from Kentucky Mesonet (2011-2013), there are approximately 69 annual storm events exceeding 0.2 inches of precipitation in Lawrence County, Kentucky. Assuming that intermittent streams are flowing for 48 hours after each storm event, there are approximately 138 annual flow days for the intermittent streams in the study area. The estimated number of annual flow days exceed three months. |
| | Provide estimates for jurisdictional waters in the review area (check all that apply): |
| | Tributary waters: One (1) intermittent stream channel totaling 3,343 linear feet. |
| | Other non-wetland waters: acres. |
| | Identify type(s) of waters: |
| | |

| | 3. | □ Wa | Ws ⁸ that flow directly or indirectly into TNWs. terbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a W 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: Other non-wetland waters: acres. |
| | | 1.1 | Identify type(s) of waters: |
| d | 4. | Wetland | Is directly abutting an RPW that flow directly or indirectly into TNWs. |
| | | | tlands directly abut RPW and thus are jurisdictional as adjacent wetlands. |
| | | F | 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: |
| | | [Z] | 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: Wetlands 14 and 17 are physically proximate to Stream 04. |
| | | Pro | vide acreage estimates for jurisdictional wetlands in the review area: Two (2) wetlands totaling 0.76 acres. |
| | 5. | □ We adj | Is adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs. Itlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are acent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data porting this conclusion is provided at Section III.C. |
| | | Provide | acreage estimates for jurisdictional wetlands in the review area: acres. |
| 11 | 6. | We and | Is adjacent to non-RPWs that flow directly or indirectly into TNWs. It ands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting conclusion is provided at Section III.C. |
| | | Provide | estimates for jurisdictional wetlands in the review area: |
| 111 | 7. | Impoun | dments of jurisdictional waters. |
| | | | eral rule, the impoundment of a jurisdictional tributary remains jurisdictional. nonstrate that impoundment was created from "waters of the U.S.," or |
| | | ☐ Der | nonstrate that water meets the criteria for one of the categories presented above (1-6), or |
| | | ☐ Der | nonstrate that water is isolated with a nexus to commerce (see E below). |
| | OR AL | DESTRI THAT | INTERSTATE OR INTRA-STATEI WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION ICTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK APPLY): ¹⁰ |
| | | | e or could be used by interstate or foreign travelers for recreational or other purposes. |
| | | | ich fish or shellfish are or could be taken and sold in interstate or foreign commerce. |
| | | | e or could be used for industrial purposes by industries in interstate commerce. |
| | | | e isolated waters. Explain: |
| | | Other fa | ctors. Explain: |
| | Ide | tify wate | er body and summarize rationale supporting determination: |
| | | | ates for jurisdictional waters in the review area (check all that apply): y waters: linear feet width (ft). |
| | Γİ | Other no | on-wetland waters: acres. tify type(s) of waters: |
| | г | | s: acres. |
| | | | |

E.

^{*}See Footnote # 3.

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

*To instructional Guidebook.

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

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*To comp

| | | 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). |
| | Г | Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: |
| | Г | Other: (explain, if not covered above): |
| | (i.e., | vide acreage estimates for non-jurisdictional waters in the review area, where the <u>sole</u> potential basis of jurisdiction is the MBR factors, presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment tok all that apply): |
| | Г | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| | Г | Lakes/ponds: acres. |
| | Г | Other non-wetland waters: acres. List type of aquatic resource: |
| | Г | Wetlands: acres. |
| | | vide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a ing is required for jurisdiction (check all that apply): |
| | | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| | Г | Lakes/ponds: acres. |
| | Г | Other non-wetland waters: acres. List type of aquatic resource: |
| | Γ | Wetlands: acres. |
| E | CTIO | N IV: DATA SOURCES. |
| ۱. | requ | PORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and ested, appropriately reference sources below): |
| | N N | Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: American Electric Power (applicant), URS Corporatio (consultant) May 2013 submittal Data sheets prepared/submitted by or on behalf of the applicant/consultant. |
| | 6.0 | Office concurs with data sheets/delineation report. |
| | | Office does not concur with data sheets/delineation report. |
| | П | Data sheets prepared by the Corps: |
| | П | Corps navigable waters' study: |
| | 17 | U.S. Geological Survey Hydrologic Atlas: |
| | 34 | USGS NHD data. |
| | | USGS 8 and 12 digit HUC maps. |
| | 1 | U.S. Geological Survey map(s). Cite scale & quad name: Fallsburg and Pritchard, KY 1:24,000 USGS Quadrangles. |
| | V | USDA Natural Resources Conservation Service Soil Survey. Citation: Lawrence County, KY soil survey |
| | P | National wetlands inventory map(s). Cite name: Fallsburg and Pritchard, KY 1:24,000 USGS Quadrangles. |
| | П | State/Local wetland inventory map(s): |
| | FI | FEMA/FIRM maps: 21127C120D |
| | П | 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929) |
| | V | Photographs: Aerial (Name & Date): |
| | П | or Other (Name & Date): Photos taken by URS Corporation during 2012 field inspections. |
| | | Previous determination(s). File no. and date of response letter: |
| | P | Applicable/supporting case law: U.S. v. Cundiff, 555 F.3d 200 (6th Cir. 2009). |
| | P | Applicable/supporting scientific literature: National Research Council (1995). Wetlands: Characteristics and Boundaries, National Academy Press, Washington, D.C. |
| | | Mitsch, William J., and Gosselink, James G. (1993). Wetlands, Van Nosttrand Reinhold Company, New York, New York |
| | | Kusler, Jon, and Opheim, Teresa (1996). Our National Wetland Heritage, Environmental Law Institute, Washington, D.C. |
| | | Mary C. Freeman, Catherine M. Pringle, C Rhett Jackson (2007) Hydrologic connectivity and the contribution of stream headwaters to ecological integrity at regional scales. Journal of the American Water Resources Association 43 (1), 5-14. |

doi:10.1111/j.1752-1688.2007.00002.x

Richard B. Alexander, Elizabeth W. Boyer, Richard A. Smith, Gregory E. Schwarz, Richard B. Moore (2007) The role of headwater streams in downstream water quality.

Journal of the American Water Resources Association 43 (1), 41-59.

doi:10.1111/j.1752-1688.2007.00005.x

Mark S. Wipfli, John S. Richardson, Robert J. Naiman (2007)

Ecological linkages between headwaters and downstream ecosystems: transport of organic matter, invertebrates, and wood down headwater channels.

Y .

Journal of the American Water Resources Association 43 (1), 72-85. doi:10.1111/j.1752-1688.2007.00007.x

Judy L. Meyer, David L. Strayer, J. Bruce Wallace, Sue L. Eggert, Gene S. Helfman, Norman E. Leonard (2007) The contribution of headwater stream to biodiversity in river networks Journal of the American Water Resources Association 43 (1), 86-103. doi:10.1111/j.1752-1688.2007.00008.x

Other information (please specify): Climate data accessed from Kentucky Mesonet (2011-2013).

B. ADDITIONAL COMMENTS TO SUPPORT JD: Based on the aforementioned findings, the two (2) emergent/scrub shrub and forested wetlands, totaling 0.76 acres provide flood storage, erosion and sediment control, pollution control through filtering and wildlife habitat adjacent to the one (1) identified unnamed intermittent (RPW) tributary (Stream 4). This intermittent tributary functions as a headwater stream channel providing water, nitrogen and organic matter transport functions as well as providing vertebrate habitat for deer, birds, and other small wildlife in the area. These functions have a substantial effect on the Big Sandy River (TNW) and thus establish a significant nexus to this TNW. *See supporting scientific literature under Section IV, A.

INTERMITTENT STREAMS AND WETLANDS DRAINING TO BLAINE CREEK WITHIN THE BIG SANDY POND CLOSURE PROJECT

| ID# | Description/Tributary Name | Latitude | Longitude | Size (linear feet - streams, or acres - wetlands) | HUC | Quad |
|---------------|---|-----------|------------|---|--|----------------------------|
| Stream 04 | Unnamed Intermittent (RPW) Tributary to Blaine Creek | 38.179875 | -82.625015 | 3,343 | Big Sandy | Fallsburg and Pritchard |
| Wetland 14 | PEM/PSS Wetland | 38.179076 | -82.625342 | 0.21 | Big Sandy | Fallsburg |
| Wetland 17 | PFO Wetland | 38.185963 | -82.625944 | 0.55 | Big Sandy | Fallsburg |
| otal: 1 stre | am, 2 wetlands | | | Stream: 3,343 Wetlands: 0.76 | Service Control of the |

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

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 9/16/14

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District, LRL-2014-417-mdh, RPW Intermittent Stream Channels Open Water and Abutting Wetland (draining to fly ash pond)

| | | e: Kentucky ter coordinates o | County/parish/borough: Lawrence County City: Louisa Fsite (lat/long in degree decimal format): Lat. 38.184825°, Long -82.643639° Universal Transverse Mercator: |
|-----|---------|--|---|
| | Nan | ne of nearest Trac | erbody: Blaine Creek Ittional Navigable Water (TNW) into which the aquatic resource flows: Big Sandy River r Hydrologic Unit Code (HUC): Big Sandy (05070204) |
| | V | Check if man/ | diagram of review area and/or potential jurisdictional areas is/are available upon request. |
| | D | | sites (e.g., offsite mitigation sites, disposal sites, etc) are associated with this action and are recorded on a different |
| 7. | | JD form | |
| D. | - | | MED FOR SITE EVALUATION (CHECK ALL THAT APPLY): |
| | V | Office (Desk) | Determination. Date: August 1, 2014 |
| | Г | Field Determin | ation. Date(s): |
| SE | CTIO | N II: SUMMA | RY OF FINDINGS |
| The | ere ar | | PETERMINATION OF JURISDICTION. waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 C.F.R. part 329) in the review |
| | Г | Waters subject | to the ebb and flow of the tide. |
| | Г | Waters are pre Explain: | sently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. |
| | ere are | SECTION 404 "waters of the U Waters of the U. | DETERMINATION OF JURISDICTION. I.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 C.F.R. part 328) in the review area. [Required] S. Hence of waters of U.S. in review area (check all that apply): |
| | F | TNWs, includi | ng territorial seas |
| | T | Wetlands adjac | ent to TNWs |
| | V | Relatively pen | nanent waters2 (RPWs) that flow directly or indirectly into TNWs |
| | | Non-RPWs tha | nt flow directly or indirectly into TNWs |
| | V | Wetlands direc | tly abutting RPWs that flow directly or indirectly into TNWs |
| | Г | Wetlands adjac | cent to but not directly abutting RPWs that flow directly or indirectly into TNWs |
| | F | Wetlands adjac | cent to non-RPWs that flow directly or indirectly into TNWs |
| | V | Impoundments | of jurisdictional waters |
| | Г | Isolated (inters | tate or intrastate) waters, including isolated wetlands |
| | | Non-wetland Wetlands: On Ponds: One (c. Limits (boun | mate) size of waters of the U.S. in the review area: waters: Twelve (12) intermittent stream channels totaling 8,377 linear feet, e (1) emergent/scrub-shrub wetland totaling 0.03 acres (Wetland 06). l) pond totaling 0.24 acres. daries) of jurisdiction based on: 1987 Delineation Manual and OHWM olished OHWM (if known): |
| | 2, | | vaters/wetlands (check if applicable): ³ sdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. |

³ Supporting documentation is presented in Section III.F.

