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February 15, 2012

TTL Project No. 6960.05

Department of Veterans Affairs
c/o Ms. Evelyn Johnson
Carpenter/Robbins Commercial Real Estate, Inc.
3160 Crow Canyon Road, Suite 200
San Ramon, California 94583

**Wetlands Determination
Proposed Louisville VA Medical Center - Brownsboro Site
Southeast Corner of Brownsboro Road and Interstate 265
Louisville, Kentucky**

Dear Ms. Johnson:

TTL Associates (TTL) is pleased to submit this letter report outlining the results of our wetlands determination at the referenced site (Site). This wetlands determination was conducted at the request of the Department of Veterans Affairs (VA) to further evaluate the findings of a previous wetlands determination prepared for the Site owner (Midlands, LLC) by URS dated July 8, 2011. A copy of the URS Wetlands Determination is included as Attachment A.

Background

As part of a National Environmental Policy Act (NEPA) Environmental Assessment (EA), information was obtained from the Louisville/Jefferson County Information Consortium (LOJIC) that indicated that potential wetlands were located in the northern portion of the Site. The LOJIC reporting of potential wetlands on the Site was likely a result of the presence of “partially hydric soils” (Lawrence silt loam) in the northern portion of the site; however, no additional information pertaining to the potential wetlands was identified from LOJIC or other resources reviewed as part of the NEPA EA. A copy of the LOJIC information is included in Attachment B

As a result, the current Site owner contracted URS to conduct a wetlands determination at the Site to further evaluate the information provided by LOJIC. URS conducted a wetlands determination on an approximately two-acre area in the northern portion of the Site in June and July 2011. Activities performed by URS included a review of available resources, including aerial photographs, topographic maps, soils surveys, and U.S. Fish and Wildlife (USFWS) National Wetland Inventory (NWI) Maps; and a field investigation. URS reported that no evidence of wetlands was identified on the Brownsboro Site from the resources reviewed, other than the information provided by LOJIC.

As part of the field investigation, URS reported that hydric soils are present in the northern portion of the Site; however, URS stated that insufficient hydrophytic vegetation and wetland hydrology, as defined in the U.S Army Corps of Engineers (USACE) Wetlands Delineation Manual, dated 1987 (1987 Manual), and the USACE Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Eastern Mountains and Piedmont Region, dated July 2010 (Regional Supplement), were present at the Site. As a result, URS concluded that the northern portion of the Site does not meet the three required criteria (hydric soils, hydrophytic vegetation, and wetland hydrology) to be classified as a wetland, as defined by the 1987 Manual and Regional Supplement. No other potential wetland areas were identified on the remaining portions of the Site.

Secondary Resources Review

Wetlands are those areas inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Any method for making a wetland determination must consider three technical criteria: hydrophytic vegetation, hydric soils, and wetland hydrology.

In February 2012, TTL performed a wetlands determination of the Site in accordance with the 1987 Manual and Regional Supplement. The wetlands determination included a review of available resources (maps and aerial photographs) and a field assessment. Copies of the secondary resources reviewed are included in Attachment B. Photographs of the Site taken during the wetland determination field activities are included in Attachment C.

As identified in the URS Wetlands Determination, no evidence of wetlands was identified from the available resources reviewed, other than the information provided by LOJIC. A review of soil survey information provided by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Web Soil Survey indicated that the soils in the northern portion of the Site (Lawrence silt loam) are classified as “partially hydric”, or soils that may exhibit some characteristics of hydric soils under the necessary conditions (i.e. in conjunction with wetland hydrology); however, partially hydric soils, themselves, are not necessarily indicative of the presence of wetlands. A copy of the soil survey map is included in Attachment B.

Field Activities

An experienced environmental professional conducted a wetlands field survey of the Site on February 1, 2012 to assess for the presence of wetland hydrology, hydric soils, and hydrophytic vegetation. On the day of the field survey, the weather was mostly cloudy with a high temperature of approximately 65 degrees with no snow cover on the ground.

Vegetation

The majority of the site is formerly cultivated land that is currently covered by invasive plant species (grasses, clovers, etc.) that are controlled by periodic mowing. The limited vegetation observed at the site was predominantly species typically associated with upland habitats (not hydrophytic); however, some unidentified sedges species were observed in the northern portion of the Site where limited standing water was noted. Due to the seasonal timing of the assessment, the specific sedge species could not be identified. No other potential wetland plant species were observed. Due to the invasive species ground cover at the Site, the presence of scattered individuals of a potential hydrophytic vegetation species, does not meet the necessary requirements to be classified as a hydrophytic vegetation community. As such, the vegetation community at the Site does not meet the requirements for the Site to be classified as a wetland, as defined by the 1987 Manual and Regional Supplement.

Soils

A series of soil core samples were conducted within the defined area of the Lawrence site loam soils in the northern portion of the Site. Soils observed were generally consistent with those described in the soil survey (silty loam). When compared to the Munsell Soil Color Charts (2000), the observed soils included 10Yellow-Red (10YR) – 5/3 (value/chroma) and 10YR – 5/4, with limited mottling (10YR – 3/2 and 10YR – 7/3). 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. Mottled soils with a matrix chroma greater than two and unmottled soils with a matrix chroma greater than one are considered to exhibit non-hydric characteristics. Although limited mottling was observed with a chroma of two in some soils, no other evidence of hydric soils was observed. As such, the soils observed at the Site do not meet the requirements for the soils to be classified as a hydric, as defined by the 1987 Manual and Regional Supplement.

Hydrology

Permanent or periodic inundation or soil saturation to the surface, at least seasonally, is the driving force behind wetland formation. Numerous factors influence the wetness of an area including precipitation, stratification, topography, soil permeability, and plant cover. The frequency and duration of inundation and soil saturation vary widely from permanent flooding or saturation to irregular flooding or saturation. Of the three technical criteria for wetlands identification, hydrology is often the most difficult to establish in the field due largely to annual, seasonal, and daily fluctuations.

Evidence of hydrology was observed at the Site in the form of approximately 600 square feet of standing water in the northeastern portion of the Site; however, no soil saturation was associated with the standing water, which appears to be intermittent and related to recent rainfall. No other evidence of wetland hydrology was observed at the Site. As such, the hydrology observed at the

Site does not meet the requirements to be classified as a wetland hydrology, as defined by the 1987 Manual and Regional Supplement.

Findings and Conclusions

Based on the findings of the secondary resource information and field activities, no areas at the Brownsboro Site meet the three criteria of a wetland (hydrophytic vegetation, wetland hydrology, and hydric soils), as defined by the 1987 Manual and the Regional Supplement.

TTL appreciates the opportunity to provide VA with our engineering, consulting, and testing services. If you have any questions or require additional information, please contact us.

Respectfully submitted,

TTL Associates, Inc.



Paul J. Jackson
Environmental Scientist



Robin J. Clark
Project Manager

Attachments

V:\Toledo\VA\louisville KY\Proposed VAMC\Wetlands\Brownsboro Determination\Brownsboro Wetlands Determination Letter 02-15-12.doc

ATTACHMENT A
URS WETLANDS DETERMINATION

July 8, 2011

Mr. Bill Northcut
Midlands Louisville, LLC
333 East Main Street, Ste. 200
Louisville, KY 40202

**Subject: Wetland Delineation of Proposed Midlands Development
4906 Brownsboro Road, Jefferson County, Kentucky**

Dear Mr. Northcut,

URS is pleased to provide the following wetland delineation letter report to assist Midlands LLC with the proposed development of a 2-acre parcel located at 4906 Brownsboro Road, Louisville, Kentucky. Midlands LLC requested that URS perform a wetland delineation survey of an area identified by Louisville/Jefferson County Information Consortium (Lojic) as having hydric soils. URS conducted a wetland delineation of an approximately 2-acre development area on July 6, 2011. The site and surrounding area are shown on Figure 1.

The wetland delineation was conducted by a qualified URS biologist with experience conducting jurisdictional wetland delineations in accordance with U.S. Army Corps of Engineers (USACE) protocols.

METHODS

Prior to conducting the wetland delineation, digital and published county Natural Resource 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.

The proposed development area was investigated for the presence of wetlands using the procedures outlined in the USACE Wetlands Delineation Manual (*1987 Manual*) (Environmental Laboratory, 1987) in conjunction with the procedures outlined in the USACE *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Interim Regional Supplement)*. The *1987 Manual* evaluation procedure is

utilized nationwide for determining the location of wetland areas and in delineating wetland extents. The new *Interim Regional Supplement* has been in place since July 2010 to address regional wetland characteristics and improve the accuracy and efficiency of wetland delineation procedures. According to the *1987 Manual* and *Interim Regional Supplement*, identification of wetlands is based on a three-factor approach involving indicators of hydrophytic vegetation, hydric soil, and wetland hydrology.

RESULTS

NWI wetlands are areas of potential wetland that have been identified from USFWS aerial photograph interpretation which have typically not been field verified. 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. A review of the USFWS online Wetlands Mapper for the proposed two-acre development revealed that no NWI wetlands are mapped.

A review of Lojic indicates that soils at the proposed development are mapped as hydric. A review of the NRCS's Soil Survey of Jefferson County, Kentucky (2007) revealed that the soil listed as hydric by Lojic is Lawrence silt loam (LaB), 2 to 6 percent slopes. LaB is a silt loam that is somewhat poorly drained. The NRCS Soil Survey of Jefferson County, Kentucky does not list LaB as a hydric soil.

Although a review of USFWS NWI mapping revealed that no NWI wetlands are present at the site and that LaB is not hydric according to the NRCS, Kentucky, URS still documented the presence or absence of the three wetland indicators at the proposed development site during the field investigation, which is discussed below.

Vegetation:

Vegetation at the proposed 2-acre development site is consistent with that of a hay field or managed field. Vegetation noted in the field included alfalfa, clover, and various grass species. Vegetation within a depression area near the northeast corner of the property is still consistent with the surrounding field, however some hydrophytic vegetation was observed such as, two sedge species and needle spikerush. Although

hydrophytic vegetation is present, there is not enough to pass the facultative (FAC)-neutral test. The FAC-neutral test is an indicator that a wetland has a predominance of hydrophytic vegetation. Since there is not a predominance of hydrophytic vegetation, the area will not meet USACE vegetation criteria to be considered a wetland.

Soils:

The NRCS Soil Survey of Jefferson County, Kentucky (2007) revealed that the soil listed as hydric by Lojic, Lawrence silt loam (LaB), 2 to 6 percent slopes, is not a hydric soil.

Soils were examined during the field investigation using a hand auger to extract soil cores. These cores were examined for hydric soil characteristics. Examined soil cores were compared to a *Munsell Soil Color Chart* (Kollmorgen Corporation, 1988) to determine the hue, value, and chroma of the matrix and mottles of the soils. Examined soils revealed low matrix chroma and mottles throughout. 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). Since examined soil cores did have low chroma matrix and mottles, the soil is considered hydric.

Hydrology:

The *1987 Manual* and *Interim Regional Supplement* 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 *1987 Manual* and *Interim Regional Supplement* state that the growing season can be approximated by the number of days between the average (five years out of ten) date of last 28°F air temperature in the spring, and the average date of first 28°F air temperature in the fall (Environmental Laboratory, 1987; USACE, 1992). The Soil Survey of Jefferson County, Kentucky, reveals that in an average year, this period

lasts from March 27 to November 8, or 224 days. In the proposed development area, five percent of the growing season equates to approximately 11 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 *Interim Regional Supplement*. Typical evidence indicating wetland hydrology typically includes primary indicators such as standing water, saturated soils, water marks on trees, drift lines, sediment deposits and wetland drainage patterns; and secondary indicators such as oxidized root channels within the upper twelve inches, buttressed trunks, water-stained leaves, soil survey data (e.g. high water table listed for the confirmed soil type), and a positive FAC-neutral test (Environmental Library, 1987).

During the field investigation the proposed 2-acre development area was examined for signs of wetland hydrology. There were some signs of saturated soil in tractor tire ruts, however the rest of the area did not exhibit signs of primary hydrology indicators. The lack of primary hydrology indicators would not meet the USACE criteria for wetland hydrology.

Based upon the procedures identified in the *Interim Regional Supplement* and *1987 Manual*, the area within the 2-acre proposed development area is not a wetland because only one of the three wetland factors (soil) is present. The lack of hydrophytic vegetation and signs of hydrology prevent the area identified by Lojic as being classified as a wetland. Photographs of 2-acre proposed development area are provided in Attachment 1.

CONCLUSION

URS conducted a wetland delineation of an approximately 2-acre development area that was identified as having hydric soils on July 6, 2011 for Midland LLC. During the field investigation, URS identified hydric soils within the development area; however, hydrophytic vegetation and indicators of hydrology were not observed. Based on the presence of only one of three wetland indicators no wetlands were identified within the 2-acre development area.

— ooOoo —

URS appreciates the opportunity to assist Midland LLC with the proposed 2-acre development at 4906 Brownsboro Road. Please do not hesitate to contact URS if there are any questions or comments regarding this report.