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

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).

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.

I. TNW

Identify TNW:

Summarize rationale supporting determination:

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 waterbody 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:

Watershed size: Big Sandy Watershed: 410.4 square miles.

Drainage area:

Average annual rainfall: 50 inches Average annual snowfall: 21 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through 3 tributaries before entering TNW.

Project waters are 2-5 river miles from TNW.

Project waters are NA river miles from RPW.

Project waters are 2-5 aerial (straight) miles from TNW.

Project waters are NA aerial (straight) miles from RPW.

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

Identify flow route to TNW⁵: Streams 11, 13, 15, 17, 18, 22, 35, 39, 41, 46, 70, and 71 all flow into the fly ash waste water treatment pond. The fly ash pond flows into Stream 30 (a perennial RPW), which flows into Blaine Creek (a perennial RPW). Blaine Creek flows into the Big Sandy River (a TNW).

Tributary stream order, if known:

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

Tributary is:

✓ Natural

✓ Artificial (man-made). Explain:

✓ Manipulated (man-altered). Explain:

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

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.

| | Ave | rage width: 2 feet trage depth: 4 inche trage side slopes: 2 | es. | to top of bank (estin | nate) | | | |
|---------------|--|--|--------------|------------------------|-------|-----------------|---|--|
| | Primary I | tributary substrate | compos | sition (check all that | appl | y): | | |
| | V | Silts | V | Sands | | Г | Concrete | |
| | V | Cobbles | V | Gravel | | Г | Muck | |
| | Г | Bedrock | Г | Vegetation. Type | /% c | over; | | |
| | V | Other. Explain: bo | oulder, | clay | | | | |
| | Presence Tributary | of run/riffle/pool of geometry: Relative | omple: | xes. Explain: Run/r | | | ain: Fairly stable, vegetated. observed in Streams 15 and 71. | |
| an average of | Flow: Tributary provides for: Seasonal Flow Estimate average number of flow events in review area/year: 20 (or greater) Describe flow regime: Seasonal intermittent Other information on duration and volume: Based upon climate data accessed from Kentucky Mesonet (2011-2013), there is approximately 69 annual storm events exceeding 0.2 inch of precipitation in Lawrence County, Kentucky. Assuming that treams are flowing for 48 hours after each storm event, there are approximately 138 annual flow days for the intermittent | | | | | | | |
| | Surface f | flow is: Discrete an | d Conf | ined Characteristic | s: | | | |
| | Subsurfa | | | | | | | |
| | 121 | has (check all tha Bed and banks | | | | | | |
| | | OHWM ⁶ (check a | | | _ | | | |
| | | | A. A. P. and | pressed on the bank | П | | | |
| | | changes in the | charac | eter of soil | П | | terrestrial vegetation | |
| | | Shelving | | | | the presence o | f wrack line | |
| | | | | wn, bent, or absent | П | sediment sortin | ng | |
| | - 4 | leaf litter distu | | r washed away | П | scour | | |
| | | sediment depo | sition | | 1 | | ved or predicted flow events | |
| | | water staining | | | П | abrupt change | in plant community | |
| | | other (list): | | | | | | |
| | П | Discontinuous Ol | HWM. | Explain: | | | | |
| | | other than the OH High Tide Line in | | | | | f CWA jurisdiction (check all that apply): ter Mark indicated by: | |
| | | [oil or scum lin | ne along | g shore objects | П | survey to avail | able datum; | |
| | | [fine shell or d | ebris de | eposits (foreshore) | | physical mark | ngs; | |
| | | T physical mark | ings/ch | aracteristics | П | vegetation line | s/changes in vegetation types. | |
| | | T tidal gauges | | | | | | |
| | | other (list): | | | | | | |
| Cha | racterize t Explain: | | ne strea | | | | ality; general watershed characteristics, etc.). ved as turbid in other streams. | |

⁶A 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.

Tibid.

| (iv) | Biol | gical Characteristics. Channel supports (check all that apply): | | | | | |
|--------|---|---|--|--|--|--|--|
| | Riparian corridor. Characteristics (type, average width): Wooded >30' | | | | | | |
| | Wetland fringe. Characteristics: Wetland 06 abuts Stream 22. Wetland 08 is located 25 feet to the southwest of S Pond 01 abuts Stream 15. | | | | | | |
| | V | labitat for: | | | | | |
| | | Federally Listed species. Explain findings: | | | | | |
| | | Fish/spawn areas. Explain findings: | | | | | |
| | | Other environmentally-sensitive species. Explain findings: | | | | | |
| | | ✓ Aquatic/wildlife diversity. Explain findings: Provides terrestrial wildlife habitat. | | | | | |
| Cha | ract | istics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW | | | | | |
| (i) | | cal Characteristics: | | | | | |
| 1.7 | | General Wetland Characteristics: | | | | | |
| | | Properties: Wetland size: 0.03 acres | | | | | |
| | | Wetland type. Explain: Emergent/Scrub-Shrub | | | | | |
| | | Wetland quality. Explain: Medium, ORAM Category 2 (Wetland 06) | | | | | |
| | | Project wetlands cross or serve as state boundaries. Explain: | | | | | |
| | (b) | General Flow Relationship with Non-TNW: | | | | | |
| | | Flow is: Ephemeral Flow Explain: | | | | | |
| | | Surface flow is: Overland Sheetflow Characteristics: | | | | | |
| | | Subsurface flow: Explain findings: | | | | | |
| | | □ Dye (or other) test performed: | | | | | |
| | (c) | Wetland Adjacency Determination with Non-TNW: | | | | | |
| | | Directly abutting: Wetland 06 directly abuts Stream 22 | | | | | |
| | | Not directly abutting | | | | | |
| | | Discrete wetland hydrologic connection. Explain: Wetland 06 is located in close proximity to Stream 22. | | | | | |
| | | Ecological connection. Explain: Wetland 06 is located in close proximity to Stream 22 and provides stormwater attenuation, filtering and wildlife habitat. | | | | | |
| | | Separated by berm/barrier. Explain: | | | | | |
| | 7.15 | | | | | | |
| | (a) | Proximity (Relationship) to TNW Project wetlands are 2-5 river miles from TNW. | | | | | |
| | | Project waters are 2-5 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. | | | | | |
| - /*** | | | | | | | |
| (11) | | nical Characteristics: acterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics | | | | | |
| | | etc.). Explain: | | | | | |
| | Ide | fy specific pollutants, if known: | | | | | |
| (iii | | gical Characteristics. Wetland supports (check all that apply): Riparian buffer. Characteristics (type, average width): Buffers >30'. | | | | | |
| | P | Vegetation type/percent cover. Explain: herbaceous 75%, sapling/shrub: 25% (Wetland 06) | | | | | |
| | | Habitat for: | | | | | |
| | | Federally Listed species. Explain findings: | | | | | |
| | | Fish/spawn areas. Explain findings: | | | | | |
| | | Other environmentally-sensitive species. Explain findings: | | | | | |
| | | Aquatic/wildlife diversity. Explain findings: Provide habitat for terrestrial wildlife. | | | | | |
| | | | | | | | |

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

2.

All wetland(s) being considered in the cumulative analysis: !

Approximately (0.03) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N) W-06 Y Size (in acres) 0.03 Directly abuts? (Y/N)

Size (in acres)

Summarize overall biological, chemical and physical functions being performed: Wetland 06 performs numerous functions such as flood storage, erosion and sediment control, pollution control through filtering and providing wildlife habitat. Wetland 06 has the capacity to transfer nutrients and organic carbon to support downstream food-webs, and it has a direct relationship on the physical, chemical and biological integrity of the Big Sandy 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:

- 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:
- 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:
- 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: linear feet width (ft), Or, 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: Based upon climate data accessed from Kentucky Mesonet (2011-2013), there are approximately 69 annual storm events exceeding 0.2 inch of precipitation in Lawrence County, Kentucky. Assuming that intermittent streams are flowing for 48 hours after each storm event, there are approximately 138 annual flow days for the intermittent streams in the study area. The estimated number of annual flow days exceeds three months. |
| | Provide estimates for jurisdictional waters in the review area (check all that apply): Tributary waters: Twelve (12) intermittent stream channels totaling 8,377 linear feet. |
| | Cher non-wetland waters: 0.24 acres. |

Identify type(s) of waters: Pond 1

| | 3. | [Waterbody that is n | lirectly or indirectly into TNWs. of a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a sal. Data supporting this conclusion is provided at Section III.C. |
|----|-----|--|--|
| | | Provide estimates for jur | isdictional waters within the review area (check all that apply): |
| | | Tributary water | rs: |
| | | Other non-wet Identify type(s | |
| | 4. | | ting an RPW that flow directly or indirectly into TNWs. but RPW and thus are jurisdictional as adjacent wetlands. |
| | | Wetlands direc | tly abutting an RPW where tributaries typically flow year-round. Provide data and rationale tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly |
| | | tributary is sea | only abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that sonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that cetly abutting an RPW: Wetland 06 (0.03 acres) is physically proximate to Stream 22. |
| | | Provide acreage est | imates for jurisdictional wetlands in the review area: One wetland (Wetland 06) totaling 0.03 acres. |
| | 5. | Wetlands that do no adjacent and with s | ut not directly abutting an RPW that flow directly or indirectly into TNWs. It directly abut an RPW, but when considered in combination with the tributary to which they are imilarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data clusion is provided at Section III.C. |
| | | Provide acreage estimate | es for jurisdictional wetlands in the review area: |
| | 6. | Wetlands adjacent and with similarly | on-RPWs that flow directly or indirectly into TNWs. to such waters, and have when considered in combination with the tributary to which they are adjacent situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting rovided at Section III.C. |
| | | Provide estimates for jur | isdictional wetlands in the review area: |
| | 7. | The same of the contract of the same of th | poundment of a jurisdictional tributary remains jurisdictional. |
| | | | npoundment was created from "waters of the U.S.," or |
| | | | ater meets the criteria for one of the categories presented above (1-6), or ater is isolated with a nexus to commerce (see E below). |
| | | | |
| E. | OR | | E OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION (HICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK |
| | | which are or could be us | ed by interstate or foreign travelers for recreational or other purposes. |
| | П | | fish are or could be taken and sold in interstate or foreign commerce. |
| | | | ed for industrial purposes by industries in interstate commerce. |
| | - | Interstate isolated waters | Explain: |
| | 11 | Other factors. Explain: | |
| | Ide | ntify water body and sur | nmarize rationale supporting determination: |
| | Pro | vide estimates for jurisdic Tributary waters: linear | tional waters in the review area (check all that apply): feet width (ft). |
| | | Other non-wetland water Identify type(s) of w | |
| | Г | Wetlands: acres. | |
| F. | NO | N-JURISDICTIONAL | WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY): |
| | | | were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Manual and/or appropriate Regional Supplements. |
| | | | |

E.

⁸See 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.

| F | 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). |
|--------|--|
| T | Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: |
| Г | Other: (explain, if not covered above): |
| (i.e. | vide acreage estimates for non-jurisdictional waters in the review area, where the <u>sole</u> potential basis of jurisdiction is the MBR factors, presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment eck all that apply): |
| Г | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| Г | Lakes/ponds: acres. |
| F | Other non-wetland waters: acres. List type of aquatic resource: |
| Г | Wetlands: |
| | vide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a ling is required for jurisdiction (check all that apply): |
| _ | Non-wetland waters (i.e., rivers, streams): linear feet width (ft). |
| _ | Lakes/ponds: acres. |
| 1 | Other non-wetland waters: acres. List type of aquatic resource: . |
| Г | Wetlands: |
| SECTIO | ON IV: DATA SOURCES. |
| | PORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and sested, appropriately reference sources below): Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: American Electric Power (applicant), URS Corporation |
| াঘ | (consultant) May 2013 submitted Data sheets prepared/submitted by or on behalf of the applicant/consultant. |
| | Office concurs with data sheets/delineation report. |
| | Office does not concur with data sheets/delineation report. |
| 100 | Data sheets prepared by the Corps: |
| П | Corps navigable waters' study: |
| P | U.S. Geological Survey Hydrologic Atlas: |
| | USGS NHD data. |
| | USGS 8 and 12 digit HUC maps. |
| 17 | U.S. Geological Survey map(s). Cite scale & quad name: Fallsburg, KY 1:24,000 USGS Quadrangle. |
| P | USDA Natural Resources Conservation Service Soil Survey. Citation: Lawrence County, KY soil survey |
| P | National wetlands inventory map(s). Cite name: Fallsburg, KY 1:24,000 USGS Quadrangle. |
| | State/Local wetland inventory map(s): |
| াল | FEMA/FIRM maps: 21127C0120D |
| | 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929) |
| 17 | Photographs: |
| П | or [7] Other (Name & Date): Photos taken by URS Corporation during 2012 field inspections. |
| П | Previous determination(s). File no. and date of response letter: |
| 17 | Applicable/supporting case law: U.S. v. Cundiff, 555 F.3d 200 (6th Cir. 2009). |
| V | Applicable/supporting scientific literature: National Research Council (1995). Wetlands: Characteristics and Boundaries, National Academy Press, Washington, D.C. |
| | Mitsch, William J., and Gosselink, James G. (1993). Wetlands, Van Nosttrand Reinhold Company, New York, New York |
| | Kusler, Jon, and Opheim, Teresa (1996). Our National Wetland Heritage, Environmental Law Institute, Washington, D.C. |
| | Mary C. Freeman, Catherine M. Pringle, C Rhett Jackson (2007) Hydrologic connectivity and the contribution of stream headwaters to ecological integrity at regional scales. Journal of the American Water Resources Association 43 (1), 5-14. doi:10.1111/j.1752-1688.2007.00002.x |
| | Richard B. Alexander, Elizabeth W. Boyer, Richard A. Smith, Gregory E. Schwarz, Richard B. Moore (2007) The role of headwater streams in downstream water quality. Journal of the American Water Resources Association 43 (1), 41-59. |

A.

doi:10.1111/j.1752-1688.2007.00005.x

Mark S. Wipfli, John S. Richardson, Robert J. Naiman (2007)

Ecological linkages between headwaters and downstream ecosystems: transport of organic matter, invertebrates, and wood down headwater channels.

Journal of the American Water Resources Association 43 (1), 72-85.

doi:10.1111/j.1752-1688.2007.00007.x

Judy L. Meyer, David L. Strayer, J. Bruce Wallace, Sue L. Eggert, Gene S. Helfman, Norman E. Leonard (2007)

The contribution of headwater stream to biodiversity in river networks

Journal of the American Water Resources Association 43 (1), 86-103.

doi:10.1111/j.1752-1688.2007.00008.x

Other information (please specify): Climate data accessed from Kentucky Mesonet (2011-2013)

B. ADDITIONAL COMMENTS TO SUPPORT JD: Based on the aforementioned findings, the one (1) wetland (Wetland 06), totaling 0.03 acres provides flood storage, erosion and sediment control, pollution control through filtering and wildlife habitat and is proximate to one (1) unnamed intermittent (RPW) stream (Stream 22) that flows into the fly ash waste water treatment pond. The remaining eleven (11) intermittent streams and Pond 1 also flow into the fly ash waste water treatment pond (which is not considered a "water of the U.S." per 33 C.F.R. § 328.3(a)(8). The fly ash pond discharges into Stream 30 (a perennial RPW), which discharges into Blaine Creek (a perennial RPW). Blaine Creek flows into the Big Sandy River (a TNW). These intermittent tributaries function as a headwater stream channels providing water, nitrogen and organic matter transport functions as well as providing vertebrate habitat for deer, birds, and other small wildlife in the area. These functions have a substantial effect on the Big Sandy River (TNW) and thus establish a significant nexus to this TNW. *See supporting scientific literature under Section IV, A.

INTERMITTENT STREAMS, WETLANDS, AND PONDS DRAINING TO FLY ASH WASTEWATER TREATMENT POND WITHIN THE BIG SANDY POND CLOSURE PROJECT

| ID# | Description/Tributary Name | Latitude | Longitude | Size | HUC | Quad |
|---------------|----------------------------|-----------|------------|-------|-----------|-----------|
| Stream 11 | Tributary to fly ash pond | 38.184825 | -82.643639 | 491 | Big Sandy | Fallsburg |
| Stream 13 | Tributary to fly ash pond | 38.185593 | -82.648905 | 816 | Big Sandy | Fallsburg |
| Stream 15 | Tributary to fly ash pond | 38.17573 | -82.642819 | 895 | Big Sandy | Fallsburg |
| Stream 17 | Tributary to fly ash pond | 38.179089 | -82.645326 | 797 | Big Sandy | Fallsburg |
| Stream 18 | Tributary to fly ash pond | 38.18225 | -82.648104 | 1,120 | Big Sandy | Fallsburg |
| Stream 22 | Tributary to fly ash pond | 38.183653 | -82,63824 | 186 | Big Sandy | Fallsburg |
| Stream 35 | Tributary to fly ash pond | 38.185591 | -82.646285 | 561 | Big Sandy | Fallsburg |
| Stream 39 | Tributary to fly ash pond | 38.181365 | -82.645372 | 169 | Big Sandy | Fallsburg |
| Stream 41 | Tributary to fly ash pond | 38.181378 | -82.645992 | 652 | Big Sandy | Fallsburg |
| Stream 46 | Tributary to fly ash pond | 38.18363 | -82,638883 | 432 | Big Sandy | Fallsburg |
| Stream 70 | Tributary to fly ash pond | 38.183888 | -82.650984 | 442 | Big Sandy | Fallsburg |
| Stream 71 | Tributary to fly ash pond | 38.185572 | -82.653279 | 1,816 | Big Sandy | Fallsburg |
| Wetland 06 | PEM/PSS Wetland | 38.185745 | -82,637086 | 0.03 | Big Sandy | Fallsburg |
| Pond 01 | Pond | 38.177116 | -82.641885 | 0.24 | Big Sandy | Fallsburg |

Total: 12 streams, 1 wetland, 1 pond

Stream: 8,377 linear feet Wetland: 0.03 acre Pond: 0.24 acre

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

| Applicant: American Electirc Power | | File Number: LRL-2014-417-mdh | Date: 9/18/2014 | |
|------------------------------------|--|-------------------------------|-----------------|--|
| Attac | Attached is: | | | |
| | INITIAL PROFFERED PERMIT (Standard | A | | |
| | PROFFERED PERMIT (Standard Permit or Letter of permission) | | В | |
| | PERMIT DENIAL | | C | |
| X | APPROVED JURISDICTIONAL DETERM | INATION | D | |
| | PRELIMINARY JURISDICTIONAL DETE | RMINATION | Е | |

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at

http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

- A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.
- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final
 authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your
 signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights
 to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final
 authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your
 signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights
 to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you
 may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this
 form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the
 date of this notice.
- C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.
- D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.
- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the
 date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative
 Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received
 by the division engineer within 60 days of the date of this notice.
- E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

| | - V | |
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| REASONS FOR APPEAL OR OBJECTIONS: (Descri initial proffered permit in clear concise statements. You may atta or objections are addressed in the administrative record.) | | |
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| ADDITIONAL INFORMATION: The appeal is limited to a revier record of the appeal conference or meeting, and any supplemental clarify the administrative record. Neither the appellant nor the Coyou may provide additional information to clarify the location of POINT OF CONTACT FOR QUESTIONS OR INFO | al information that the review officer has determined is needed to Corps may add new information or analyses to the record. However, If information that is already in the administrative record. |) |
| If you have questions regarding this decision and/or the appeal process you may contact: Mr. Michael Hasty, Senior Project Manager US Army Engineer District Louisville Attn: CELRL-OP-FS PO Box 59 Louisville, KY 40201-0059 TEL (502) 315-6676; FAX (502) 315-6677 michael.d.hasty@usace.army.mil | If you only have questions regarding the appeal process you also contact: US Army Corps of Engineers ATTN: Appeal Review Officer CELRD-PD-RE 550 Main Street RM 10524 Cincinnati, OH 45202-3222 TEL (513) 684-6212; FAX (513) 684-2460 | |
| RIGHT OF ENTRY: Your signature below grants the right of en consultants, to conduct investigations of the project site during the notice of any site investigation, and will have the opportunity to project site during the notice of any site investigation, and will have the opportunity to project site during the notice of any site investigation, and will have the opportunity to project site during the notice of any site investigation and will have the opportunity to project site during the notice of any site investigation and will have the opportunity to project site during the notice of any site investigation and will have the opportunity to project site during the notice of any site investigation and will have the opportunity to project site during the notice of any site investigation and will have the opportunity to project site during the notice of any site investigation and will have the opportunity to project site during the notice of any site investigation and will have the opportunity to project site during the notice of any site investigation and will have the opportunity to project site during the notice of any site investigation and will have the opportunity to project site during the notice of any site investigation and the notice of any | he course of the appeal process. You will be provided a 15 day | |



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Kentucky Ecological Services Field Office 330 West Broadway, Suite 265 Frankfort, Kentucky 40601 (502) 695-0468 May 16, 2012

Ms. Rebekah Hovermale Environmental Specialist II Water and Ecological Resource Services American Electric Power 1 Riverside Plaza Columbus, Ohio 43215

Re: FWS 2012-B-0544; American Electric Power, Big Sandy Plant Landfill Project, located

in Lawrence County, Kentucky

Dear Ms. Hovermale:

The U.S. Fish and Wildlife Service (Service) has reviewed your correspondence of April 27, 2012 regarding the above-referenced project. The Service offers the following comments in accordance with the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). This is not a concurrence letter. Please read carefully, as further consultation with the Service may be required.

In order to assist you in determining if the proposed project has the potential to impact protected species we have searched our records for occurrences of listed species within the vicinity of the proposed project. Based upon the information provided to us and according to our databases, we believe that the Indiana bat (*Myotis sodalis*) is the only federally listed species that has the potential to occur within the project vicinity.

We must advise you that collection records available to the Service may not be all-inclusive. Our database is a compilation of collection records made available by various individuals and resource agencies. This information is seldom based on comprehensive surveys of all potential habitats and thus does not necessarily provide conclusive evidence that protected species are present or absent at a specific locality.