Sincerely,

URS CORPORATION



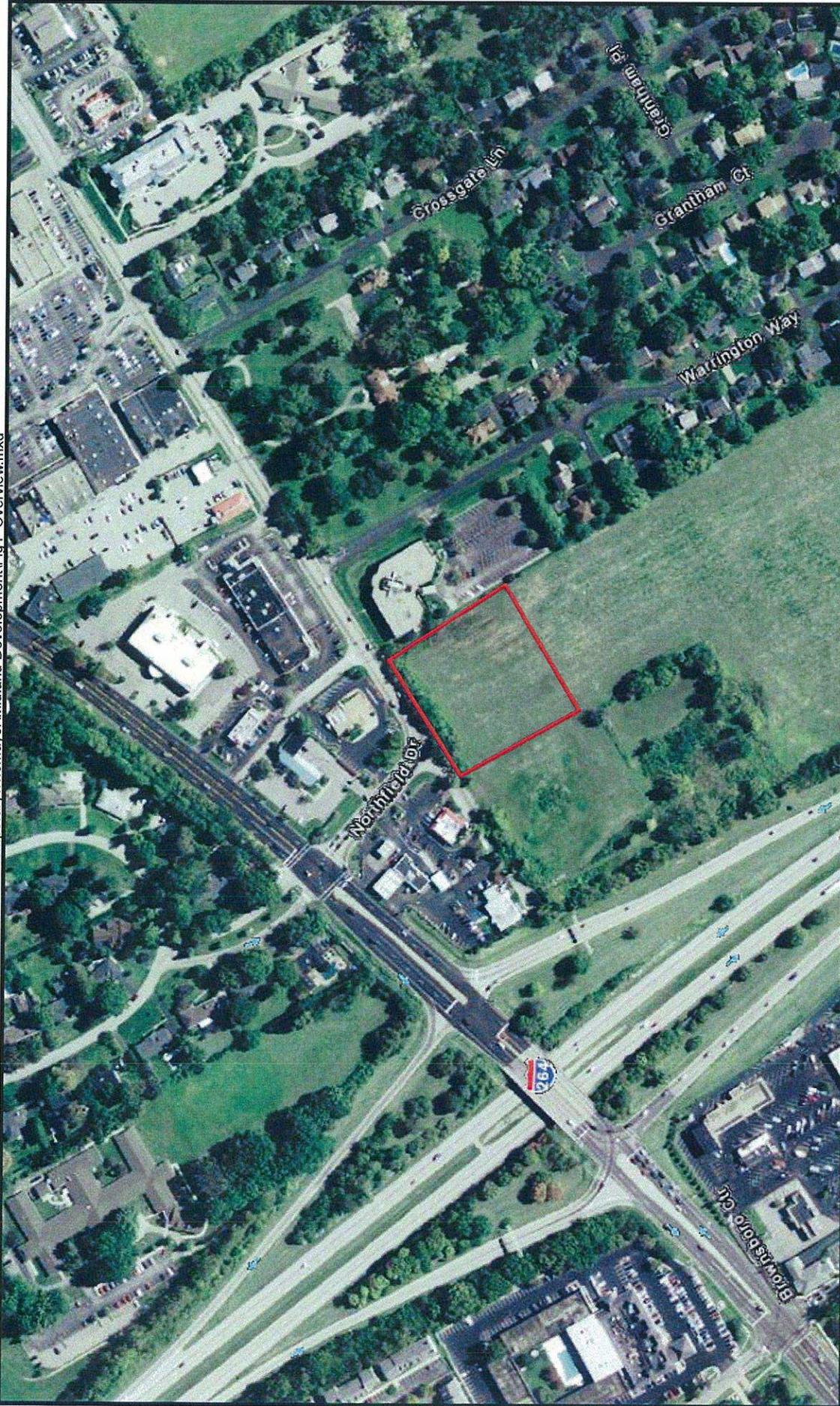
Matthew D. Thomayer
Wetland Biologist



James R. J. Nicholas, Ph.D.
Principal Scientist

Attachments:

Attachment 1: Selected Site Photographs



LEGEND:

 Proposed Development Area



Scale In Feet

BASE MAP SOURCE:
ESRI, USA Prime Imagery

4906 Brownsboro Road
Midlands Development

FIGURE 1
PROPOSED MIDLANDS
DEVELOPMENT OVERVIEW MAP





PHOTOGRAPHIC RECORD
Attachment 1

Client Name: Midlands LLC	Site Location: 4906 Brownsboro Proposed Development	Project No.
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Photo No. 1
Date: July 6, 2011
Description: Proposed development area looking west/southwest



Photo No. 2
Date: July 6, 2011
Description: Proposed development area looking southeast



ATTACHMENT B
SECONDARY RESOURCES



**LOJIC MAP
2011**

WETLANDS DETERMINATION
PROPOSED LOUISVILLE VAMC
BROWNSBORO SITE
LOUISVILLE, KENTUCKY

PREPARED FOR
**U.S. DEPARTMENT OF VETERANS
AFFAIRS**
WASHINGTON, D.C.

TTL PROJECT NO.
6960.05





**SOIL SURVEY MAP
2011**

WETLANDS DETERMINATION
PROPOSED LOUISVILLE VAMC
BROWNSBORO SITE
LOUISVILLE, KENTUCKY

PREPARED FOR
**U.S. DEPARTMENT OF VETERANS
AFFAIRS**
WASHINGTON, D.C.

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6960.05





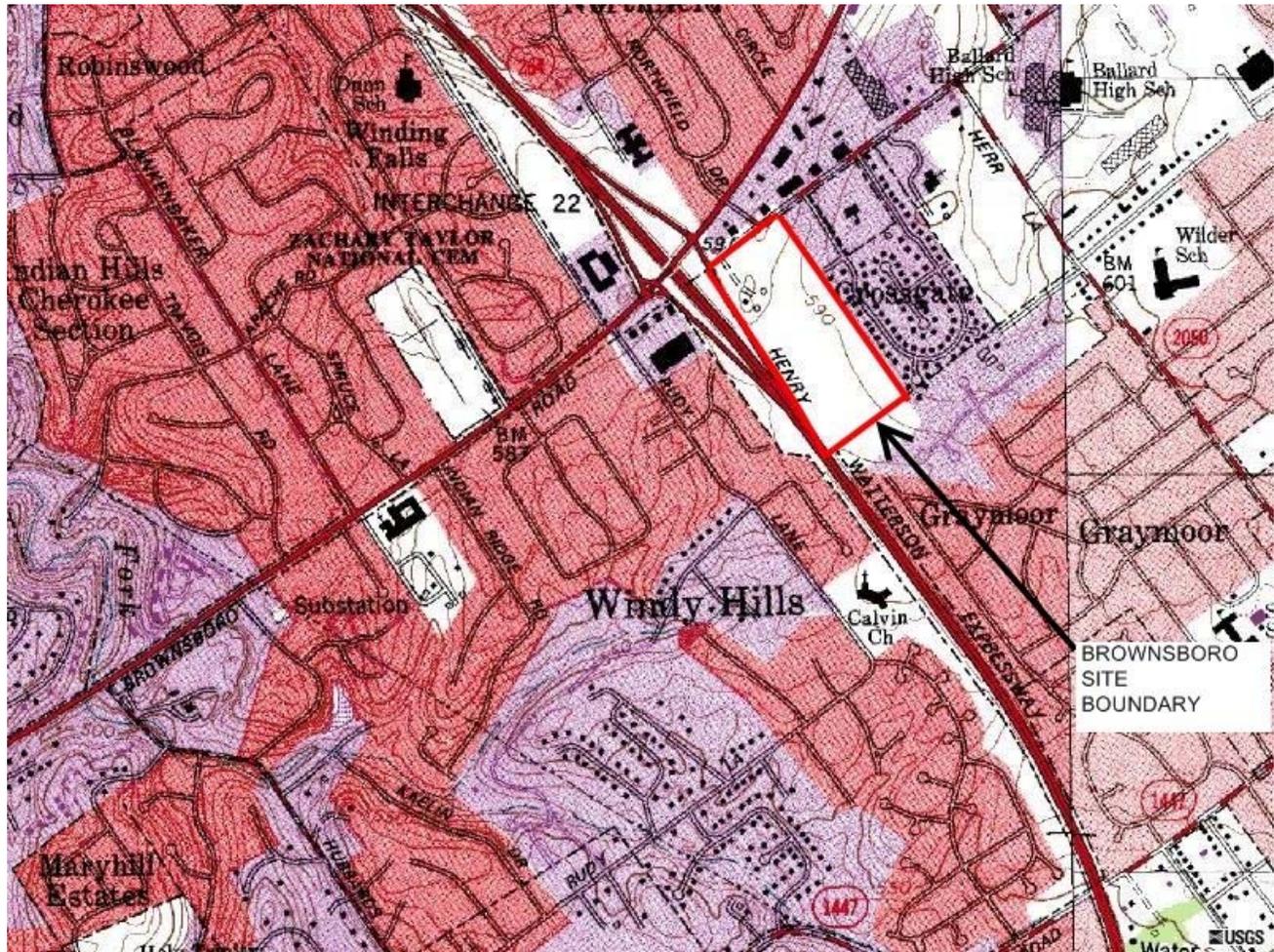
**NWI MAP
2011**

WETLANDS DETERMINATION
PROPOSED LOUISVILLE VAMC
BROWNSBORO SITE
LOUISVILLE, KENTUCKY

PREPARED FOR
**U.S. DEPARTMENT OF VETERANS
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WASHINGTON, D.C.

TTL PROJECT NO.
6960.05





**TOPOGRAPHIC MAP
1995**

WETLANDS DETERMINATION
PROPOSED LOUISVILLE VAMC
BROWNSBORO SITE
LOUISVILLE, KENTUCKY

PREPARED FOR
**U.S. DEPARTMENT OF VETERANS
AFFAIRS**
WASHINGTON, D.C.

TTL PROJECT NO.
6960.05



ATTACHMENT C
PHOTOGRAPHS



Photo #1:	Looking southwest across the northern portion of the Brownsboro Site
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Photo #2:	Looking northwest at the standing water in the northern portion of the Brownsboro Site
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Photo #3:	Looking northeast across the northern portion of the Brownsboro Site
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Photo #4:	Looking northeast across the northern portion of the Brownsboro Site
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Photo #5:	A view of the soils evaluated at the Brownsboro Site (surface to 16 inches below grade equals left to right in photograph)
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Photo #6:	A view of the soils evaluated at the Brownsboro Site (surface to 16 inches below grade equals left to right in photograph)
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February 17, 2012

TTL Project No. 6960.06

U.S. Department of Veterans Affairs
c/o Ms. Evelyn Johnson
Carpenter/Robbins Commercial Real Estate, Inc.
3160 Crow Canyon Road, Suite 200
San Ramon, California 94583

**Threatened and Endangered Species Habitat Survey Documentation
Proposed Louisville VA Medical Center
St. Joseph Site
Factory Lane
Louisville, Kentucky**

Dear Ms. Johnson:

This letter report summarizes the results of the Threatened and Endangered Species Habitat Survey Documentation conducted at the above-referenced site by TTL Associates, Inc. (TTL) for Carpenter/Robbins Commercial Real Estate, Inc. (CRCRE) on behalf of the U.S. Department of Veterans Affairs (VA).

Background

The St. Joseph Site (site) is approximately 99 acres is located south of Factory Lane and east of Interstate 265 in Louisville, Jefferson County, Kentucky. Figure 1.0 illustrates the site location. Based on historic topographic maps and aerial photographs, the site has been farmland since at least 1937. Dilapidated structures associated with the former farmstead in the northwestern portion of the site were removed in 2011.

As part of a National Environmental Policy Act (NEPA) Environmental Assessment (EA) that is being conducted for the VA for the proposed replacement Louisville VA Medical Center (VAMC), the U.S. Fish and Wildlife Service (USFWS), Kentucky Department of Natural Resources (KDNR), Kentucky Fish and Wildlife Resources (KFWR), Jefferson County, and the City of Louisville were contacted to identify any potential for presence of State or Federally listed threatened or endangered species on or in the vicinity of five candidate sites being considered for the proposed VAMC. The following summarizes the information provided by these agencies for the St. Joseph Site:

- The USFWS indicated that the St. Joseph Site is located within potential Indiana Bat habitat range. The Indiana Bat is a Federally-listed endangered species. To minimize impacts to the Indiana Bat, the USFWS stated that VA should design the new VAMC to eliminate impacts to the Indiana Bat; request a formal Section 7 (Endangered Species Act) consultation; or enter into a Memorandum of Agreement (MOA) with the USFWS to account for the incidental taking of Indiana Bats. However, the USFWS stated that seasonal tree clearing could occur without additional mitigation. The USFWS also stated that the St. Joseph Site includes habitat that supports the presence of Running Buffalo Clover, a Federally-listed endangered species. The USFWS stated that alteration of habitat at the St. Joseph Site would require an on-site inspection for the presence of Running Buffalo Clover.
- The KFWR indicated that no listed species were identified in the vicinity of the St. Joseph Site. No information pertaining to threatened and endangered species (TNE) was provided by the KDNR.
- Jefferson County – Louisville Metro Public Works and Assets (PWA) stated that there are several endangered species of plants, such as Running Buffalo Clover, that have been documented in Jefferson County. The PWA also noted that Indiana Bats also have been found in many wooded areas in Jefferson County.

A copy of the agency information is included in Attachment A.

The St. Joseph Site includes mostly unimproved, agricultural land. None of the original natural vegetation communities are present on the site. The lands immediately adjacent to this site are generally undeveloped (north), unimproved vacant land (south), residential (west), pasture land (east), or institutional (west and east). In addition, the site is adjoined to the west by Interstate 265. Such communities support wildlife species associated with suburban areas in Kentucky.