Indiana bat

Summer roost habitat for the endangered Indiana bat may exist within the proposed project site. Based on this information, we believe that: (1) forested areas in the vicinity of and on the project area may provide potentially suitable summer roosting and foraging habitat for the Indiana bat. Our belief that potentially suitable habitat may be present is based on the information provided in your correspondence, the fact that much of the project site and/or surrounding areas contain

forested habitats that are within the natural range of this species, and our knowledge of the life history characteristics of the species.

The Indiana bat utilizes a wide array of forested habitats, including riparian forests, bottomlands, and uplands for both summer foraging and roosting habitat. Indiana bats typically roost under exfoliating bark, in cavities of dead and live trees, and in snags (i.e., dead trees or dead portions of live trees). Trees in excess of 16 inches diameter at breast height (DBH) are considered optimal for maternity colony roosts, but trees in excess of 9 inches DBH appear to provide suitable maternity roosting habitat. Male Indiana bats have been observed roosting in trees as small as 5 inches DBH.

Prior to hibernation, Indiana bats utilize the forest habitat around the hibernacula (*i.e.* cave), where they feed and roost until temperatures drop to a point that forces them into hibernation. This "swarming" period is dependent upon weather conditions and may last from about September 15 to about November 15. This is a critical time for Indiana bats, since they are acquiring additional fat reserves and mating prior to hibernation. Research has shown that bats exhibiting this "swarming" behavior will range up to five miles from chosen hibernacula during this time. For hibernation, the Indiana bat prefers limestone caves, sandstone rockshelters, and abandoned underground mines with stable temperatures of 39 to 46 degrees F and humidity above 74 percent but below saturation.

Because we have concerns relating to the Indiana bat on this project and due to the lack of occurrence information available on this species relative to the proposed project area, we have the following recommendation relative to Indiana bats.

 We recommend that the project proponent only remove trees within the project area between October 15 and March 31 in order to avoid impacting summer roosting Indiana bats.

However, if this recommendation cannot be incorporated as a project condition, then the project area may be surveyed to determine the presence or absence of this species within the project area in an effort to determine if potential impacts to the Indiana bat are likely. A qualified biologist who holds the appropriate collection permits for the Indiana bat must undertake such surveys, and we would appreciate the opportunity to approve the biologist's survey plan prior to the survey being undertaken and to review all survey results, both positive and negative. If any Indiana bats are identified, we would request written notification of such occurrence(s) and further coordination and consultation.

If your project schedule requires the clearing of potential Indiana bat habitat (i.e., trees that are greater than 5 inches DBH and exhibit any of the following characteristics: exfoliating bark, cracks, crevices, dead portions, cavities, broken limbs) during the period of April 1 to October 14, you have two primary options for addressing impacts to Indiana bats. First, you can survey the project site as described previously, or you can enter into a Conservation Memorandum of Agreement (MOA) with the Service. By entering into a Conservation MOA with the Service, Cooperators gain flexibility in project timing with regard to the removal of suitable Indiana bat habitat. In exchange for this flexibility, the Cooperator provides recovery-focused conservation

benefits to the Indiana bat through the implementation of minimization and mitigation measures as set forth in the Indiana Bat Mitigation Guidance for the Commonwealth of Kentucky. For additional information about this option, please notify our office.

Thank you again for your request. Your concern for the protection of endangered and threatened species is greatly appreciated. If you have any questions regarding the information that we have provided, please contact James Gruhala at (502) 695-0468 extension 116.

Sincerely,

Virgil Lee Andrews, Jr.

Field Supervisor

Steven L. Beshear Governor



Leonard K. Peters
Secretary
Energy and Environment Cabinet

Donald S. Dott, Jr.
Director

Commonwealth of Kentucky Kentucky State Nature Preserves Commission

801 Schenkel Lane Frankfort, Kentucky 40601-1403 502-573-2886 Voice 502-573-2355 Fax

May 23, 2012

Matthew Thomayer URS Corporation 36 East Seventh St., Ste 2300 Cincinnati, OH 45202

Data Request 12-107

Dear Mr. Thomayer:

This letter is in response to your data request of May 16, 2012 for the AEP Big Sandy Plant Landfill project (Lawrence County) project. We have reviewed our Natural Heritage Program Database to determine if any of the endangered, threatened, or special concern plants and animals or exemplary natural communities monitored by the Kentucky State Nature Preserves Commission occur near the project area on the Fallsburg and Pritchard USGS Quadrangle, as shown on the map provided. Please see the attached reports for more information, which reflect analysis of the project area with three buffers applied:

1-mile for all records – 2 records 5-mile for aquatic records – 3 records 5-mile for federally listed species – 1 record 10-mile for mammals and birds – 1 record

None of our records were found within $\frac{1}{2}$ mile of the project boundary.

Haliaeetus leucocephalus (Bald eagle, federally delisted, KSNPC threatened) is known to occur within ten miles of the proposed project. This species can be found near seacoasts, rivers and large lakes. Preferentially roosts in conifers in winter in some areas. In winter, may associate with waterfowl concentrations or congregate in areas with abundant dead fish.

Several monitored and even federally listed aquatic species have been previously reported from Blaine Creek and the Big Sandy River in the area of the project. Even though these are possibly extirpated from the area, aquatic species and habitats are sensitive to increased turbidity, sediment, and other adverse influences on water quality and should be protected from further



Data Request 12-107 May 23, 2012 Page 2

degradation. Our data are not sufficient to guarantee absence of endangered, threatened or sensitive species from the sites of proposed disturbance. We recommend that impacted streams be thoroughly surveyed by a qualified biologist prior to any in-stream disturbance.

I would like to take this opportunity to remind you of the terms of the data request license, which you agreed upon in order to submit your request. The license agreement states "Data and data products received from the Kentucky State Nature Preserves Commission, including any portion thereof, may not be reproduced in any form or by any means without the express written authorization of the Kentucky State Nature Preserves Commission." The exact location of plants, animals, and natural communities, if released by the Kentucky State Nature Preserves Commission, may not be released in any document or correspondence. These products are provided on a temporary basis for the express project (described above) of the requester, and may not be redistributed, resold or copied without the written permission of the Kentucky State Nature Preserves Commission's Data Manager (801 Schenkel Lane, Frankfort, KY, 40601. Phone: (502) 573-2886).

Please note that the quantity and quality of data collected by the Kentucky Natural Heritage Program are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Kentucky have never been thoroughly surveyed, and new plants and animals are still being discovered. For these reasons, the Kentucky Natural Heritage Program cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of Kentucky. Heritage reports summarize the existing information known to the Kentucky Natural Heritage Program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. We would greatly appreciate receiving any pertinent information obtained as a result of on-site surveys.



Data Request 12-107 May 23, 2012 Page 3

If you have any questions or if I can be of further assistance, please do not hesitate to contact me.

Sincerely,

Sara Hines Data Manager

SLD/SGH

Enclosures: Data Report and Interpretation Key





Donald S. Dott, Jr.Director

Steven L. Beshear Governor

Commonwealth of Kentucky Kentucky State Nature Preserves Commission

801 Schenkel Lane Frankfort, Kentucky 40601-1403 502-573-2886 Voice 502-573-2355 Fax

INVOICE

May 23 2012

Matthew Thomayer URS Corporation 36 East Seventh St., Ste 2300 Cincinnati, OH 45202

| Purchase Order Number | Data Request 12-107 |
|--|---|
| | f \$ 84.38 for data services requested in Plant Landfill project (Lawrence County) project. |
| Please make payment to the Kentucky Na Request number on your check. Payment is due | ature Preserves Fund and include the Data upon receipt. |
| Please contact us if we can be of further assistan | ce. |





STEVEN L. BESHEAR GOVERNOR

TOURISM, ARTS AND HERITAGE CABINET KENTUCKY HERITAGE COUNCIL

BOB STEWART SECRETARY

THE STATE HISTORIC PRESERVATION OFFICE 300 WASHINGTON STREET FRANKFORT, KENTUCKY 40601 PHONE (502) 564-7005 FAX (502) 564-5820 www.heritage.ky.gov

CRAIG A, POTTS
EXECUTIVE DIRECTOR AND
STATE HISTORIC PRESERVATION OFFICER

August 14, 2014

Ms. Jill N. Lukehart Water and Ecological Resource Services American Electric Power 1 Riverside Plaza Columbus, OH 43215-2373

Re: Phase I Archaeological Survey of American Electric Power's Big Sandy Plant Pond Closure Project in Lawrence County, Kentucky by Crista M. Haag of URS

Dear Ms. Lukehart:

Thank you for the above referenced report. This project entailed pedestrian survey and shovel testing of the project area. No new historic or prehistoric archaeological sites were recorded as a result of this survey, and the author recommends no further investigations of the project area. I concur with the author's findings and recommendations. We have no further comments and your responsibility to consult with the Kentucky State Historic Preservation Officer under the Section 106 review process for this project is fulfilled.

If the project design or boundaries change, this office should be consulted to determine the nature and extent of additional documentation that may be needed. In the event of the unanticipated discovery of an archaeological site or object of antiquity, the discovery should be reported to the Kentucky Heritage Council and to the Kentucky Office of State Archaeology in the Anthropology Department at the University of Kentucky in accordance with KRS 164.730. In the event that human remains are encountered during project activities, all work should be immediately stopped in the area and the area cordoned off, and in accordance with KRS 72.020 the county coroner and local law enforcement must be contacted immediately. Upon confirmation that the human remains are not of forensic interest, the unanticipated discovery must be reported to the Kentucky Heritage Council.

Should you have any questions, feel free to contact Yvonne Sherrick of my staff at 502.564.7005, extension 113.

Sincerely,

Craig A. Potts,

Executive Director and

State Historic Preservation Officer

CP: KHC # 42219-3

Cc: George Crothers (OSA)





United States Department of the Interior

DEC 24 2014

FISH AND WILDLIFE SERVICE Kentucky Ecological Services Field Office 330 West Broadway, Suite 265 Frankfort, Kentucky 40601 (502) 695-0468

December 12, 2014

Mr. Alan. Wood, P.E.

Director, Water & Ecological Resource Services American Electric Power, Environmental Services 1 Riverside Plaza Columbus, Ohio 43215-2373

Re: FWS 2012-B-0544; American Electric Power, Big Sandy Plant, Fly Ash Pond Closure

Project, located in Lawrence County, Kentucky

Dear Mr. Wood:

Thank you for the opportunity to provide comments on the above-referenced project. The U.S. Fish and Wildlife Service (Service) has reviewed your November 14, 2014 correspondence regarding the proposed project and offers the following comments in accordance with the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

In accordance with the provisions of the Fish and Wildlife Coordination Act, the Service has reviewed the project with regards to the effects the proposed actions may have on wetlands and/or other jurisdictional waters. We recommend that project plans be developed to avoid impacting wetland areas and/or streams, and reserve the right to review any required federal or state permits at the time of public notice issuance. The U.S. Army Corps of Engineers should be contacted to assist you in determining if wetlands or other jurisdictional waters are present or if a permit is required.