Indiana Bat

Since first listed as endangered in 1967, Indiana Bat populations have declined by nearly 60%. Several factors have contributed to the decline of the Indiana bat, including the loss and degradation of suitable overwintering sites (hibernacula), human disturbance during hibernation, pesticides, and the loss and degradation of forested habitat, particularly stands of large, mature trees. Fragmentation of forest habitat may also contribute to declines. During winter, Indiana Bats hibernate in caves and abandoned mines. Summer habitat requirements for the species are not well defined, but the following are considered important:

- Dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used as maternity roost areas.
- Live trees (such as shagbark hickory and oaks) which have exfoliating bark.

- Stream corridors, riparian areas, and upland woodlots which provide forage sites.

Generally, large trees [greater than 16 inches diameter breast height (dbh)] with lots of peeling bark and solar exposure are suitable for maternity colonies of Indiana Bats, including multiple females and their offspring. Smaller trees (greater than 8 inches dbh, but less than 16 inches dbh) or trees that only have a small amount of peeling bark are typically only suitable for male Indiana bats, which are solitary.

Running Buffalo Clover

According to the USFWS, Running Buffalo Clover, a Federally-listed endangered species, is a perennial species found in Indiana, Kentucky, Missouri, Ohio, and West Virginia. It is called Running Buffalo Clover because it produces runners that extend from the base of erect stems and run along the surface of the ground. Running Buffalo Clover may have depended on bison to periodically disturb areas and create habitat, as well as to disperse its seeds. As bison were eliminated, vital habitat and a means of seed dispersal were lost.

Clearing land for agriculture and development has led to elimination of populations, loss of habitat, and fragmentation of the Running Buffalo Clover populations that remain. Small, isolated populations of Running Buffalo Clover are prone to extinction from herbivory, disease, and inbreeding.

Invasive, non-native plant species, such as white clover, garlic mustard, and Japanese honeysuckle, out-compete Running Buffalo Clover for moisture, nutrients, space, and sunlight. Non-native clovers are also believed to have introduced diseases and insect predators.

Natural succession has resulted in a loss of open woodlands and a reduction in Running Buffalo Clover habitat. Excessive grazing directly kills plants through herbivory or trampling and can indirectly kill plants by degrading the habitat. Mowing may remove seed heads before seeds are mature but may help the clover by controlling competing vegetation.

Running Buffalo Clover requires periodic disturbance and a somewhat open habitat to successfully flourish, but it cannot tolerate full-sun, full-shade, or severe disturbance. Historically, Running Buffalo Clover was found in rich soils in the transition zone between open forest and prairie. Those areas were probably maintained by the disturbance caused by bison. Today, the species is found in partially shaded woodlots, mowed areas (lawns, parks, cemeteries), and along streams and trails.

Field Activities

As a result of the agency-provided information, VA contracted TTL to perform habitat surveys of the St. Joseph Site in order to identify areas which may include the necessary characteristics

that could support the presence at and/or use of the St. Joseph Site by Indiana Bats and Running Buffalo Clover.

On January 31 and February 1, 2012, a TTL environmental scientist/biologist performed a reconnaissance of the St. Joseph Site to evaluate the extent of suitable habitat for the Indiana Bat and Running Buffalo Clover.

On the days of the field activities, the weather was mostly cloudy with high temperatures in the mid-60s. There was no snow cover during the field activities. In addition, due to the unusually mild winter, remnants of short-growing, herbaceous vegetation was present.

Indiana Bat

Trees at the site were evaluated based on USFWS criteria. Trees greater than 8 inches dbh were identified and evaluated for peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used by Indiana Bats for roosting. The identified trees were generally flagged with a tree-specific identification number; however, in areas where larger numbers of potentially suitable Indiana Bat roosting trees were identified within a confined space (i.e., Area 2, Area 3, and the northern portion of the eastern site boundary), the number of suitable trees was counted and identified as associated with the specific area.

The forested areas of the site include approximately 3.7 acres of fragmented forest in the vicinity of the former homestead and outbuildings in the northwestern portion of the site (Area 1); an approximately 2-acre forested area in the northeastern portion of the site (Area 2); an approximately 1.2-acre forested area along the southern boundary of the site (Area 3); and an approximately 0.34-acre forested area surrounding a wetland in the central portion of the site (Wetland Area 3). In addition, a tree-lined stream (Floyds Fork Tributary), with associated wetlands/ponds crosses the northern portion of the site. A tree-lined fence row is also located along the eastern boundary of the site. Refer to the attached Figure 2.0 for the location of wooded areas at the site. Photographs of the site are included in Attachment B.

Tree species observed at the site were predominantly populated by Shagbark Hickory (*Carya ovata*), Red Oak (*Quercus rubra*), American Elm (*Ulmus americana*), Sugar Maple (*Acer saccharum*), American Basswood (*Tilia americana*), Black Walnut (*Juglans nigra*), Sycamore (*Platanus occidentalis*), and Black Locust (*Robinia pseudoacacia*).

Area 1

Area 1 is an approximately 3.7-acre fragmented forested area in the northwestern portion of the St. Joseph Site and is located in the vicinity of the former homestead and outbuildings along Factory Lane. Area 1 can be characterized as an upland woodlot. In addition, the fragmented nature of Area 1 allows for additional solar exposure in and around the trees that is not typically associated with unfragmented forested areas.

Sixty trees were identified in Area 1 that include the necessary characteristics that could support the presence of Indiana Bats. The trees identified in Area 1 ranged in dbh from 9 inches to 60 inches and included Red Oak (*Quercus rubra*), American Elm (*Ulmus americana*), Sugar Maple (*Acer saccharum*), American Basswood (*Tilia americana*), and Black Walnut (*Juglans nigra*). Refer to Table 1.0.

One tree (TTL-IB17A) was identified as completely dead, while the remaining trees generally included less than 20 percent dead portions with peeling or exfoliating bark, split tree trunk and/or branches, or cavities.

Area 2

Area 2 is an approximately 2-acre forested area in the northeastern portion of the site. Area 2 can also be characterized as an upland woodlot. Area 2 exhibits a tree population density typically associated with other forested areas in the region.

Thirty-four trees were identified in Area 2 that include the necessary characteristics that could support the presence of Indiana Bats. The trees identified in Area 2 included nine trees greater than 8 inches dbh, but less than 16 inches dbh and 25 trees greater than 16 inches dbh. Tree species included Shagbark Hickory (*Carya ovata*), Red Oak (*Quercus rubra*), Sugar Maple (*Acer saccharum*), and Black Walnut (*Juglans nigra*). Refer to Table 1.0.

One tree (TTL-IB98) was identified as 50 percent dead, four trees were identified as 20 percent to 40 percent dead (TTL-IB79, TTL-IB83, TTL-IB103, and TTL-IB110), while the remaining trees generally included less than 20 percent dead portions with peeling or exfoliating bark, split tree trunk and/or branches, or cavities.

Area 3

Area 3 is an approximately 1.2-acre forested area along the southern boundary of the site. Area 3 can be characterized as an upland woodlot in the northern portion and as a lowland woodlot in the southern portion; however, Area 3 is adjoined to the east by a recently constructed access road and a municipal water tower currently under construction. In addition, Area 3 is adjoined to the west by Interstate 265, including significant vehicle traffic and associated noise. A small stream crosses the southern portion of Area 3. Area 3 exhibits a tree population density typically associated with other forested areas in the region.

Ten trees were identified in Area 3 that include the necessary characteristics that could support the presence of Indiana Bats. The trees identified in Area 3 were all identified as greater than 16 inches dbh. Tree species included Shagbark Hickory (*Carya ovata*), Red Oak (*Quercus rubra*), Sugar Maple (*Acer saccharum*), and Black Walnut (*Juglans nigra*). Refer to Table 1.0.

All ten of the trees identified in Area 3 generally included less than 20 percent dead portions with peeling or exfoliating bark, split tree trunk and/or branches, or cavities.

Floyds Fork Tributary

Floyds Fork Tributary is a small stream that crosses the northern portion of the site and includes two small wetlands/pond adjacent to its western extent. Floyds Fork Tributary can be characterized as a tree-lined stream with associated wetlands/ponds. Trees along Floyds Fork Tributary are generally small and scattered; however, larger trees are located adjacent to the stream by Wetland Area 2 (W2) and near the eastern boundary of the site.

Twelve trees were identified along Floyds Fork Tributary that include the necessary characteristics that could support the presence of Indiana Bats. Six of the trees were located in the vicinity of W2, the western extent of Floyds Fork Tributary, and six trees were identified near the eastern boundary of the site. The trees identified along Floyds Fork Tributary ranged in dbh from 16 inches to 38 inches. Tree species included Shagbark Hickory (*Carya ovata*), American Elm (*Ulmus americana*), Black Walnut (*Juglans nigra*), Sycamore (*Platanus occidentalis*), and Black Locust (*Robinia pseudoacacia*). Refer to Table 1.0.

One tree (TTL-IB73) was identified as completely dead, two trees (TTL-IB68 and TTL-IB72) were identified as 50 percent dead, one tree (TTL-IB75) was identified as 20 percent to 40 percent dead, while the remaining trees generally included less than 20 percent dead portions with peeling or exfoliating bark, split tree trunk and/or branches, or cavities.

Eastern Site Boundary

The eastern boundary of the site is generally a tree-lined fence row, with a small, off-site, wooded area (less than 10 acres) adjoining to the east of the northern portion of the site. Trees along the northern portion of the eastern boundary are generally larger than those trees along the southern portion of the eastern boundary of the site. In addition, survey stakes identified at the site indicate that the trees along the southern portion of the eastern boundary of the site are not located on-site; however, portions of their respective canopies do overhang the site.

Twenty-nine trees were identified along the northern portion of the eastern boundary of the site that include the necessary characteristics that could support the presence of Indiana Bats. The trees identified in this area included 9 trees greater than 8 inches dbh, but less than 16 inches dbh, and 20 trees greater than 16 inches dbh. Tree species included Shagbark Hickory (*Carya ovata*), Red Oak (*Quercus rubra*), American Elm (*Ulmus americana*), Sugar Maple (*Acer saccharum*), Black Walnut (*Juglans nigra*), and Black Locust (*Robinia pseudoacacia*). Refer to Table 1.0.

One tree (TTL-IB141) was identified as completely dead, while the remaining trees generally included less than 10 percent dead portions with peeling or exfoliating bark, split tree trunk and/or branches, or cavities.

Three trees (TTL-IB143, 144, and 145) were identified along the southern portion of the eastern boundary of the site that include the necessary characteristics that could support the presence of Indiana Bats. The trees identified in this area ranged in width from 28 inches to 38 inches dbh, and included two Shagbark Hickory (*Carya ovata*) trees and one Black Walnut (*Juglans nigra*). As previously stated, these trees are located off-site; however portions of their canopies overhang the site.

One tree was identified as 50 percent dead (TTL-IB144), while the remaining two trees generally included less than 20 percent dead portions with peeling or exfoliating bark, split tree trunk and/or branches, or cavities.

Wetland Area 3 (W3)

Wetland Area 3 is an approximately 0.34-acre forested area around a wetland system in the central portion of the site. W3 can be characterized as a lowland woodlot. W3 includes approximately six large trees, many saplings, and an open water wetland system.

Three trees [all Black Walnut (*Juglans nigra*)] were identified adjacent to W3 that include the necessary characteristics that could support the presence of Indiana Bats. Refer to Table 1.0. The three trees identified adjacent to W3 ranged in width from 24 inches to 32 inches dbh. All three of the trees generally included less than 20 percent dead portions with peeling or exfoliating bark, split tree trunk and/or branches, or cavities.

Miscellaneous

Two lone-standing trees (TTL-IB61 and TTL-IB65) were identified south of Wetland Area 1 (W1) and east of W3. Refer to Table 1.0. TTL-IB61 is surrounded on three sides by open farmland and by a tree line with smaller trees on the fourth side. TTL-IB65 is located in an inactive drainage swale and is generally surrounded by open farmland. Tree species included Sugar Maple (*Acer saccharum*) and Black Walnut (*Juglans nigra*), respectively. Both trees generally included less than 20 percent dead portions with peeling or exfoliating bark, split tree trunk and/or branches, or cavities.

Running Buffalo Clover

As previously stated, Running Buffalo Clover requires periodic disturbance and a somewhat open habitat to successfully flourish, but it cannot tolerate full-sun, full-shade, or severe disturbance. Historically, Running Buffalo Clover was found in rich soils in the transition zone between open forest and prairie. Those areas were probably maintained by the disturbance

caused by bison. Today, the species is found in partially shaded woodlots, mowed areas (lawns, parks, cemeteries), and along streams and trails.

Several areas that could potentially support the presence of Running Buffalo Clover were identified at the site, including the edges of the trees lines primarily along the eastern boundary, but in other portions as well; the edges of Floyds Fork Tributary; the edges of Areas W1, W2, and W3; the edges of Factory Lane; and the edges of the wooded area along the southern boundary. Photographs of the site are included in Attachment B.

Based on the climate of the region and observations made during the field activities, evidence of Running Buffalo Clover should have been identifiable at the site if the species is present. No evidence of Running Buffalo Clover was observed during the field activities in January 31 and February 1, 2012.

The areas described above were generally covered by invasive herbaceous plant species, such as Purslane (*Portulaca oleracea*), Mouse Ear Chickweed (*Cersatiuim vulgatum*), Garlic Mustard (*Alliaria petiolata*), and Purple Deadnettle (*Lamium purpureum*), among others plant species. No clover species were observed.