In order to assist you in determining if the proposed project has the potential to impact protected species we have searched our records for occurrences of listed species within the vicinity of the proposed project. Based upon the information provided to us and according to our databases, we believe that the following federally listed species have the potential to occur within the project vicinity. The listed species are:

| Group | Species | Common name | Legal* Status |
|---------|------------------------|-------------------------|------------------|
| Mammals | Myotis sodalis | nlis Indiana bat | |
| - 10 | Myotis septentrionalis | Northern long-eared bat | Р |

^{*} Key to notations: E = Endangered, T = Threatened, P = Proposed, C = Candidate, CH = Critical Habitat

We must advise you that collection records available to the Service may not be all-inclusive. Our database is a compilation of collection records made available by various individuals and resource agencies. This information is seldom based on comprehensive surveys of all potential habitats and thus does not necessarily provide conclusive evidence that protected species are present or absent at a specific locality.

Indiana bat

The proposed project is located in Indiana bat "potential habitat," therefore we believe that: (1) caves, rockshelters, and abandoned underground mines in the vicinity of and in the project area may potentially provide suitable wintering habitat for the Indiana bat; and (2) forested areas in the vicinity of and in the project area may potentially provide suitable summer roosting and foraging habitat for the Indiana bat. In order to address the concerns and be in compliance with the ESA, we have the following comments and recommendations relative to potential direct and/or indirect effects as a result of impacts to the habitats listed above:

Indiana bat winter (hibernacula) habitat

According to your correspondence, a field site assessment report confirmed that the proposed project area lacks potential Indiana bat hibernacula habitat (i.e.; caves. abandoned mines. sink holes). Based on this information, the Service believes that the proposed project would have no effect to the Indiana bat hibernacula habitat.

Indiana bat summer roost / foraging habitat

The Indiana bat utilizes a wide array of forested habitats, including riparian forests, bottomlands, and uplands for both summer foraging and roosting habitat. Indiana bats typically roost under exfoliating bark, in cavities of dead and live trees, and in snags (i.e., dead trees or dead portions of live trees). Trees in excess of 16 inches diameter at breast height (DBH) are considered optimal for maternity colony roosts, but trees in excess of 9 inches DBH appear to provide suitable maternity roosting habitat. Male Indiana bats have been observed roosting in trees as small as 5 inches DBH. According to your correspondence, the proposed project would result in the removal of some potential Indiana bat summer roost / foraging habitat.

Your request indicates that the project proponent will commit to conducting all project-associated tree removal during "unoccupied" time. The Service believes that conducting all project-associated tree removal between the dates of October 15th and March 31st would likely avoid direct effects to Indiana bats. Even though removing trees during the specified "unoccupied" period likely avoids direct effects, the proposed project may still have significant indirect and cumulative effects to Indiana bats. To address our concerns relative to the potential indirect and cumulative effects to Indiana bats, we offer the following primary options to ensure that the project is in full compliance with the ESA.

- The project proponent can modify the proposed project to eliminate or reduce impacts to suitable Indiana bat habitat, thus avoiding impacts.
- The project proponent can survey the project site to determine the presence or absence of Indiana bats within the project area in an effort to determine if potential effects are likely. A qualified biologist who holds the appropriate collection permits for the Indiana bat must

undertake such surveys, and we would appreciate the opportunity to approve the biologist's survey plan prior to the survey being undertaken and to review all survey results, both positive and negative. If any Indiana bats are identified, we would request written notification of such occurrence(s) and further coordination and consultation.

- The project proponent can assume presence of the Indiana bat in the proposed project area and mitigate for the impacts of habitat removal on the species by entering into a Conservation Memorandum of Agreement (MOA) with the Service. By entering into an MOA, the Cooperator can gain flexibility in project timing with regard to the removal of suitable Indiana bat habitat and/or avoid the need for surveys or additional analysis. In exchange, the Cooperator provides recovery-focused conservation benefits to the Indiana bat through the implementation of minimization and mitigation measures as set forth in the Indiana Bat Mitigation Guidance for the Commonwealth of Kentucky. For additional information about this option, please notify our office.
- The project proponent may provide the Service with additional information through the
 informal consultation process, prepared by a qualified biologist, that includes sitespecific habitat information and a thorough effects analysis (direct, indirect, and
 cumulative) to support a "not likely to adversely affect" determination. The Service will
 review this and decide if there is sufficient supporting information to concur with the
 determination.

Northern long-eared bat

The proposed project area is within potential northern long-eared bat summer roost/foraging habitat. The northern long-eared bat is currently proposed for federal listing under the ESA. The entire Commonwealth of Kentucky is considered potential habitat for the northern long-eared bat. During the summer, Northern long-eared bats typically roost singly or in colonies in a wide-variety of forested habitats, where they seek shelter during daylight hours underneath bark or in cavities/crevices of both live trees and snags, including relatively small trees and snags that are less than 5 inches in DBH. Northern long-eared bats have also been documented roosting in man-made structures (i.e., buildings, barns, etc.) during the summer. According to current winter occurrence data, northern long-eared bats predominately winter in hibernacula that include caves, tunnels, and underground mine passages.

Federal action agency(s) for the proposed project are encouraged to voluntarily confer with the Service on any federal action which is likely to jeopardize the continued existence of the northern long-eared bat (ESA, Section 7(a)(4). The conference process is discretionary if the proposed action may affect a proposed species, like the northern long-eared bat. At this time, no designated critical habitat has been proposed for the northern long-eared bat. Although species proposed for listing are not afforded protection under the ESA, when a species is listed, the ESA prohibition under Section 7(a)(2) becomes effective 30 days after the publication of the final rule, regardless of an action's stage of completion.

According to your correspondence, the proposed project would result in the removal of some potential northern long-eared bat summer roost / foraging habitat and the project-associated tree removal is expected to occur during 2015. The final rule to list the northern long bat or not is expected to be published by April 2, 2015. If the project-associated construction activities

continue after April, 2015, and the northern long eared bat is listed as threatened or endangered, the federal action agency is required to consult with the Service if it is determined that the proposed project may affect the northern long-eared bat. The Service may recommend additional minimization and mitigation measures to ensure that the proposed project is in full compliance with the ESA relative to the northern long-eared bat. Therefore, to avoid significant project delays, we recommend that you contact our office to identify and resolve potential conflicts regarding the northern long-eared bat in your project area.

Thank you again for your request. Your concern for the protection of endangered and threatened species is greatly appreciated. If you have any questions regarding the information that we have provided, please contact Jim Gruhala of my staff at (502) 695-0468 extension 116.

Sincerely,

Wirgil Lee Andrews, Jr.

Field Supervisor





United States Fish and Wildlife Service Kentucky Ecological Services Field Station ATTN: Mr. Jim Gruhala 330 West Broadway, Suite 265 Frankfort, Kentucky 40601

February 11, 2015

Subject: Kentucky Power Company dba American Electric Power - Big Sandy Plant

FWS 2012-B-0544

Fly Ash Pond Closure Project Pre-Development Consultation

Mr. Gruhala,

In 2012 and 2014, Kentucky Power Company dba American Electric Power (AEP) submitted correspondence to the U.S. Fish and Wildlife Service (USFWS), Kentucky Ecological Services Field Station describing the proposed closure of the facility's existing fly ash pond. A response letter dated December 12, 2014, was received and identified the federally-listed Indiana bat (*Myotis sodalis*) and the proposed-listed northern long-eared bat (*Myotis septentrionalis*) are the only species that have the potential to occur within the vicinity of the project. USFWS agreed that AEP's proposal of conducting tree clearing within the seasonal timeframe of October 15th-March 31st will likely avoid direct effects to the Indiana bat. However, the USFWS stated the project may have significant indirect and cumulative effects and provided four options that may be implemented to ensure compliance. A copy of the correspondence between AEP and USFWS in 2014 is attached.

Since the beginning of the Project, AEP has sought to avoid and minimize impacts to forested habitat to the extent possible. However, due to the nature of the Project, tree clearing in certain areas cannot be avoided. Where impacts are unavoidable, AEP considered design alternatives that reduced impacts to the extent possible. This avoidance and minimization is depicted with the successively smaller boundaries of planned limits of disturbance that were conceptually designed in April 2013, July 2014, and December 2014, respectively, as depicted on Figure 2 (attached).

Because the nature of the project requires unavoidable clearing of forested habitat, to address the concerns regarding indirect and cumulative effects to the Indiana bat, AEP will assume presence within the project area and mitigate potential impacts of habitat removal by entering into a Conservation Memorandum of Agreement (CMOA) with the USFWS. This approach is also expected to satisfy any necessary indirect or cumulative effects to the northern long-eared bat, should it be listed in the future.

Jim Gruhala February 11, 2015 Page 2

The "polygon method" was used to estimate the total area of clearing impact for the project. Accordingly, the total acreage is approximately 101.1-acres (refer to attached Figure 3). Further, AEP will commit to conducting all project-associated tree removal within the October 15th-March 31st timeframe. As a result, AEP will contribute \$159,232.50 to the Indiana Bat Conservation Fund (IBCF) based on a mitigation ratio of 0.5 and the current rate of \$3,150/acre. Should the USFWS find this proposal acceptable, AEP requests approval for the proposed tree clearing activities associated with this project.

If you have any questions regarding this information, please contact Jill N. Lukehart of my staff at (614) 716-2209 or at jnlukehart@aep.com

Alan R. Wood, P.E.

Director, Water and Ecological Resource Services

AEP Environmental Services

Attachments: 2014 AEP and USFWS Correspondence

Figure 1: Overview Figure

Figure 2: Limit of Disturbance Comparison Map

Figure 3: Forested Habitat Clearing Map



CULTURAL RESOURCES WALKOVER OF AMERICAN ELECTRIC POWER COMPANY, INC.'S BIG SANDY PLANT POND CLOSURE PROJECT IN LAWRENCE COUNTY, KENTUCKY

Lead Agency: United States Army Corps of Engineers, Louisville District

Contains Privileged Information – Do Not Release

Prepared for:

American Electric Power Company, Inc.

November 2012

AUTHORS:

Crista M. Haag, MA

and

Benjamin S. Goodwin, MA, RPA

PRINCIPAL INVESTIGATOR:

Christopher Bergman, PhD, RPA

ABSTRACT

URS Corporation (URS) was contracted by American Electric Power Company, Incorporated (AEP) to conduct a cultural resources walkover for the proposed Big Sandy Plant Pond Closure Project near Louisa in Lawrence County, Kentucky (the Project). The purpose of this walkover was to evaluate the Project for the probability of encountering archaeological and/or historic resources, and to make recommendations for additional cultural resources work (if needed). The lead federal agency for the Project is the United States Army Corps of Engineers, Louisville District (USACE).

The Area of Potential Effect (APE) will include all areas where ground disturbance associated with the Project will occur. In this instance, the APE consists of approximately 573 acres (232 hectares) contained within the maximum limits of disturbance for the Project. URS recognizes that a smaller area may be impacted within this APE. Because the lead agency for the Project is the USACE, special attention was given to the USACE jurisdictional areas, which consisted of streams, wetlands, vernal pools, and ponds.