Conclusions and Recommendations

Indiana Bat

Due to the seasonal timing, no evidence of the use of the site by Indiana Bats was observed. However, the St. Joseph Site includes areas that could provide foraging and roosting habitat for Indiana Bats. Area 1, Area 2, and the eastern site boundary (northern portion) are the most likely areas for Indiana Bat activities due to the number of trees and available surrounding habitat. To a lesser extent, W3 supports foraging and roosting habitat for Indiana Bats; however, its small size (approximately 0.34 acres) and the small number of available trees for roosting (three trees) would limit Indiana Bat activities in this area.

The southern portion of the eastern site boundary and the two lone trees south of W1 and east of W3 are not likely to support roosting activities by Indiana Bats; however, due to their proximity to other, higher quality habitats, they would likely be included as foraging habitat, if Indiana Bats are present.

Although Area 3 includes sufficiently-sized trees for roosting and surrounding habitat that may be used for foraging, it is less likely to be an active location for Indiana Bats due to its limited size and the presence of human activity (water tower and Interstate 265) adjoining to Area 3.

If VA choses the St. Joseph Site for the future location of the proposed replacement Louisville VAMC, TTL recommends that VA follow the initial recommendations provided by the USFWS to minimize impacts to the Indiana Bat, including a design of the new VAMC that would avoid

impacts to the Indiana Bat, if possible. During the site design, VA should request formal Section 7 consultation from the USFWS. If impacts to the Indiana Bat are unavoidable, VA should enter into a MOA with the USFWS to account for the incidental taking of Indiana Bats.

Any tree cutting will need to be coordinated through and approved by the USFWS and is required to occur between September 30 and April 1 (fall and winter).

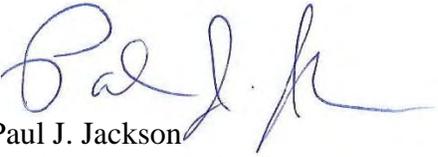
Running Buffalo Clover

Running Buffalo Clover status as a Federally-listed endangered species is a result of its specific habitat requirements, as detailed above. Based on the observations of the Site, it is unlikely that Running Buffalo Clover is present at the St. Joseph Site. However, the most effective method to identify Running Buffalo Clover is to observe areas with potential conditions to support the species while it is in flower (late spring to early summer). As such, TTL cannot definitively state that Running Buffalo Clover is not present at the St. Joseph Site without conducting field activities during the Running Buffalo Clover flowering season. As such, if VA selects the St. Joseph Site for proposed VAMC, TTL recommends conducting an additional survey for Running Buffalo Clover during its flowering season of late spring to early summer.

TTL appreciates the opportunity to provide CRCRE and the VA with our engineering, consulting, and testing services. If you have any questions or require additional information, please contact us.

Respectfully submitted,

TTL Associates, Inc.


Paul J. Jackson
Environmental Scientist


Robin J. Clark
Senior Scientist

Attachments

V:\Toledo\VA\louisville KY\Proposed VAMC\Threatened and Endangered Species\St. Joseph TNE Report\696006 TNE Summary Letter 02-17-12.docx

FIGURES

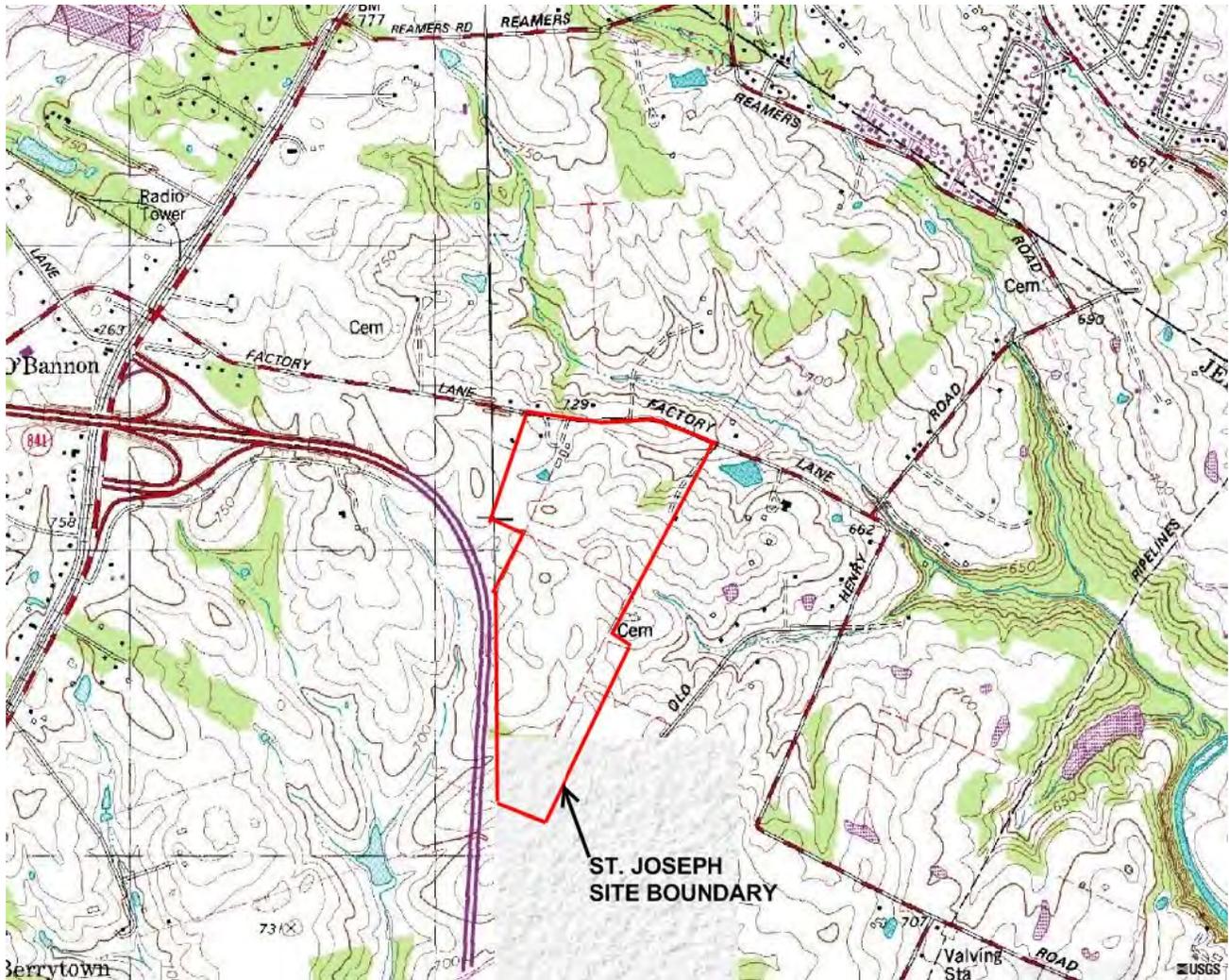
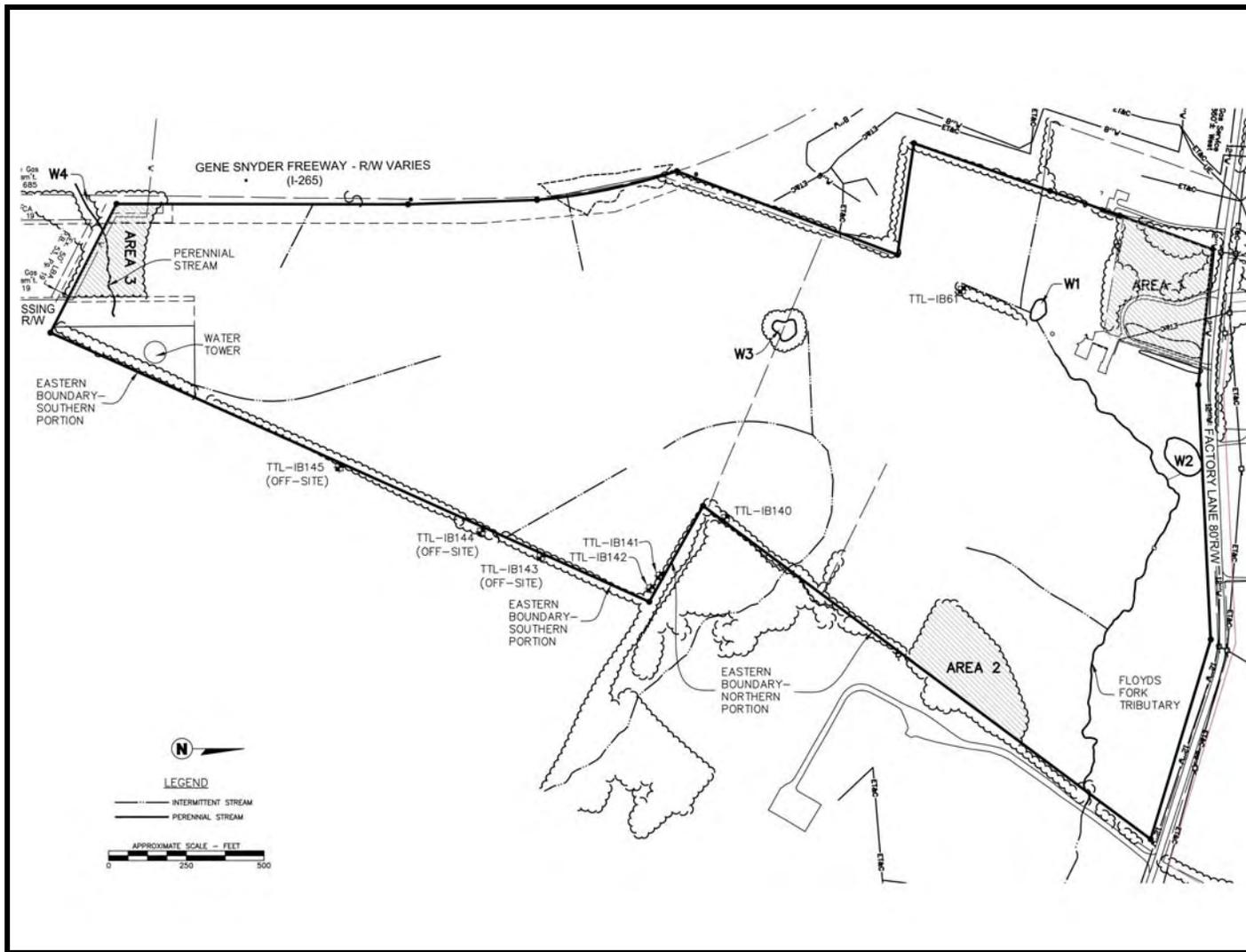


FIGURE 1.0
SITE LOCATION MAP
 THREATENED AND ENDANGERED SPECIES
 HABITAT SURVEY
 PROPOSED LOUISVILLE VAMC
 ST. JOSEPH SITE
 FACTORY LANE
 LOUISVILLE, KENTUCKY

PREPARED FOR
**U.S. DEPARTMENT OF VETERANS
 AFFAIRS**
 WASHINGTON, D.C.

TTL PROJECT NO.
 6960.06





**FIGURE 2
ST. JOSEPH SITE
SITE MAP**

THREATENED AND
ENDANGERED SPECIES
HABITAT SURVEY
PROPOSED LOUISVILLE VAMC
LOUISVILLE, KENTUCKY

PREPARED FOR
**U.S. DEPARTMENT OF
VETERANS AFFAIRS
WASHINGTON, D.C**

CHECKED

APPROVED

TTL
PROJECT
NO. 6960.06



TABLE

Table 1.0
Tree Data
Threatened and Endangered Species Habitat Survey
Proposed Louisville VAMC
St. Joseph Site
Louisville, Kentucky

TTL ID No.	Diameter Breast Height (dbh) In Inches	Location	Comments
TTL-IB1A	30	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB1B	30	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB2	26	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB3	24	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB4	38	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB5	30	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB6	19	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB7	16	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB8	41	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB9	26	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB10	20	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB11	36	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB12	15	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB13	9	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB14	48	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB15	24	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB16	29	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB17A	16	Area 1 - Northwestern portion by former homstead and outbuildings	100% dead
TTL-IB17B	27	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB18	25	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB19	24	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB20	36	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB21A	14	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB21B	14	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB21C	14	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB21D	10	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB21E	10	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB22	34	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB23	30	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB24	25	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB25	46	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB26	11	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB27	16	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB28A	12	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB28B	12	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB28C	12	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB29	22	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB30	60	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB31	32	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB32	42	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB33	35	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB34	30	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB35	18	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB36	14	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB37	16	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB38	16	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB39	14	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB40	16	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB41	18	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB42	18	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB43	16	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead

Table 1.0
Tree Data
Threatened and Endangered Species Habitat Survey
Proposed Louisville VAMC
St. Joseph Site
Louisville, Kentucky

TTL ID No.	Diameter Breast Height (dbh) In Inches	Location	Comments
TTL-IB44	26	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB45	18	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB46	40	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB47	54	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB48	33	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB49	18	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB50	22	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB51	41	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB52A	12	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB52B	14	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB53	13	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB54	22	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB55	42	Area 1 - Northwestern portion by former homstead and outbuildings	< 20% dead
TTL-IB56	35	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB57	20	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB58	22	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB59	18	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB60	10	Area 1 - Northwestern portion by former homstead and outbuildings	< 10% dead
TTL-IB61	41	South of W1	< 20% dead
TTL-IB62	25	By W3	< 20% dead
TTL-IB63	32	By W3	< 10% dead
TTL-IB64	24	By W3	< 20% dead
TTL-IB65	22	Lone Tree East of W3	< 20% dead
TTL-IB66	30	Adjacent to W2	< 20% dead
TTL-IB67	27	Adjacent to W2	50% dead
TTL-IB68	36	Adjacent to W2	< 10% dead
TTL-IB69	19	Along stream, east of W2	< 10% dead
TTL-IB70	38	Along stream, east of W2	< 10% dead
TTL-IB71	24	Along stream, east of W2	< 10% dead
TTL-IB72	27	Along stream, near eastern Site boundary	50% dead
TTL-IB73	16	Along stream, near eastern Site boundary	100% dead
TTL-IB74	26	Along stream, near eastern Site boundary	< 20% dead
TTL-IB75	18	Along stream, near eastern Site boundary	20% to 40% dead
TTL-IB76	28	Along stream, near eastern Site boundary	< 20% dead
TTL-IB77	23	Along stream, near eastern Site boundary	< 10% dead
TTL-IB78	> 8 < 16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB79	> 8 < 16	Area 2 - Northeastern wooded area	20% to 40% dead
TTL-IB80	> 8 < 16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB81	> 8 < 16	Area 2 - Northeastern wooded area	< 10% dead
TTL-IB82	> 8 < 16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB83	> 8 < 16	Area 2 - Northeastern wooded area	20% to 40% dead
TTL-IB84	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB85	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB86	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB87	>16	Area 2 - Northeastern wooded area	< 10% dead
TTL-IB88	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB89	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB90	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB91	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB92	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB93	>16	Area 2 - Northeastern wooded area	< 10% dead

Table 1.0
Tree Data
Threatened and Endangered Species Habitat Survey
Proposed Louisville VAMC
St. Joseph Site
Louisville, Kentucky

TTL ID No.	Diameter Breast Height (dbh) In Inches	Location	Comments
TTL-IB94	>16	Area 2 - Northeastern wooded area	< 10% dead
TTL-IB95	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB96	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB97	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB98	>16	Area 2 - Northeastern wooded area	50% dead
TTL-IB99	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB100	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB101	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB102	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB103	>16	Area 2 - Northeastern wooded area	20% to 40% dead
TTL-IB104	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB105	>16	Area 2 - Northeastern wooded area	< 10% dead
TTL-IB106	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB107	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB108	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB109	>16	Area 2 - Northeastern wooded area	< 10% dead
TTL-IB110	>16	Area 2 - Northeastern wooded area	20% to 40% dead
TTL-IB111	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB112	>16	Area 2 - Northeastern wooded area	< 20% dead
TTL-IB113	> 8 < 16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB114	> 8 < 16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB115	> 8 < 16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB116	> 8 < 16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB117	> 8 < 16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB118	> 8 < 16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB119	> 8 < 16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB120	> 8 < 16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB121	> 8 < 16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB122	>16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB123	>16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB124	>16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB125	>16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB126	>16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB127	>16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB128	>16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB129	>16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB130	>16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB131	>16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB132	>16	Eastern boundary south of northeastern wooded area	< 10% dead
TTL-IB133	>16	East/west fence line south of northeastern wooded area	< 10% dead
TTL-IB134	>16	East/west fence line south of northeastern wooded area	< 10% dead
TTL-IB135	>16	East/west fence line south of northeastern wooded area	< 10% dead
TTL-IB136	>16	East/west fence line south of northeastern wooded area	< 10% dead
TTL-IB137	>16	East/west fence line south of northeastern wooded area	< 10% dead
TTL-IB138	>16	East/west fence line south of northeastern wooded area	< 10% dead
TTL-IB139	>16	East/west fence line south of northeastern wooded area	< 10% dead
TTL-IB140	31	East/west portion of eastern Site boundary	< 10% dead
TTL-IB141	16	East/west portion of eastern Site boundary	100% dead
TTL-IB142	31	East/west portion of eastern Site boundary	< 10% dead
TTL-IB143	30	Southern portion of eastern Site boundary	off-site; < 20% dead
TTL-IB144	38	Southern portion of eastern Site boundary	off-site; 50% dead

Table 1.0
Tree Data
Threatened and Endangered Species Habitat Survey
Proposed Louisville VAMC
St. Joseph Site
Louisville, Kentucky

TTL ID No.	Diameter Breast Height (dbh) In Inches	Location	Comments
TTL-IB145	28	Southern portion of eastern Site boundary	off-site; < 20% dead
TTL-IB146	>16	Area 3 - Southern wooded area along southern Site boundary	< 10% dead
TTL-IB147	>16	Area 3 - Southern wooded area along southern Site boundary	< 20% dead
TTL-IB148	>16	Area 3 - Southern wooded area along southern Site boundary	< 10% dead
TTL-IB149	>16	Area 3 - Southern wooded area along southern Site boundary	< 10% dead
TTL-IB150	>16	Area 3 - Southern wooded area along southern Site boundary	< 20% dead
TTL-IB151	>16	Area 3 - Southern wooded area along southern Site boundary	< 10% dead
TTL-IB152	>16	Area 3 - Southern wooded area along southern Site boundary	< 20% dead
TTL-IB153	>16	Area 3 - Southern wooded area along southern Site boundary	< 20% dead
TTL-IB154	>16	Area 3 - Southern wooded area along southern Site boundary	< 10% dead
TTL-IB155	>16	Area 3 - Southern wooded area along southern Site boundary	< 20% dead
TTL-IB156	>16	Area 3 - Southern wooded area along southern Site boundary	< 10% dead

ATTACHMENT A
AGENCY INFORMATION

**Revised¹ Indiana Bat Mitigation Guidance
for the
Commonwealth of Kentucky**

Introduction

This guidance is to be used when assessing minimization and mitigation needs for the endangered Indiana bat (*Myotis sodalis*) relative to development, forestry, and other land use or land management projects that have the potential to alter or otherwise affect Indiana bat habitat in Kentucky. The Service will pursue similar minimization goals and options for Indiana bat conservation and recovery during informal and formal consultations with Federal action agencies pursuant to section 7(a)(2) of the Endangered Species Act of 1973 (ESA), subject to the acceptability of the minimization measures to the Federal action agencies. *Additionally, the Service will use this Guidance, to the extent appropriate, for its assessment of interstate projects (within 20 miles of Kentucky) where the KFO is the lead Service office and use of the Guidance is acceptable to the adjacent state's field office.*

The intent of this guidance is to (1) provide direction to project proponents whose actions have the potential to adversely affect the Indiana bat and (2) enhance conservation and recovery of Indiana bat populations in Kentucky by providing minimization and mitigation for adverse effects to Indiana bats that occur in Kentucky. The guidance is subject to modification as new information relative to the species, its conservation status, and its conservation and recovery becomes available.

Kentucky, like most states, is experiencing significant growth. Projects associated with growth can cause the loss, degradation, and fragmentation of natural habitats as the alteration or development of these formerly natural to semi-natural habitats occur. These types of impacts have the potential to adversely affect the Indiana bat, so project proponents must often determine if potential adverse effects to Indiana bats are likely to occur and, if so, how they can avoid, minimize, and/or mitigate for those adverse effects. If avoidance of all likely adverse effects is not achievable, project proponents must follow these guidelines below to ensure compliance with the ESA and avoid an illegal “take” of Indiana bats, a federally listed species. “Take” of federally listed species is prohibited pursuant to section 9 of the ESA. As a result, the supporting rationale for this guidance is that future recovery, conservation, and mitigation efforts for the Indiana bat undertaken by the Service and others using this guidance will improve conservation and recovery of Indiana bat populations in Kentucky in spite of adverse effects that occur, as these adverse effects would require avoidance, minimization, and/or mitigation.

¹ Revised text shown in blue

Background

Kentucky lies near the center of the Indiana bat's range and contains numerous caves and forestlands known to contain and provide habitat for the species. Five out of the 23 Priority 1 hibernacula identified in the draft, revised Indiana bat recovery plan² lie within Kentucky's borders. Three of these hibernacula occur within the Mammoth Cave System, located in the Pennyriple region of the state. Cave researchers have suggested that the Mammoth Cave System historically may have provided winter roosts for millions of Indiana bats.^{3, 4} The two other Priority 1 hibernacula are found in Kentucky's Eastern Coalfields⁵ with Bat Cave in the northeast portion of Kentucky and Line Fork Cave in the southeast. The expansive karst within much of Kentucky's limestone geology results in numerous caves that historically and currently provide winter habitat for Indiana bats. Over 100 caves (5 Priority 1 and 15 Priority 2) within the state have historic Indiana bat records and 74 of these caves have extant winter populations. Many of these caves occur within areas of existing conservation ownerships, both private and public. Of particular note are the Daniel Boone National Forest that is managed by the U.S. Forest Service, Mammoth Cave National Park that is managed by the National Park Service, Carter Cave State Resort Park that is managed by the Kentucky Department of Parks, and several parcels along Pine Mountain. Like the hibernacula, known maternity colonies are scattered throughout the state with notable clusters of maternity colonies occurring near the Fort Knox Military Reservation, Mammoth Cave National Park, Daniel Boone National Forest, Pine Mountain, the Eastern Coalfields, and along the Ohio River floodplain in the Pennyriple (Mississippian Plateaus) and Jackson Purchase (Mississippi Embayment) regions of the state.

Because Indiana bat records occur broadly across the Commonwealth, nearly any project with suitable habitat has the potential to adversely affect the Indiana bat. The KFO reviews **between 800 and 1,000** projects annually for impacts to Indiana bats. The majority of these projects involve the loss of suitable summer roosting and foraging habitat. Projects that impact known winter habitat are rare. Projects impacting known and potential summer and swarming habitats range from large block disturbances such as those associated with surface mining and development projects to linear impacts associated with transmission lines and pipelines. Additionally, the KFO annually reviews numerous impacts that vary in size. Although the small size of some of the disturbances makes direct adverse impacts to Indiana bats less likely, the cumulative and indirect effects of these projects as a whole are or can be detrimental to the species and limit the potential conservation and recovery of the species.

² U.S. Fish and Wildlife Service. 2007. Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision. U.S. Fish and Wildlife Service, Fort Snelling, MN. 258 pp.

³ Toomey, R.S., III, M.L. Colburn, and R.A. Olson. 2002. Paleontological evaluation of use of caves: a tool for restoration of roosts. Pp. 79-85 in A. Kurta and J. Kennedy (eds.), *The Indiana bat: biology and management of an endangered species*. Bat Conservation International, Austin, TX.

⁴ Tuttle, M.D. 1997. A mammoth discovery. *Bats* 15:3-5.

⁵ Physiographic Regions of Kentucky. *Kentucky Atlas and Gazetteer*. 3/5/2007 (see Appendix A)

<http://www.uky.edu/KentuckyAtlas/kentucky-atlas.html>

Explanation of Terms

Throughout this document, certain terms are used repeatedly to describe Indiana bat habitat. For the purpose of this document the Service provides the following definitions:

- “Known habitat” refers to suitable summer or winter habitat located within 10 miles of a documented priority 1 or 2 hibernacula, within five (5) miles of a documented maternity capture record or documented priority 3 or 4 hibernacula, or within 2.5 miles of a documented maternity roost tree or non-maternity capture record.
- “Maternity habitat” refers to suitable summer habitat used by juveniles and reproductive (pregnant, lactating, or post-lactating) females.
- “Non-maternity habitat” refers to suitable summer habitat used by non-reproductive females and/or males.
- “Occupied” refers to suitable habitat that is expected or assumed to be in use by Indiana bats at the time of impact. Please see Appendix D for more information on when habitats are considered occupied.
- “Potential habitat” occurs statewide where suitable roosting, foraging and travel habitat for the Indiana bat exists. Known habitat also includes potential habitat for those currently undocumented uses.
- “Suitable habitat” refers to summer and/or winter habitat that is appropriate for use by Indiana bats.
 - Suitable winter habitat (hibernacula) is restricted to underground caves and cave-like structures (e.g. abandoned mines, railroad tunnels). These hibernacula typically have a wide range of vertical structures; cool, stable temperatures, preferably between 4°C and 8°C; and humidity levels above 74 percent but below saturation.
 - Suitable summer habitat for Indiana bats consists of the variety of forested/wooded habitats where they roost, forage and travel. This includes forested blocks as well as linear features such as fencerows, riparian forests and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Isolated trees are considered suitable habitat when they exhibit the characteristics of a suitable roost tree.
- “Suitable primary maternity roost tree” refers to a dead or partially dead tree that is at least 9 inches DBH and has cracks, crevices, and/or loose or exfoliating bark. 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.
- “Suitable roost tree” refers to a tree (live or dead) with a diameter at breast height (DBH) of 5 inches or greater that exhibits any of the following characteristics: exfoliating bark, crevices

or cracks. Indiana bats typically roost under exfoliating bark, and in cavities of dead, dying, and live trees, and in snags (i.e., dead trees or dead portions of live trees).

- “Unoccupied” refers to suitable habitat not expected to be in use by Indiana bats at the time of impact. Please see Appendix D for more information on when habitats are considered unoccupied.