Given the results of the background research, which recorded a low number of cultural resources within two kilometers (1.2 miles) of the Project; the large degree of previous disturbance and deflation exhibited within the soils during the walkover; and the incidence of steep slope greater than 15 percent; the APE displays a low probability for containing intact archaeological resources.

As a result, a majority of the APE would not require formal Phase I archaeological survey. In areas with steep slope near USACE jurisdictional areas, a pedestrian survey meeting the KHC guidelines may be conducted to identify any caves, quarries, benches, rock faces, and rock overhangs. If identified, these resources would need to be surveyed per the methodology in Sanders (2006:22). The only level area that would need formal Phase I archaeological survey may be the ridgeline in the eastern portion of the APE near the USACE jurisdictional area. The family cemetery that was identified within the western half of the APE should be avoided.

With regard to the indirect (viewshed) APE, because the Project involves the closure of an existing facility there appears to be no major viewshed concerns. No architectural history survey is therefore recommended. If the scope of the Project changes, the viewshed may need to be re-evaluated for indirect effects.

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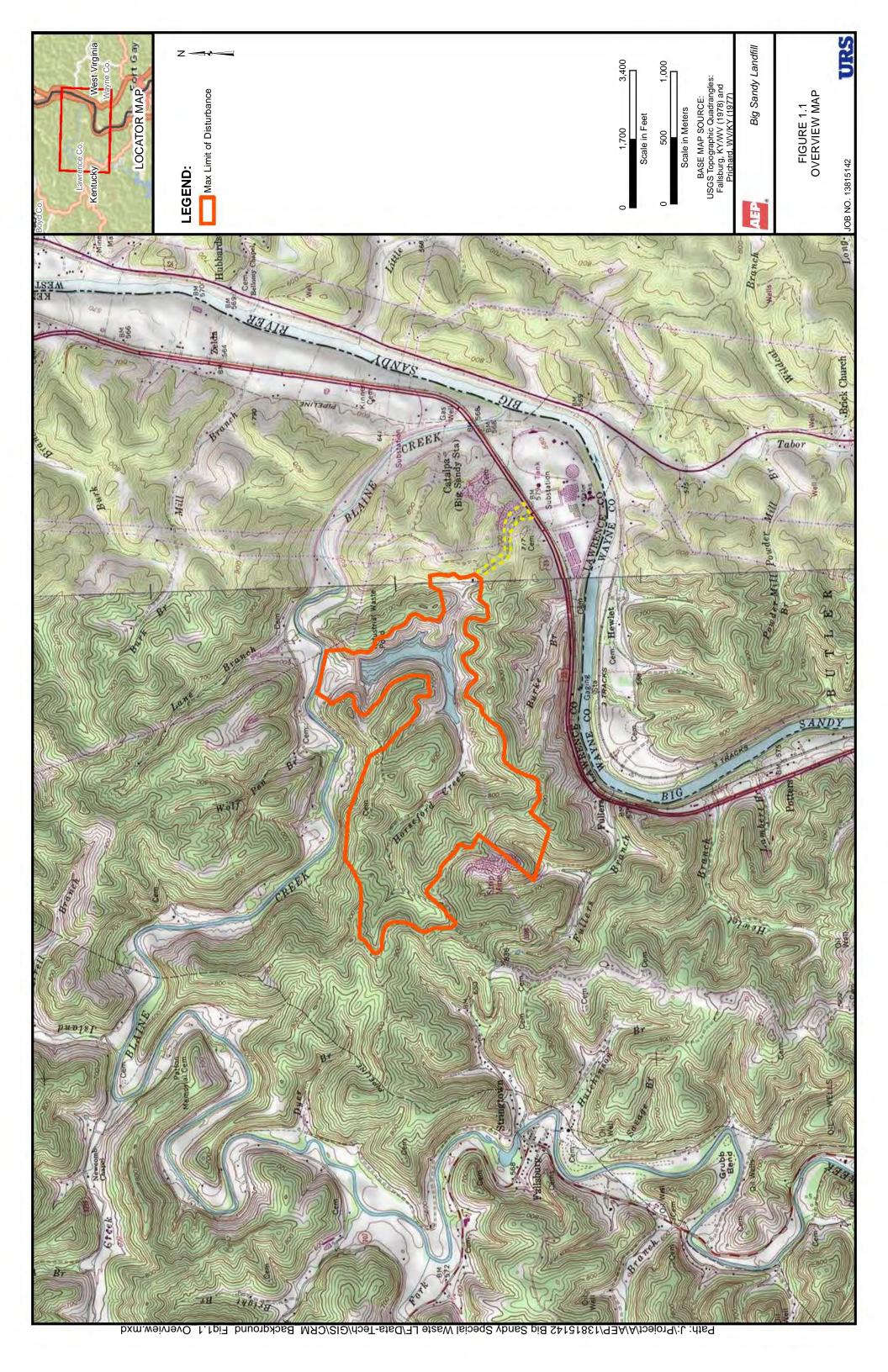
1.0 INTRODUCTION AND PROJECT DESCRIPTION

URS Corporation (URS) was contracted by American Electric Power Company, Incorporated (AEP) to conduct a cultural resources walkover for the proposed Big Sandy Plant Pond Closure project in Lawrence County, Kentucky (the Project). The purpose of this walkover was to evaluate the Project for the probability of encountering archaeological and/or historic resources, and to make recommendations for additional cultural resources work (if needed).

1.1 PROJECT DESCRIPTION AND PROJECT AREA OF POTENTIAL EFFECT

AEP's Kentucky Power Company owns and operates the 1,097 Mega Watt (MW) Big Sandy Plant on the west bank of the Big Sandy River, near Louisa in Lawrence County, Currently, coal combustion fly ash from the plant is disposed of in the Big Sandy Fly Ash reservoir, which is impounded by the Horseford Creek Dam located approximately 0.75 miles northwest of the plant. In expectation of future Federal Regulations pertaining to wet ash impoundments, the Project involves closure design of the Plant's existing 130-acre (53-hectare) wet fly ash impoundment, which will no longer be needed for wet sluice disposal beginning in 2016 (Figure 1.1). In an effort to effectively close the fly ash reservoir in accordance with expected but not-yet-promulgated Federal Regulations for wet CCP impoundments, it is AEP's desire to permanently close the facility by draining and capping the Big Sandy Fly Ash Pond. The lead federal agency for the Project is the United States Army Corps of Engineers, Louisville District (USACE).

The Area of Potential Effect (APE) will include all areas where ground disturbance associated with the Project will occur. In this instance, the APE consists of approximately 573 acres (232 hectares) contained within the maximum limits of disturbance for the Project. Because the lead agency for the Project is the USACE, special attention was given to the USACE jurisdictional areas, which consisted of streams, wetlands, vernal pools, and ponds.



2.0 BACKGROUND RESEARCH

URS conducted background research in March 2012 utilizing the electronic GIS shapefiles from the Office of the State Archaeologist (OSA) in Lexington, and the Kentucky Heritage Council (KHC) in Frankfort, to locate any previously recorded cultural resources within a two-kilometer (1.2-mile) radius of the APE (referred to as the Archival Study Area, for ease of reference). This research was conducted with the primary goal of identifying any cultural resources that were previously defined within or adjacent to the APE for the Project.

As a result of the background research, only eight archaeological sites were identified within the Archival Study Area, none of which occur within the APE. One cemetery was also documented within the APE after an examination of topographic mapping.

Table 2.1 lists the archaeological sites documented within the Archival Study Area. Of these eight archaeological sites, all are located on the floodplain or on a terrace of Blaine Creek to the north of the Project. All of these resources are documented as unassigned prehistoric locales.

Table 2.1. Previous Archaeological Sites within the Archival Study Area

| Site Number | Temporal Period | Site Type | NRHP Status |
|-------------|------------------------|-------------------------------|--------------|
| 15La80 | Unassigned Prehistoric | Open habitation w/o mounds | Not Recorded |
| 15La81 | Unassigned Prehistoric | Open habitation w/o mounds | Not Recorded |
| 15La82 | Unassigned Prehistoric | Open habitation w/o mounds | Not Recorded |
| 15La83 | Unassigned Prehistoric | Open habitation w/o mounds | Not Recorded |
| 15La84 | Unassigned Prehistoric | Open habitation w/o mounds | Not Recorded |
| 15La85 | Unassigned Prehistoric | Open habitation w/o mounds | Not Recorded |
| 15La86 | Unassigned Prehistoric | Open habitation w/o mounds | Not Recorded |
| 15La87 | Unassigned Prehistoric | Open habitation w/o mounds | Not Recorded |
| 15La88 | Unassigned Prehistoric | Open habitation w/o mounds | Not Recorded |

3.0 WALKOVER FIELD METHODS AND RESULTS

3.1 FIELD METHODS

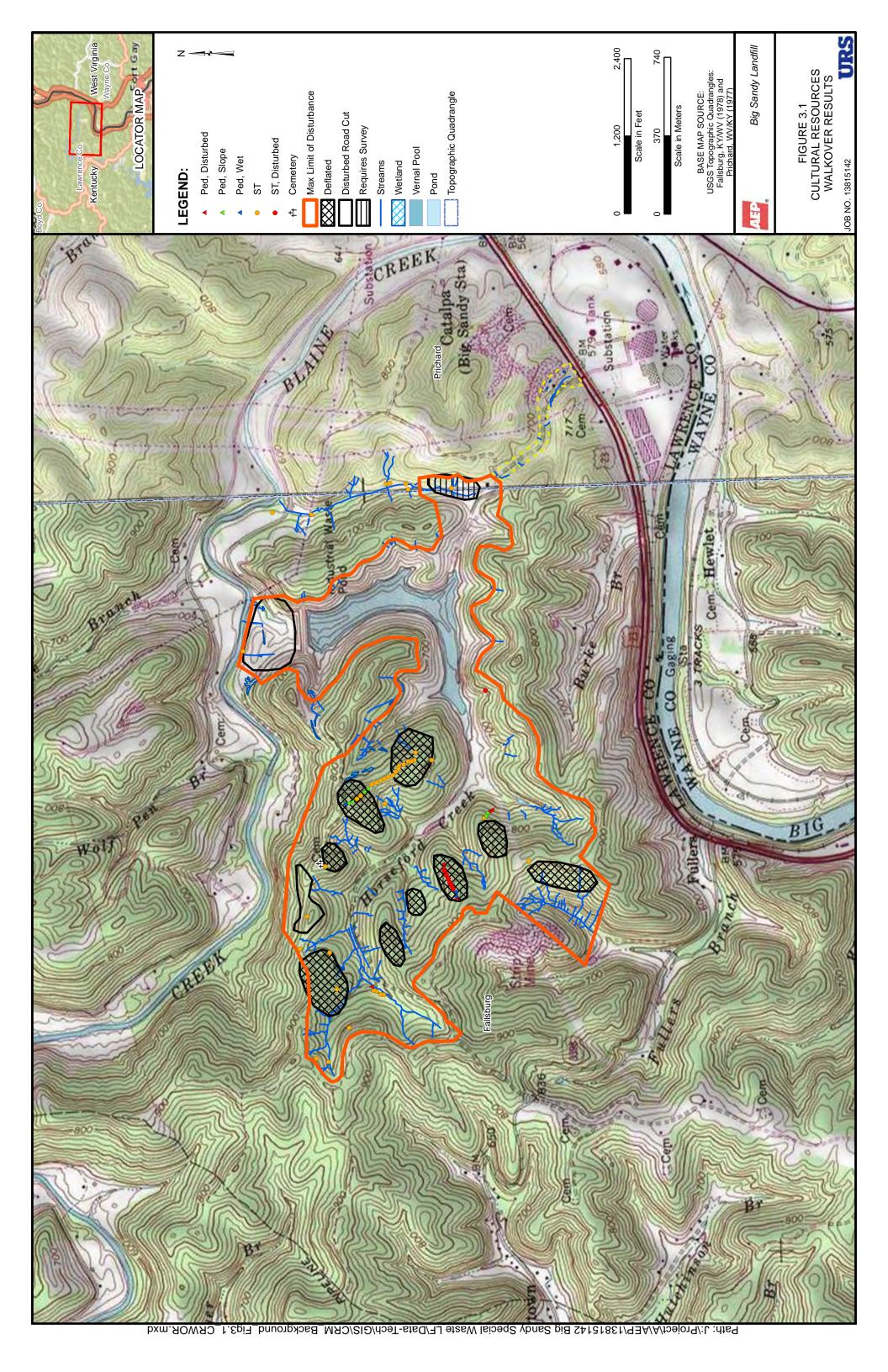
URS conducted a cultural resources walkover of the APE in March 2012 and October 2012. The March 2012 visit focused on the western portion of the APE, while the October 2012 visit focused on the eastern portion of the APE.