Conservation Strategy and General Minimization and Mitigation Goals for Indiana Bats in Kentucky

The Service’s Kentucky Field Office will generally rely on the draft, revised Indiana Bat recovery plan and other literature and data available on the Indiana bat to support its conservation and recovery activities for the species. For example, the draft, revised recovery plan’s primary recovery actions focus on protection and management of Priority 1 and Priority 2 hibernacula, which will also be the primary conservation focus in Kentucky. However, there are a number of other recovery actions that this guidance supports, including, but not limited to: (a) Conserve and manage hibernacula and their winter populations (Recovery Action 1.1); (b) Reduce threats by purchasing from willing sellers or leasing at-risk privately owned P1 and P2 hibernacula to assure long-term protection (1.1.3); (c) Conserve and manage areas surrounding hibernacula (1.1.4); (d) Purchase from willing sellers or lease privately owned lands surrounding P1 and P2 hibernacula identified as having inadequate buffers (1.1.4.4); (e) Restoration and creation of hibernacula (1.2); (f) Conserve and manage summer habitat to maximize survival and fecundity (2.0); (g) Monitor and manage known maternity colonies (2.4); and (h) Minimize adverse impacts to the Indiana bat and its habitat during review of Federal, state, county, municipal, and private activities under the ESA, National Environmental Policy Act, Fish and Wildlife Coordination Act, and Section 404 of the Clean Water Act (2.6). Collectively, these recovery actions address Indiana bat conservation and recovery needs in both winter and summer habitat. As a result, they provide the foundation that supports this guidance. The Service will use its existing authorities, especially those under the ESA, when implementing this guidance.

Based on the background information above and the available information on the species, its status, and conservation⁶, the Service developed a list of general minimization and mitigation goals for Indiana bats in Kentucky. If achieved, these goals would (a) support the conservation strategy discussed above, (b) significantly contribute to Indiana bat conservation and recovery in Kentucky, and (c) act as a guide for determining the appropriateness of any proposed minimization and mitigation measures. The goals are listed below:

Tier 1

1. Protect and manage known Priority 1 (P1) and Priority 2 (P2) hibernacula.
2. Protect and manage existing forested habitat:

⁶ The KFO relied heavily on the draft revised Indiana Bat Recovery Plan, state heritage information, and the knowledge of experienced Indiana bat biologists to derive this list, but a number of other sources of information, which are on file in our office, were used.

- a. Swarming habitat within 10 miles of a known hibernacula; and/or
 - b. Summer habitat within 2.5 miles of a documented maternity roost tree or within 5.0 miles of a maternity capture (mist-net) record.
3. Protect and manage additional conservation lands for Indiana bats, especially habitat that is contiguous with or within the proclamation/acquisition/preserve boundaries of existing public and private conservation lands occupied by Indiana bats.
 4. Restore winter habitat conditions in degraded caves that exhibit the potential for successful restoration such as, but not limited to, those caves identified as having High Potential (HP) in the draft revised Indiana bat Recovery Plan.

Tier 2

5. Protect and manage known Priority 3 (P3) and Priority (P4) hibernacula.
6. Protect and manage additional conservation lands that are currently suitable for but unoccupied by Indiana bats.
7. Fund priority Indiana bat research and monitoring that support the six strategies above and/or Kentucky's Indiana bat populations.

Tier 1 goals would have priority over Tier 2 goals and are encouraged.

Indiana Bat Recovery and Mitigation Focus Areas

The Service's analyses also resulted in the delineation of Indiana Bat Recovery and Mitigation Focus Areas (RMFAs) within the Commonwealth of Kentucky (Figure 1). RMFAs were identified specifically to support the general minimization and mitigation priorities identified in the previous section and represent areas that:

1. Contain one or more public or protected private lands that are known to support Indiana bat populations;
2. Currently support populations of Indiana bats that are expected to support long-term recovery and conservation efforts of the species;
3. Contain adequate suitable habitat to support recovery and conservation efforts;
4. Provide opportunities for future protection, restoration, enhancement, and/or creation of additional summer and/or winter Indiana bat habitat; and/or
5. In the Service's estimation, contain conditions that generally are expected to contribute to the persistence of the Indiana bat population and habitat into the future.

The identified RMFAs can be categorized as Summer Habitat RMFAs, Winter Habitat RMFAs, or as both and are shown in Table 1. Collectively, these RMFAs are key landscapes for Indiana bat conservation and recovery in Kentucky. Therefore, RMFAs will be those areas where most Indiana bat minimization and/or mitigation efforts will be undertaken or attempted. The Service expects, however, that minimization and/or mitigation efforts may also be undertaken or attempted at locations outside of the Indiana bat RMFAs in circumstances where the conservation and/or recovery benefits to Indiana bats can be clearly identified and justified. The applicability of minimization and/or mitigation efforts outside of RMFAs will be determined on a case-by-case basis in coordination with the Service and will depend on a variety of factors including, but not necessarily limited to, (a) location of the site, (b) the type and quality of the conservation opportunities available, and (c) the existence of new information that would help justify the conservation effort. In addition, minimization and/or mitigation efforts will generally be directed to the RMFA closest to the impact site or to the RMFA that best minimizes and/or mitigates the specific impact(s).

Table 1: Table of Recovery and Mitigation Focus Areas (RMFAs) & Available Habitat Types

RMFA Name and Description	Summer Habitat RMFA	Winter Habitat RMFA
<i>Tygarts Creek-Carter Caves SRP</i> – the assemblage of caves along Tygarts Creek and within Carter Caves SRP, including caves on private lands within 10 miles of Tygarts Creek and/or Carter Caves SRP Primary Conservation Ownership – Carter Caves SRP	no	yes
<i>Daniel Boone National Forest</i> – the area within the DBNF proclamation boundary, including caves and maternity colonies on private lands within 10 miles of the proclamation boundary Primary Conservation Ownership – Daniel Boone National Forest	yes	yes
<i>Pine Mountain</i> – the assemblage of caves along Pine Mountain, including caves and maternity colonies on private lands within 10 miles of the crest of Pine Mountain Primary Conservation Ownership – Kentucky State Parks and Kentucky State Nature Preserves Commission	yes	yes
<i>Mammoth Cave National Park</i> – the assemblage of caves within MCNP, including caves and maternity colonies on private lands within Barren, Edmonson, Hart, and Warren counties Primary Conservation Ownership – Mammoth Cave National Park	yes	yes
<i>Barrens-Fort Knox</i> – the assemblage of caves and maternity colonies in Breckinridge, Bullitt, Hardin, Jefferson, Meade, and Spencer counties Primary Conservation Ownership – Fort Knox, Taylorsville Lake WMA	yes	yes
<i>Big Rivers</i> – the assemblage of caves and maternity colonies in Christian, Livingston, Lyon, Marshall, and Trigg counties Primary Conservation Ownership – Land Between the Lakes NRA, Fort Campbell, and Clarks River National Wildlife Refuge	yes ⁷	yes
<i>Lower Ohio River</i> – the assemblage of maternity colonies in Daviess, Henderson, and Union counties Primary Conservation Ownership – Sloughs WMA	yes	no
<i>Mississippi River</i> – the assemblage of maternity colonies in Ballard, Carlisle, Hickman, and McCracken counties Primary Conservation Ownership – Ballard, Boatwright, Doug Travis, and West Kentucky WMAs	yes	no

⁷ Maternity colony exists on Fort Campbell in Tennessee.

Types of Adverse Effects That Are Appropriate for Minimization and Mitigation

Based on the importance of hibernacula, the Service determined that development of minimization and mitigation measures would not be appropriate for projects resulting in adverse effects to hibernacula; avoidance of caves and other potential hibernacula is preferred. However, minimization and mitigation of certain adverse effects to hibernacula or potential hibernacula may be appropriate but must be coordinated with the Service. The reasons minimization and mitigation measures would be inappropriate at hibernacula include, but are not limited to:

1. P1 and P2 hibernacula are critical to Indiana bat recovery and conservation;
2. Adverse effects to P1 and P2 hibernacula have the potential to cause significant, (and likely irreversible) negative effects on Indiana bat populations range-wide;
3. Sufficient technology and funding does not currently exist to recreate the habitat conditions that exist in most hibernacula, especially P1 and P2 hibernacula; and
4. Current P3 and P4 hibernacula may have historically been P1 or P2 hibernacula, so allowing impacts to restorable P3 and P4 hibernacula could limit Indiana bat recovery.

Minimization and mitigation measures would be appropriate for most other adverse effects that typically occur in association with development projects in Kentucky. However, certain groups of impacts will require project-specific evaluation by the Service to assess the appropriateness of the minimization and mitigation measures. These groups include:

1. Projects resulting in the loss of more than 250 acres of Indiana bat habitat⁸
2. Projects occurring within 1 mile of a priority 1 or 2 hibernacula⁹
3. Project occurring within ½ mile of a priority 3 or 4 hibernacula⁹
4. Identified hibernacula with percent forest cover less than 60 percent in the **swarming buffer** surrounding the entrance⁸
5. Identified maternity areas with percent forest cover less than 45 percent⁸.
6. Projects resulting in impacts to known maternity habitat between June 1 and July 31. Limited clearing during this time may be approved only after a detailed survey to ensure that no primary maternity roosts would be adversely affected during this sensitive period.

⁸ Analyses by the Service and KDFWR relating to the amount of forested habitat available to known Indiana bat maternity colonies **within and adjacent to Kentucky** has shown that percent forest cover ranges between 9 and 95 percent with no discernable break in records of occurrence(see Appendix B). Similar analysis of P1 and P2 hibernacula found the percent forested cover **between 44 and 86 percent with no discernable breaks** (see Appendix C). Based on the data (unpublished USFWS data, 2008), the Service determined that projects that (a) were greater than 250 acres, (b) occurred within the swarming area of a hibernaculum with less than 60 percent forest cover, or (c) occurred within known maternity habitat areas containing less than 45 percent forest cover warranted a separate analysis relative to these guidelines in order to further minimize potential adverse effects to **Indiana bats**.

⁹ Separate analyses for projects within ½ or 1 mile of hibernacula will (a) ensure that impacts to occupied swarming habitat are not underestimated (i.e., Most bat activity occurs close to a hibernaculum entrance, so adverse effects are most likely to occur there.), and (b) will help the Service better determine if direct impacts to known hibernacula are likely.

Determine Habitat Mitigation Need

The following mitigation needs have been identified in order of preference.

1. Protect known and previously unprotected Indiana bat hibernacula^{10,11,12}
 - a. Purchase or otherwise acquire fee title
 - b. Secure perpetual conservation easements and land management agreements
2. Protect known Indiana bat maternity or swarming habitat^{10,11,12}
 - a. Purchase or otherwise acquire fee title (typically at an acre for acre ratio)
 - b. Secure perpetual conservation easements and land management agreements (typically at a ratio of two acres protected for each acre impacted)
3. Contribute funding to the Indiana bat Conservation Fund (IBCF) sufficient to achieve identified mitigation needs.
4. Other activities that will provide a tangible conservation benefit to the Indiana bat may be proposed to the Service for a case-by-case evaluation.

Acceptability of Mitigation and Minimization Measures

The Service defined the terms used in the following table in Explanation of Terms section. Table 2 provides guidance on whether a minimization and mitigation measure can be used for a specific type of action or impact. In some cases, minimizing and mitigating impacts to summer habitat with the protection of winter habitat may be appropriate, but this must be determined on a case-by-case basis. Impacts to known Indiana bat hibernacula will require a project specific analysis of suitable mitigation options and may not be appropriate or allowed under these Guidelines at the Service's sole discretion.

¹⁰ Property acquired or protected must adjoin or be within the preserve design or acquisition boundary of an existing conservation ownership.

¹¹ Easement or fee simple lands shall include all surface and mineral rights to the property and clear an unencumbered ownership of these rights. The applicant shall pay for all fees and/or other costs associated with title work, recording, transferring, surveying, and/or acquiring of the easement or property.

¹² Mitigation and minimization measures that involve land acquisition or easement require the donation of the property (or easement) to a conservation organization approved by the Service. Accompanying the donation must be a cash endowment sufficient to provide perpetual management of the preserved lands and any other funds identified by the receiving conservation organization that may be necessary for that entity to accept title or easement (e.g. contaminants surveys, fencing, trash removal, etc.).

Table 2. Table of Project Actions/Impact Types & Types of Appropriate Habitat Mitigation Measures.

ACTION / IMPACT TYPE	HABITAT MITIGATION MEASURE		
	Protect Hibernacula	Protect Maternity and/or Swarming Habitat	IBCF Contribution
Summer Habitat Loss	Contact the Service for review of the appropriateness of these measures.		These are appropriate minimization and mitigation measures for the impacts listed and any overlapping habitats.
Known maternity habitat			
Known other habitat			
Potential habitat			
Swarming Habitat Loss			
P1 or P2			
P3 or P4			

Determination of Minimization and Mitigation Amounts

Table 3 below assists project proponents in determining the amount of minimization and mitigation needed to offset the specific impacts of a given project. The project's impact(s) should be divided into the actions or impact types and then quantified to yield the acreage of impact for each action. For impacts where suitable habitat is sparse, each suitable roost tree should be counted, and the number of suitable roost trees should be multiplied by 0.09 acres/tree to determine the acreage of suitable habitat loss (i.e., the single tree method). For impacts involving the loss or alteration of blocks of forested habitat, the acreage of the impact is determined by identifying the perimeter and area of the impact with Global Positioning System or Geographic Information System technology (i.e., the habitat block method). Once the acreage of habitat loss has been determined for each action using the single tree and/or habitat block method(s), the impact information should then be inserted into Table 3 and multiplied by the appropriate multiplier to yield the amount of mitigation required for each action or impact type. The Service will provide assistance to project proponents in determining how the single tree and habitat block methods for calculating impact acreages should be applied on their project(s) so that an accurate mitigation estimate can be determined.

The value of a particular hibernacula or maternity or swarming habitat proposed for protection depends on the circumstances applicable to that particular site. As such, standard multipliers are not provided but must be determined on a case-by-case basis by the Service. Factors that influence the value of a particular protection site include, but are not limited to: the relative significance of the site to the conservation and recovery of the Indiana bat, the quality of the habitat, the level of protection afforded, the degree of risk to the site without the proposed mitigation and minimization measure, and the site's position within the landscape and proximity to RMFAs.

Table 3. Table for Calculation of Impact Acres & Mitigation Acres.¹³

ACTION / IMPACT TYPE	IMPACT ACRES	MULTIPLIER	MITIGATION ACRES
Habitat Loss			
Select Action/Impact Type based on location and current map of Indiana bat Habitat in KY(see Appendix E)		Please see Appendix D to select appropriate multiplier based on location and timing of impact.	
Minimization & Mitigation Measures			
Purchase or protect hibernacula	Value determined on a case by case basis		
Purchase or protect maternity or swarming habitat			
Contribute to IBCF	\$2880/mitigation acre ¹⁴ (please contact the KFO to confirm current cost per acre)		

Summary

This Guidance has been developed by the Service to provide direction to project proponents whose actions have the potential to adversely affect the Indiana bat and to enhance the conservation and recovery of Indiana bat populations in Kentucky. This will be accomplished by the implementation of the minimization and mitigation measures set forth in this Guidance.

These measures were developed to support the recovery actions identified in the draft, revised recovery plan for the Indiana bat and address both summer and winter habitat. This document also establishes the conservation strategy that the Kentucky Field Office (KFO) will employ, which is the foundation for the Guidance.

The KFO has identified those impacts to the Indiana bat where avoidance is more appropriate than minimization and mitigation as well as those projects that will need individual evaluations to determine if minimization and mitigation measures are appropriate. For any impacts that may be allowed, the level of minimization and mitigation that is established in the Guidance varies according to the relative importance of the habitat type that will be impacted to the conservation and recovery of the Indiana bat and likelihood of take. Recovery and Mitigation Focus Areas have been developed to support the identified minimization and mitigation measures as well as to

¹³ The Service determined that impacts to potential habitat during the occupied season require direct replacement of impacted acres. From that point, mitigation ratios were assigned based on the importance of the habitat type to the recovery of the Indiana bat and likelihood for direct versus indirect impacts. Direct impacts (occupied) require more mitigation than indirect impacts for each habitat type.

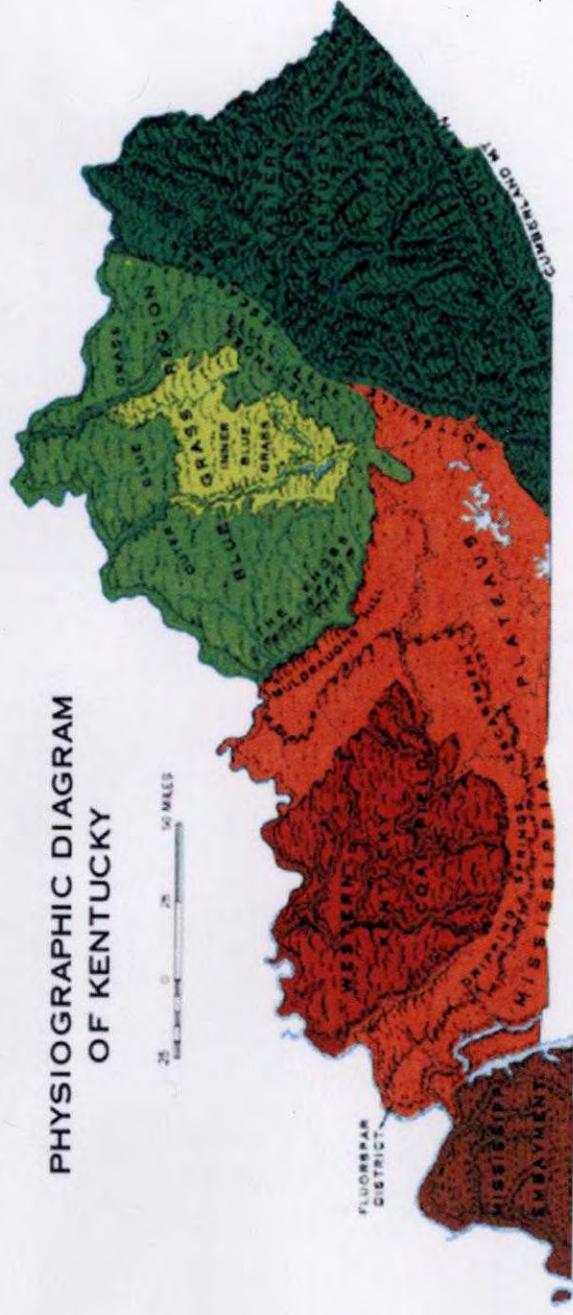
¹⁴ This dollar amount is subject to change based on Kentucky's average value of farm real estate as published annually by the U.S. Department of Agriculture in the Land Values and Cash Rents document. The current value is based on the Land Values and Cash Rents, 2010 Summary released by the USDA in August 2010. (ISSN 1949-1867)

ensure appropriate distribution and implementation of these measures relative to the locations of the impacts.

The protection of hibernacula, swarming and maternity areas is critical to ensuring the conservation and recovery of the Indiana bat. These guidelines set forth a process by which impacts that may directly or indirectly result in adverse effects to the Indiana bat can also help ensure the long-term survival of the species. The Service believes the implementation of this Guidance can help achieve that goal.

APPENDIX A

Kentucky Atlas & Gazetteer

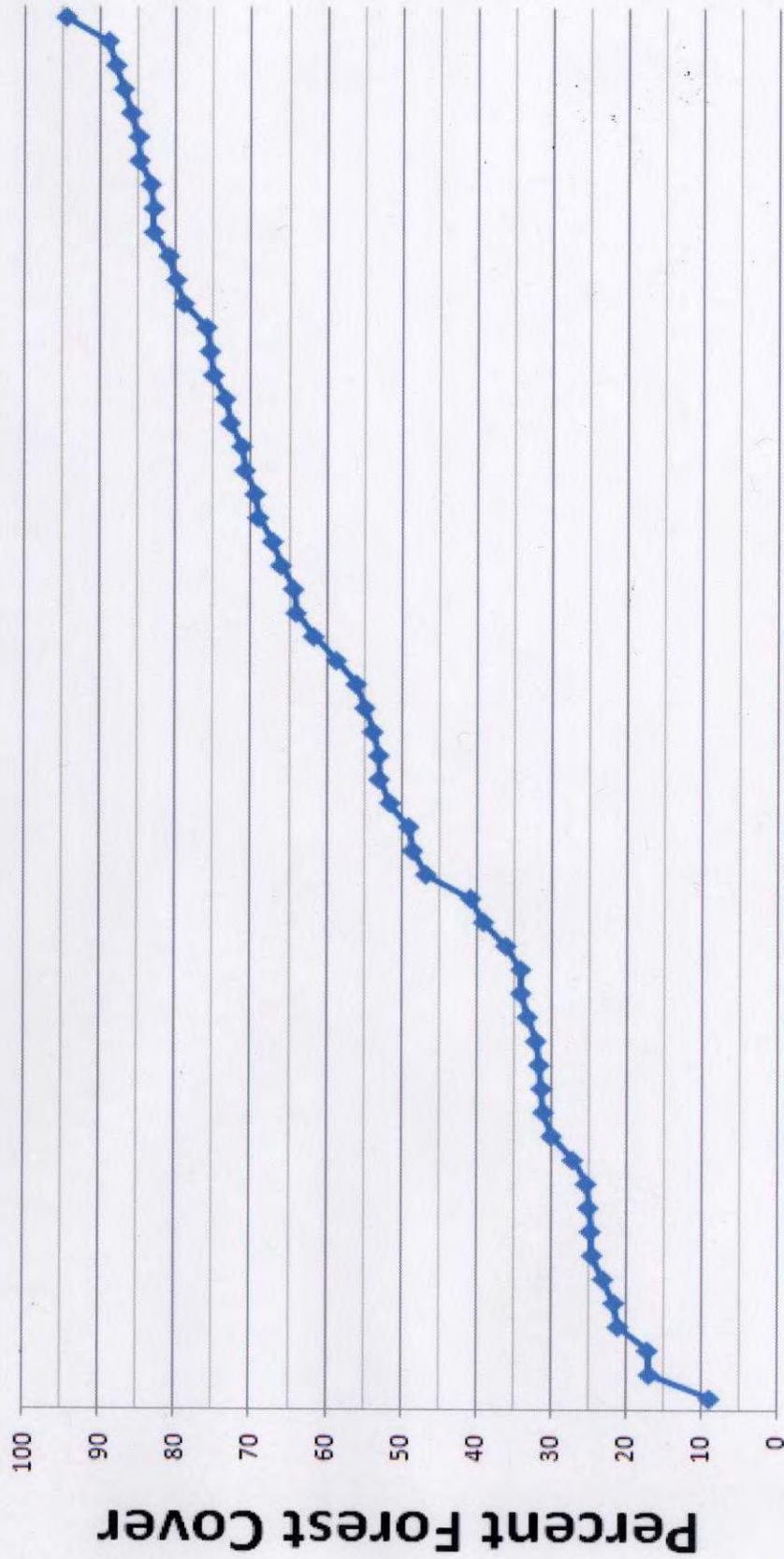


http://www.uky.edu/KentuckyAtlas/kentucky/physiographic/map/568_243

Internet

APPENDIX B

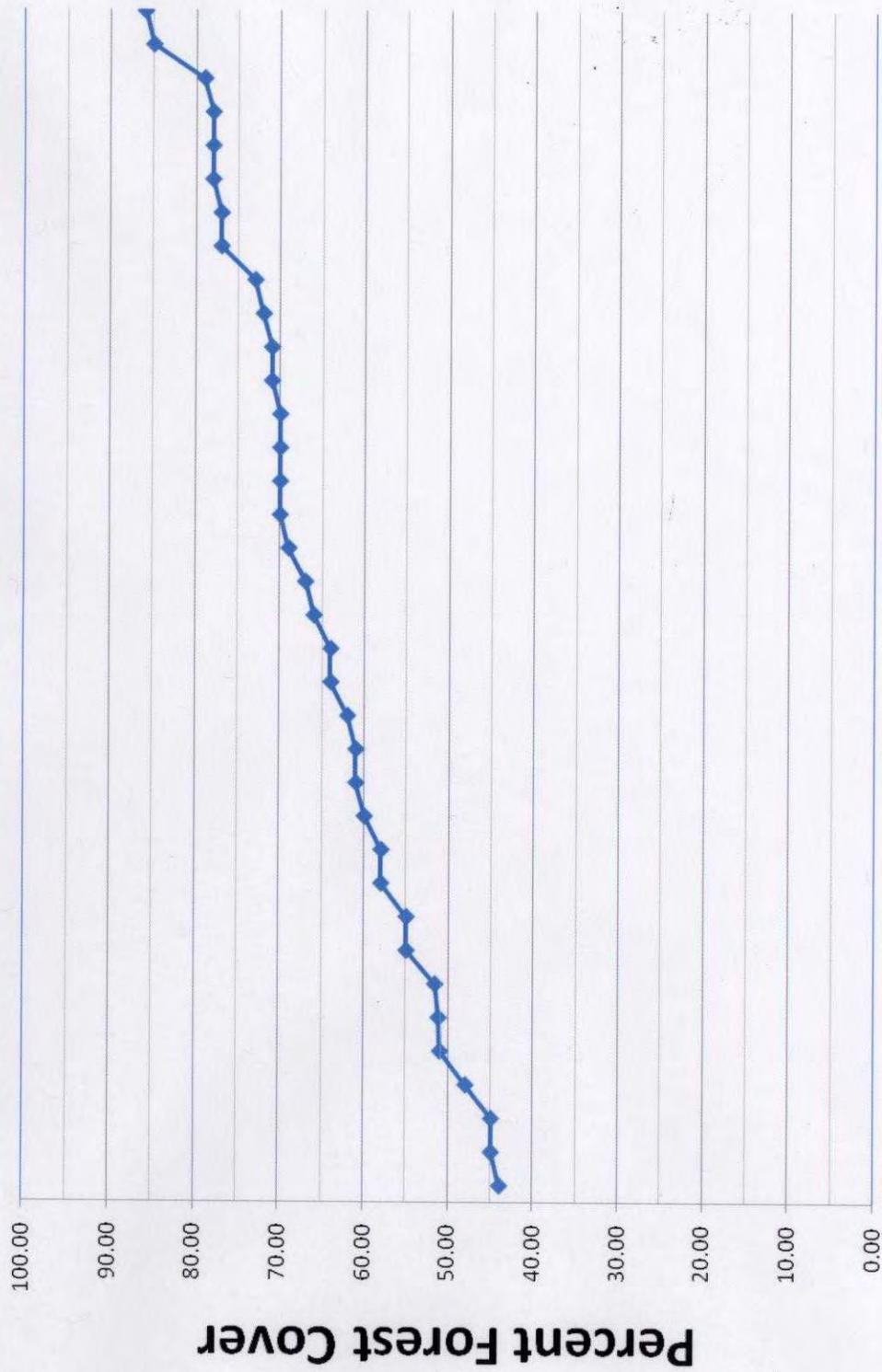
Habitat Availability in Known Maternity Areas



Maternity Colonies

APPENDIX C

Habitat Availability at Priority 1 & 2 Hibernacula



APPENDIX D

Mitigation Multiplier by Habitat Type and Season

	November 15 – March 31 (all habitats unoccupied)	April 1 – August 15 (swarming unoccupied*; potential, maternity** & non-maternity occupied)	August 16 – October 14 (swarming & potential occupied; maternity & non- maternity unoccupied)	October 15 – November 14 (swarming occupied; potential, maternity & non-maternity unoccupied)
Known maternity + P1&2 swarming	2.5	3.0 (4.0)*	3.5	3.5
Known maternity + P3&4 swarming	2.0	2.5 (3.5)*	3.0	3.0
Known non-maternity + P1&2 swarming	2.0	2.5 (3.5)*	3.0	3.0
Known non-maternity + P3&4 swarming	1.5	2.0 (3.0)*	2.5	2.5
Swarming P1&2	1.5	2.0 (3.0)*	2.5	2.5
Swarming P3&4	1.0	1.5 (2.5)*	2.0	2.0
Known maternity	1.5	2.0	1.5	1.5
Known non-maternity	1.0	1.5	1.0	1.0
Potential	0.5	1.0	1.0	0.5

*Spring emergence occurs close to the hibernacula entrances in the early spring with females emerging in early to mid-April and males emerging in late April – early May. Swarming habitat within 1 mile of P1 and P2 hibernacula entrances and within ½ mile of P3 and P4 hibernacula entrances will be considered occupied between April 1 and May 14. Projects within these areas require project-specific evaluation by the Service and may require additional mitigation, please see page 7 for more information.