The cultural resources walkover involved photo documentation of the APE, including general views of the surrounding landscape, in addition to visible above-ground cultural features, obvious disturbance, steep slope, etc. In addition to photography, URS, when possible, excavated shovel probes to verify the presence of intact soils and/or disturbance.

Shovel probes were excavated in accordance with the KHC guidelines entitled, *Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports* (Sanders 2006). A 20-meter interval was utilized, and minimally 30 centimeter in diameter holes were excavated to archaeologically sterile soil or to 50 centimeters below the surface. Excavated soils were screened through ¼ inch wire mesh and examined for evidence of cultural materials. Profiles were described for each shovel probe and notes were recorded concerning the soil stratigraphy (including Munsell color designations and texture) and any cultural resources encountered. All shovel probes were assigned a unique designation that was then mapped with sub-meter accurate GPS equipment. During fieldwork, Sample Loci (SL) forms were completed by URS personnel.

3.2 MARCH 2012 FIELD RESULTS

The walkover for the western portion of the APE was conducted on March 22 and 23, 2012, by URS staff archaeologist Benjamin S. Goodwin, MA, RPA. This area was also revisited by Mr. Goodwin in October 2012. Within the APE there is an existing fly ash pond surrounded by steep wooded slopes with some level areas on the outer portions of the APE (Plates 3.1 and 3.2). An existing access road extends around the entire fly ash facility that corresponds roughly to the APE boundary (Plate 3.3). A total of 42 SL were examined during the walkover of this western portion of the APE, 27 of which were excavated as shovel probes, and these are summarized in Table 3.1 (see Figures 3.1 and 3.2 for walkover results).



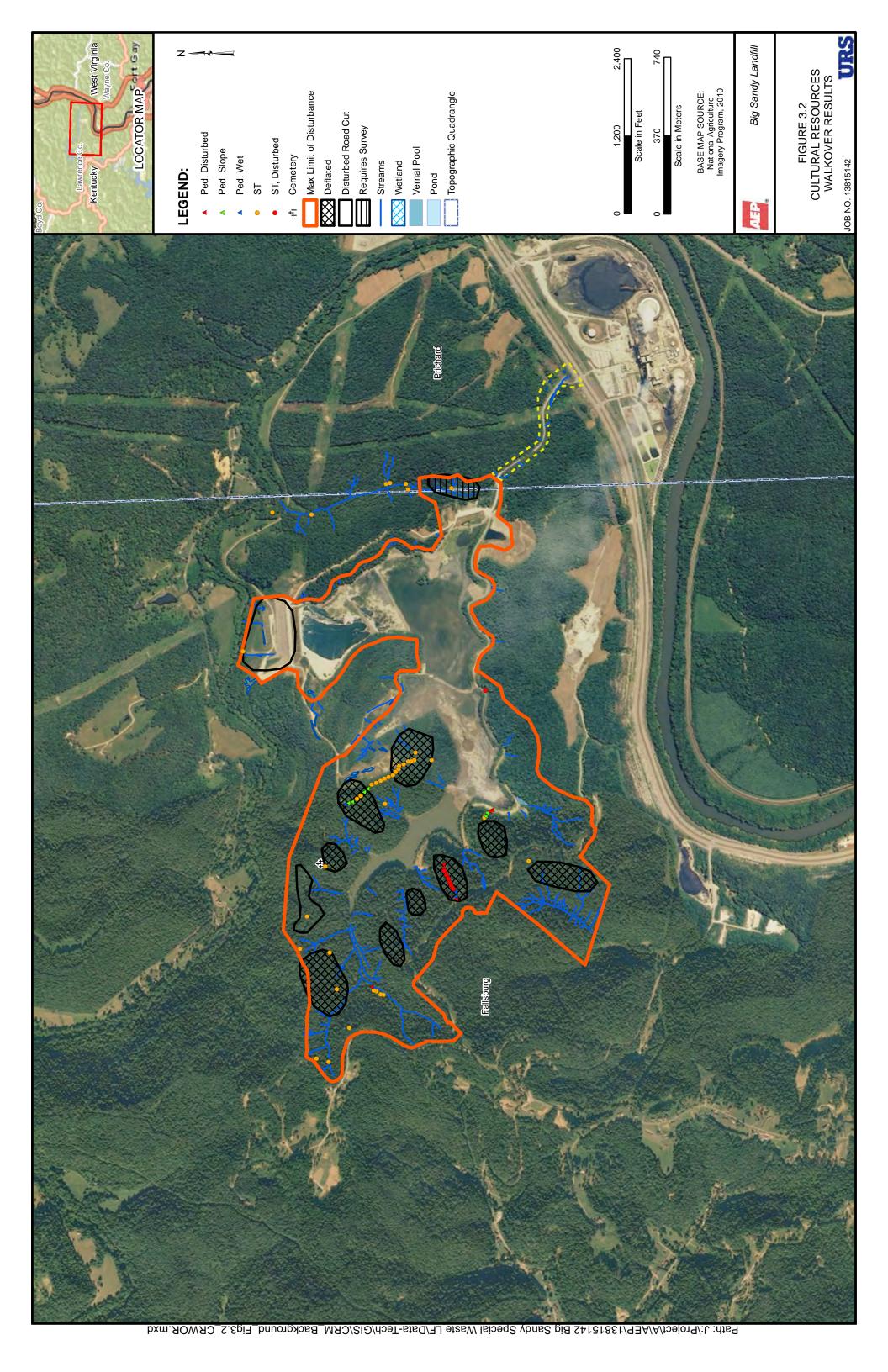




Plate 3.1. Example of Existing Fly Ash Pond.



Plate 3.2. Example of Wooded Slopes.

7



Plate 3.3. Example of Existing Access Road.

Table 3.1. Summary of SL Data in Western Portion of APE

| SL Type | SL Count (n=) |
|-------------------------|---------------|
| Pedestrian, Disturbed | 6 |
| Pedestrian, Slope | 6 |
| Pedestrian, Wet | 3 |
| Shovel Probe, Disturbed | 7 |
| Shovel Probe, Negative | 20 |
| Total | 42 |

Large portions of the level areas surrounding the existing ash pond are either deflated or disturbed (Plates 3.4 and 3.5). Deflated soil profiles, such as SL 7, revealed a brown (10YR 4/3) silt loam to a depth of 15 centimeters below ground surface, with an underlying very pale brown (10YR 7/4) clay mottled with brownish yellow (10YR 6/6) clay B horizon soil. No cultural materials were recovered from the 27 excavated shovel probes.



Plate 3.4. Example of Deflated Soils.



Plate 3.5. Example of Disturbed Soils.

One family cemetery was documented within the western portion of the APE (see Figure 3.1 and 3.2). This cemetery appears to be maintained, and consists of 21 marked graves

dating from 1918 to 2010 (Plates 3.6 and 3.7). Family names in the cemetery include Elkins, Jones, McDaniel, Samson, and Thompson.



Plate 3.6. Overview of Cemetery.



Plate 3.7. Oldest Grave Identified at Cemetery.

Figure 3.3 illustrates areas within the APE that contain slope greater than 15 percent (encompassing most of the APE), and do not require formal Phase I cultural resources survey according to KHC guidelines (Sanders 2006). Sanders (2006:22) does suggest,

however, that steeply sloped areas would still need a visual inspection to look for caves, quarries, benches, rock faces, and rock overhangs. During the cultural resources walkover of the western portion of the APE in October 2012, URS did identify one possible rock overhang at the very western end of the APE (Plate 3.8).



Plate 3.8. Example of a Rock Overhang.

3.3 OCTOBER 2012 FIELD RESULTS

The walkover for the eastern portion of the APE was conducted on October 15 and 16, 2012, also by Mr. Goodwin. Similar to the western portion, the eastern APE contains an existing fly ash pond surrounded by steep wooded slopes (Plate 3.9). In the northern portion of this section near Blaine Creek is an existing dam (Plate 3.10). A total of two shovel tests were excavated in level areas during the walkover of this eastern portion of the APE, and these are summarized in Table 3.2 (see Figures 3.1 and 3.2 for walkover results).