** Projects within known maternity habitat that occur from June 1 through July 31 require project-specific evaluation by the Service, please see page 7 for more information



**KENTUCKY DEPARTMENT OF FISH & WILDLIFE RESOURCES
TOURISM, ARTS, AND HERITAGE CABINET**

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Marcheta Sparrow
Secretary

Dr. Jonathan W. Gassett
Commissioner

19 April 2011

TTL Associates, Inc.
44265 Plymouth Oak Boulevard
Plymouth, Michigan 48170
ATTN: Paul J. Jackson, Environmental Scientist

RE: Intergovernmental and Interagency Coordination of Environmental Planning for the:
Department of Veterans Affairs (VA)
Proposed VA Medical Center
25 or More Acres on One of Five Potential Sites
Louisville – Jefferson County, Kentucky

Dear Mr. Jackson:

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has received your request for information regarding the subject project. The Kentucky Fish and Wildlife Information System indicates that the following federally and state-listed species are known to occur within one mile, as specified in the request letter, of the project sites:

Brownsboro Site: No listed species, however this site falls within known Indiana bat (*Myotis sodalis*) summer maternity habitat and is considered a sensitive area for this species. These sensitive areas require coordination with the US Fish and Wildlife Service Kentucky Field Office (502-695-0468) prior to construction. This species uses trees (dead, dying, or alive) as summer roosting habitat, with larger trees containing sloughing bark being the most suitable.

Fegenbush Site: State-endangered Louisville Crayfish (*Orconectes jeffersoni*) and Bousfield's Amphipod (*Gammarus bousfieldi*). The Fern Creek flows within the boundaries of the project area, and any impacts to this stream must be addressed and permits obtained through the Kentucky Division of Water and the U.S. Army Corps of Engineers.

St. Joseph Site: No listed species, but impacts to streams and wetlands should be addressed if deemed necessary.

Downtown Site: Federally-protected Peregrine Falcon (*Falco peregrinus*), the state-endangered Great Egret (*Ardea alba*), and the state-threatened Kirtland's Snake (*Clonophis kirtlandii*) and Black-crowned Night Heron (*Nycticorax nycticorax*)

Existing (Robley Rex) VAMC Site: Louisville Crayfish, also within sensitive habitat for the Indiana bat.

Please be aware that our database system is a dynamic one that only represents our current knowledge of various species distributions. To minimize indirect impacts to aquatic resources, strict erosion control measures should be developed and implemented prior to construction to minimize siltation into streams and storm water drainage systems located within the project area. Such erosion control measures may include, but are not limited to silt fences, staked straw bales, brush barriers, sediment basins, and diversion ditches. Erosion control measures will need to be installed prior to construction and should be inspected and repaired regularly as needed.

I hope this information is helpful to you, and if you have questions or require additional information, please call me at (502) 564-7109 extension 4453.

Sincerely,



Dan Stoelb
Wildlife Biologist

Cc: Environmental Section File

From: Ted Pullen, Director of Metro Public Works and Assets

05-06-11

St. Joseph Site

With this being a Greenfield site, we have several concerns. First is the conversion of currently pervious area in to non-pervious surface area. As well as drainage concerns, there are several endangered species of plants, such as Running Buffalo Clover, that have been documented in this county. Additionally, Indiana Bats also have been found in many wooded areas in Jefferson County. The site has potential to be Prime and Unique Farmland. Additionally a blue line stream crosses the site. The site is in close proximity to several residential areas.

The transportation infrastructure in this area is totally inadequate to handle the traffic volumes for such a development. Major improvements to roads and intersections leading into the development would be required as part of developing this site. These improvements would likely include improvements to the I-265 Interchange at Old LaGrange Road, the intersection of Old LaGrange road and Factory Lane, and construction of a connector road to Old Henry Road.



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 31, 2011

Mr. Paul Jackson
Environmental Scientist
44265 Plymouth Oaks Boulevard
Plymouth, Michigan 48170

Re: FWS 2011-B-0610; TTL Associates, Inc., Proposed Department of Veterans Affairs (VA) Medical Center to be located within One of Five Potential Sites in Jefferson County, Kentucky

Dear Mr. Jackson:

The U.S. Fish and Wildlife Service (Service) has reviewed your correspondence of April 15, 2011 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.

We understand that the VA is in the process of evaluating five potential sites for the construction and operation of a VA Medical Center (VAMC). All of the five sites that are under consideration are located within Jefferson County, Kentucky. The five sites are identified as the Brownsboro Site, Fegenbush Site, St. Joseph Site, Downtown Site, and the Existing (Robley Rex) VAMC Site.

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.

<u>Common Name</u>	<u>Scientific Name</u>	<u>Federal Status</u>
Indiana bat	<i>Myotis sodalis</i>	endangered
running buffalo clover	<i>Trifolium stoloniferum</i>	endangered
Kentucky glade cress	<i>Leavenworthia exigua</i> var. <i>lacinata</i>	candidate

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.

Downtown Site

Aerial imagery of the Downtown Site indicates that this site does not contain habitat that coincides with the habitat that is required for any of the aforementioned species. Therefore, we believe that if the Downtown Site is the selected location for the proposed VAMC, the proposed project would not likely adversely affect federally listed species.

Indiana bat

Brownsboro Site and Existing Robley Rex Site

The Brownsboro Site and the Existing Robley Rex Site are situated within the home range of a known Indiana bat maternity colony. “Maternity habitat” refers to suitable summer habitat used by juveniles, and reproductive (pregnant, lactating, or post-lactating) females, and is an essential component of the Indiana bat’s lifecycle. Female Indiana bats become pregnant in spring soon after they emerge from their hibernacula, which are usually caves, rockshelters, and mines. The pregnant females migrate to their maternity habitat, forming colonies of up to 100 or more individuals, and roost on “suitable roost trees”. A “suitable roost tree” is any tree (live or dead) with a diameter- at- breast- height (DBH) of 5-inches or greater that exhibits any of the following characteristics: exfoliating bark, crevices or cracks. Trees with a DBH of 5-inches or greater and are not “suitable roost trees”, as previously defined, still serve as foraging habitat for the Indiana bat. Each female in the colony gives birth to one pup per year. The young bats are nursed by the mother, who leaves the roost tree only to forage for food. The young stay with the maternity colony throughout their first summer.

Typically for a project of this nature, the Service would recommend seasonal tree clearing or the completion of a mist net survey before construction activities take place. Mist net surveys provide presence/absence information; however, we already know that the Indiana bats are present and that the project area falls within a maternity colony and a swarming range of a known hibernacula. We do not believe a survey is necessary for the proposed project. Also, seasonal tree clearing could result in indirect and/or cumulative effects to the bats utilizing this maternity colony and overlapping swarming range through changes to the landscape and the removal of potential foraging and roosting habitat while the bats are hibernating, so even seasonal removal of habitat is likely to result in significant or non-discountable effects to the Indiana bat. Due to these concerns, we cannot concur with a determination of not likely to adversely affect for the Indiana bat at this time.

In order to address these concerns and be in compliance with the ESA, we recommend one of the following options:

- 1) The project proponent can further modify the proposed project to eliminate impacts to Indiana bat habitat and thus avoid impacts;

2) The project proponent can request formal section 7 consultation through the lead Federal Action Agency associated with the proposed project; or

3) The project proponent may choose to enter into a Conservation Memorandum of Agreement (MOA) with the Service to account for the incidental take of Indiana bats. 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 that are described in the Indiana Bat Mitigation Guidance for the Commonwealth of Kentucky. For additional information about this option, please notify our office.

Fegenbush Site and St. Joseph Site

The Fegenbush and St. Joseph Sites are situated within potential Indiana bat habitat. The aforementioned recommendations, regarding the Indiana bat, apply to these areas, except that the project proponent could remove trees in these areas in between the dates of October 15th through March 31st without additional mitigation.

Running Buffalo Clover

Existing Robley Rex Site, Fegenbush Site, and St. Joseph Site

Running buffalo clover may occur within the Existing Robley Rex Site, Fegenbush Site, and St. Joseph Sites. This plant species requires periodic, moderate disturbances to reduce competition and maintain open or semi-open habitat conditions. Disturbed areas such as old pastures, moderately grazed fields, road rights-of-way, and power line rights-of-way that are mechanically maintained are known to provide suitable habitat for these species. Additionally, running buffalo clover is known to occur in habitats ranging from stream banks and low mesic (moderately moist) forests to lawns and cemeteries. If the proposed project(s) require alteration of habitat that coincides with the habitat required for this species, an on-site inspection or survey of the area must be conducted to determine if the listed species is present or occurs seasonally. Prior to construction activities including tree clearing, a survey should be done by qualified personnel and be conducted during the appropriate time of day and/or year to ensure confidence in survey results. Please notify this office with the results of any surveys and an analysis of the “effects of the action,” as defined by 50 CFR 402.02 on any listed species including consideration of direct, indirect, and cumulative effects.

A survey for running buffalo clover would not be necessary if sufficient site-specific information was available that showed that: (1) there is no potentially suitable habitat within the project area or its vicinity or (2) the species would not be present within the project area or its vicinity due to site-specific factors.

Kentucky glade cress

Fegenbush Site

Kentucky glade cress may occur within the Fegenbush Site. Kentucky glade cress is federally listed as a candidate species. This rare plant species is only known to occur in Bullitt County and Jefferson County, Kentucky. It grows in small depressions of exposed bedrock that are in

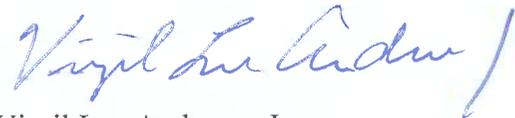
full sun on flat bedded outcrops of limestone in shallow soils of glades, rock outcrops, pastures and lawns. This habitat is sometimes present along ROWs. The Service requests that the VA voluntarily commit to ensuring that the proposed project does not impact potential or identified Kentucky glade cress habitat. The Service believes this measure would significantly contribute to the conservation and restoration of Kentucky glade cress; and, may prevent the species from becoming listed as endangered or threatened.

Kentucky glade cress is a federal candidate species, which means the Service has sufficient information on its biological status and threats to propose Kentucky glade cress as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities. Candidate species receive no statutory protection under the ESA. The Service encourages cooperative conservation efforts for these species because they are, by definition, species that may warrant future protection under the ESA.

Addressing the needs of Kentucky glade cress before the regulatory requirements associated with a listed threatened or endangered species come into play, would allow the VA, landowners, and other entities greater management flexibility to stabilize or restore the species and its habitat for future projects. In addition, as such threats are reduced and populations are increased or stabilized, priority for listing can be shifted to those species in greatest need of the ESA's protective measures. Ideally, sufficient threats can be removed to eliminate the need for listing.

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,

A handwritten signature in blue ink that reads "Virgil Lee Andrews, Jr." with a stylized flourish at the end.

Virgil Lee Andrews, Jr.
Field Supervisor

ATTACHMENT B
SITE PHOTOGRAPHS



Photo #1:	Looking north at Area 1
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Photo #2:	Typical trees in Area 1
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Photo #3:	Typical tree in Area 1
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Photo #4:	Typical trees in Area 1
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Photo #5:	Typical trees in Area 1
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Photo #6:	Looking northwest at Area 1
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Photo #7:	Looking northwest at the southwest corner of Area 2
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Photo #8:	Typical trees in Area 2
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Photo #9:	Typical trees in Area 2
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Photo #10:	Looking north along the northern portion of the eastern boundary
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Photo #11:	Typical tree along the eastern boundary
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Photo #12:	Looking south at Area 3
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Photo #13: Looking south at Area 3



Photo #14: Looking southwest at Area 3



Photo #15: Looking east at Area 3



Photo #16: Looking east at Area 3



Photo #17: Looking west at Area W3



Photo #18: Looking east at Area W3



Photo #19:	Looking southeast at Area W3
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Photo #20:	Looking southwest at Area W3
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Photo #21:	Looking southeast at the lone tree east of Area W3
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Photo #22:	Typical groundcover vegetation in potential Running Buffalo Clover areas
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Photo #23:	Typical groundcover vegetation in potential Running Buffalo Clover areas
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Photo #24:	Typical groundcover vegetation in potential Running Buffalo Clover areas
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