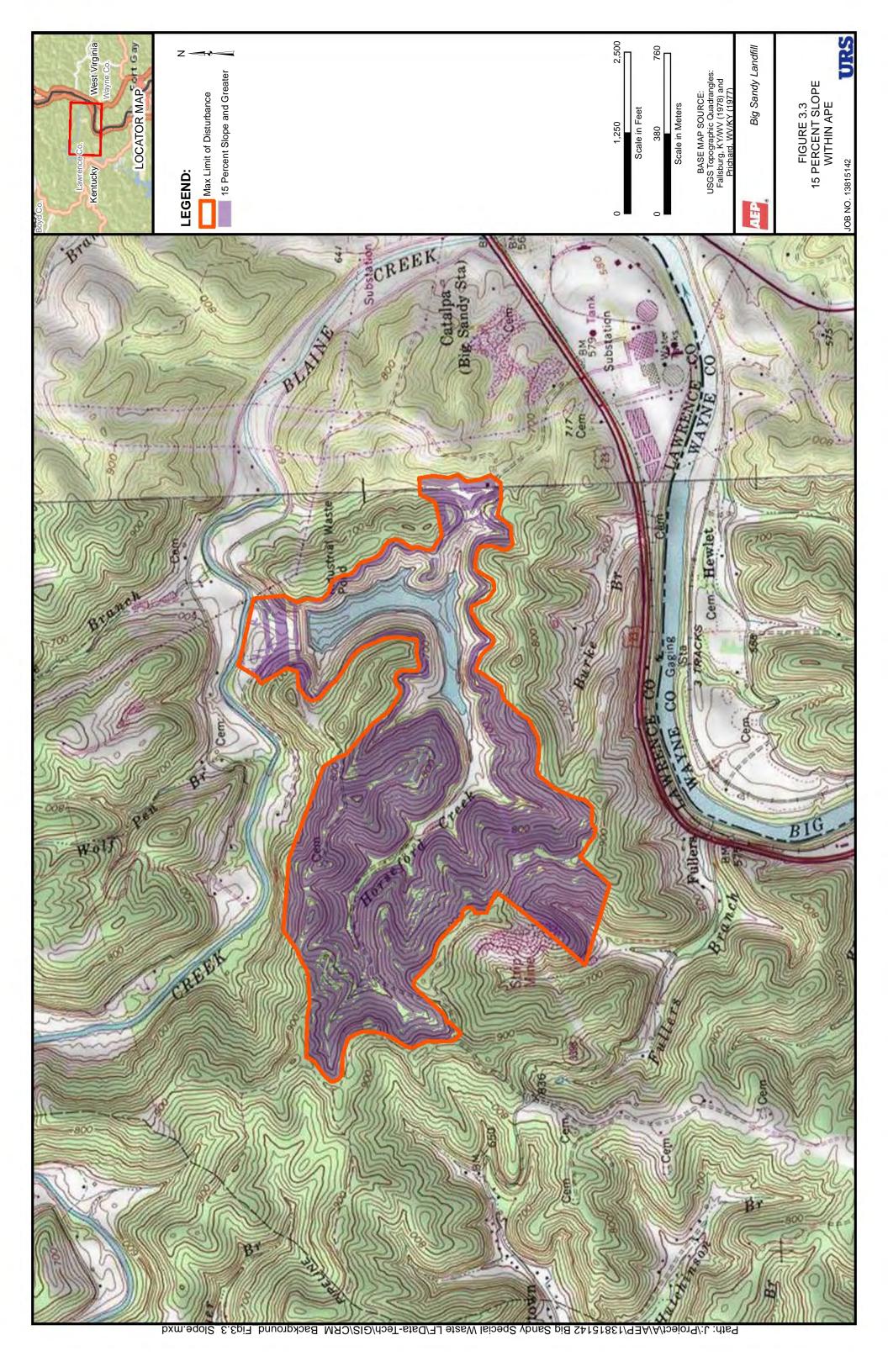




Plate 3.9. Overview of the Eastern Portion of the APE.



Plate 3.10. Overview of the Dam within the APE (photo taken north of the dam).

Table 3.2. Summary of SL Data in Eastern Portion of APE

| SL Type | SL Count (n=) |
|-------------------------|---------------|
| Shovel Probe, Disturbed | 1 |
| Shovel Probe, Negative | 1 |
| Total | 2 |

Selected shovel probes were placed within the APE just north of the dam and within the easternmost portion of the APE along a ridgeline. Soil profiles north of the dam indicate that this portion of the APE is disturbed, most likely as a result of dam construction (Plate 3.11). Soils consisted of a yellowish brown (10YR 5/8) and grayish brown (10YR 5/2) silt clay loam. These disturbed soils are consistent with the web soil survey (2012) that classifies this area as Dm (dumps, mine, tailings, and tipple).

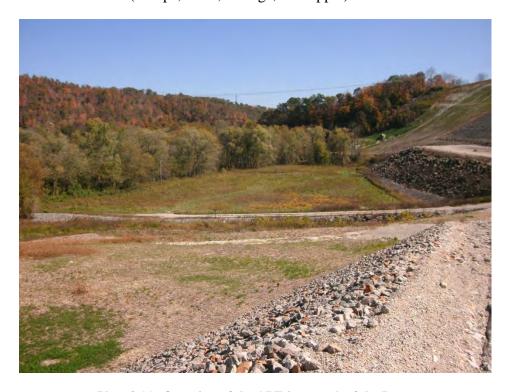


Plate 3.11. Overview of the APE just north of the Dam.

The easternmost portion of the APE is located along a level ridgeline. Soils were shallow, consisting of a 12 centimeter thick dark yellowish brown (10YR 4/4) silt clay loam, underlain by a grayish brown (10YR 5/2) and brownish yellow (10YR 6/8) clay (Plate 3.12). No cultural materials were recovered from the shovel probes.



Plate 3.12. Overview of the APE within the level ridgeline.

Similar to the western portion of the APE, the eastern portion also contained large areas of slope greater than 15 percent slope (Figure 3.3), which do not require formal Phase I cultural resources survey according to KHC guidelines (Sanders 2006). Sanders (2006:22) does suggest however, that steeply sloped areas would still need a visual inspection to look for caves, quarries, benches, rock faces, and rock overhangs. During the cultural resources walkover of the eastern portion of the APE in October 2012, URS did not identify any caves, quarries, benches, rock faces, and rock overhangs.

4.0 SUMMARY AND RECOMMENDATIONS

URS was contracted by AEP to conduct a cultural resources walkover for the Project. The purpose of this walkover was to evaluate the Project for the probability of encountering archaeological and/or historic resources, and to make recommendations for additional cultural resources work (if needed).

The Project is located approximately 4.5 miles (7.2 kilometers) north and northwest of Louisa, Kentucky, within an existing fly ash disposal area that is used for the nearby AEP Big Sandy Power Generating Facility. In an effort to effectively close the fly ash reservoir in accordance with expected but not-yet-promulgated Federal Regulations for wet CCP impoundments, it is AEP's desire to permanently close the facility by draining and capping the Big Sandy Fly Ash Pond.

As a result of the archival research conducted in March 2012, eight archaeological sites were identified within two kilometers (1.2 miles) of the Project. Of these eight archaeological sites, most of these sites are associated with Blaine Creek to the north and are documented as unassigned prehistoric locales in floodplain or terrace settings. No historic structures or NRHP listings were previously recorded within two kilometers (1.2 miles) of the Project. One cemetery was noted within the APE from topographic mapping.

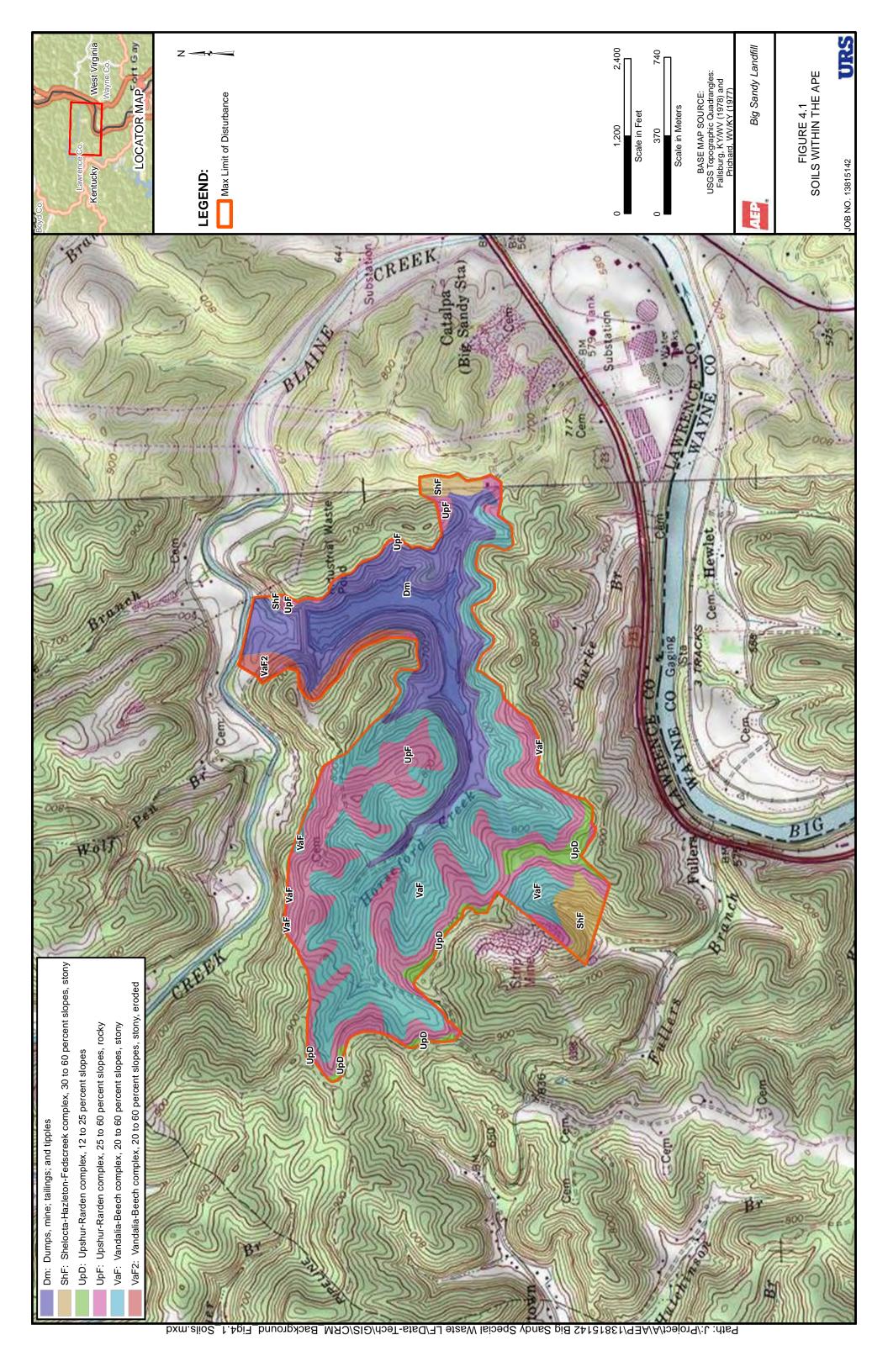
The cultural resources walkover, which was conducted in March and October 2012, indicates that large portions of the APE have been disturbed by existing facilities such as the ash pond and dam. In addition to this previous disturbance, the APE contains mostly 15 percent or greater slopes (Figure 3.3). The few level areas within the APE, especially within the western half, are either disturbed or deflated. Within the eastern half of the APE, disturbance also occurs on the floodplain north of the dam. The only portion that does not appear disturbed is the easternmost portion of the APE along a ridgeline (Figures 3.1 and 3.2).

Given the results of the background research which recorded a low number of cultural resources within two kilometers (1.2 miles) of the Project; the large degree of previous disturbance and deflation exhibited within the soils during the walkover (Figure 4.1); and that most of the APE contains slope greater than 15 percent (please reference Figure 4.1); the APE displays a low probability for containing cultural resources.

As a result, a majority of the APE would not require formal Phase I archaeological survey. In areas with steep slope near USACE jurisdictional areas, a pedestrian survey meeting the

KHC guidelines may need to be conducted to identify any caves, quarries, benches, rock faces, and rock overhangs. If identified, these resources would need to be surveyed per the methodology in Sanders (2006:22). The only level area that may need formal Phase I archaeological survey would be the small portion of ridgeline in the eastern portion of the APE, located within a USACE jurisdictional area. The family cemetery that was identified within the western half of the APE should be avoided.

Because the Project involves the closure of an existing facility, there appears to be no major viewshed concerns. No architectural history survey is recommended. If the scope of the Project changes, the viewshed may need to be re-evaluated for indirect effects.



5.0 REFERENCES

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