Document Type: EA-Administrative Record
Index Field: Environmental Document
Project Name: ED Grant – Logan County, KY
Project Number: 2016-5

ECONOMIC DEVELOPMENT GRANT FOR SITE IMPROVEMENTS AT WEST INDUSTRIAL PARK ENVIRONMENTAL ASSESSMENT

Logan County, Kentucky

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August 2016

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Purpose and Need for Action

An integral part of the Tennessee Valley Authority's (TVA's) mission is to promote the economic development of the TVA Valley region. TVA provides financial assistance to communities to help them bring new improved sites and facilities to market and to position communities to compete successfully for new jobs and investment. TVA needs to make a decision about providing a grant to the Logan Economic Alliance for Development (LEAD) for improvements to the existing zoned West Industrial Park in order to enhance the marketability and facilitate the development of the site located in Logan County, Kentucky. While future prospects for the site are not known at this time, TVA is preparing an environmental assessment to assess the environmental impacts of providing such financial assistance to LEAD.

Proposed Action

TVA proposes to provide a grant to LEAD for improvements to the existing zoned West Industrial Park located in Logan County, Kentucky (Figure 1). LEAD has recently proposed to purchase an additional 20 acres which will increase the West Industrial Park from 140 acres to 160 acres. TVA funding would be used to complete a boundary survey on the new parcel and clear any standing timber present on the 20 acre parcel. In addition, TVA funding would be used to clear an approximately 20 acre overgrown area on the existing 140 acre park and improve the existing entrance road by widening the road and installing signage (Figure 2).

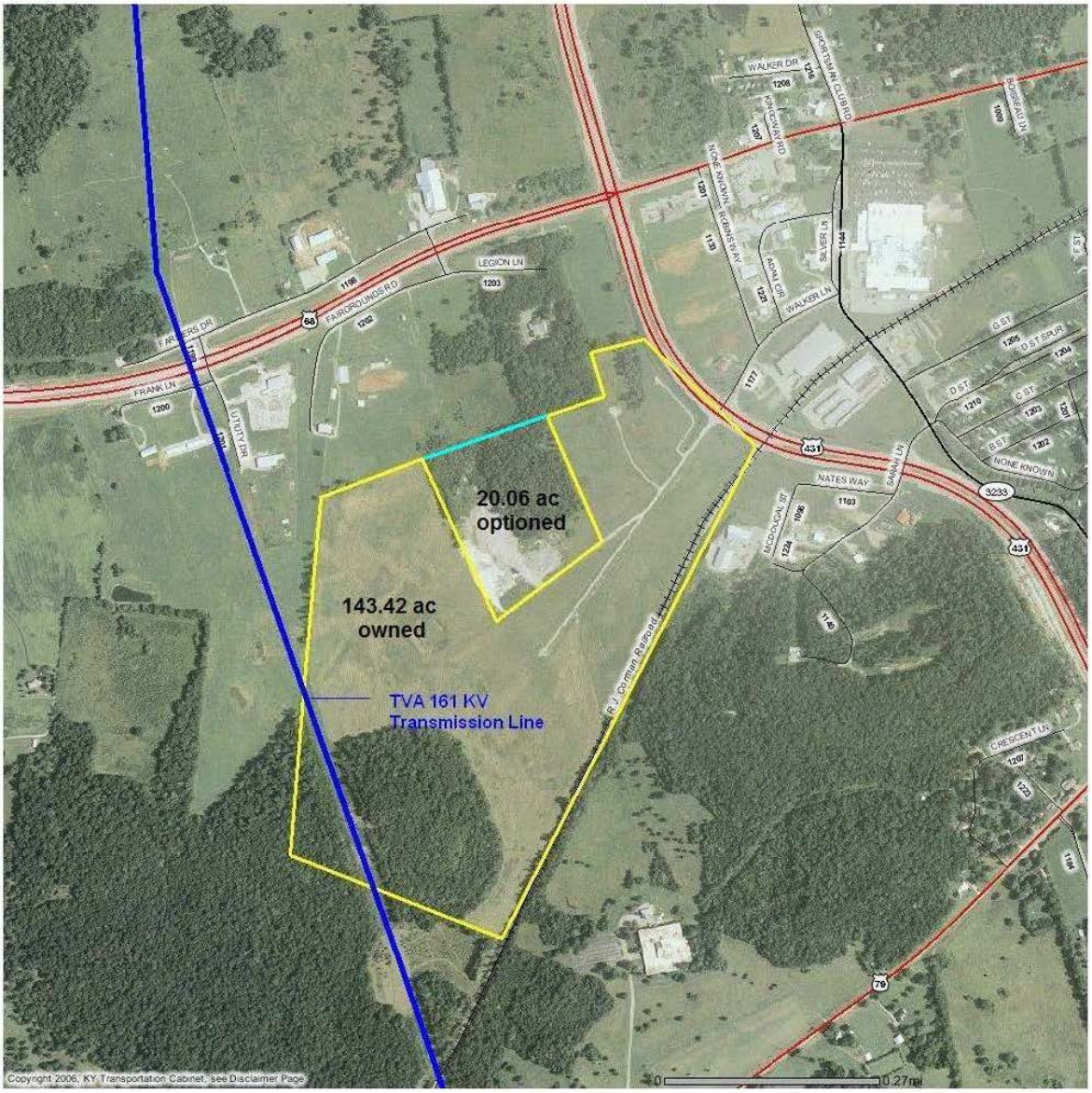

Figure 1. Location map of the Logan County West Industrial Park, including the approximately 20 acre option

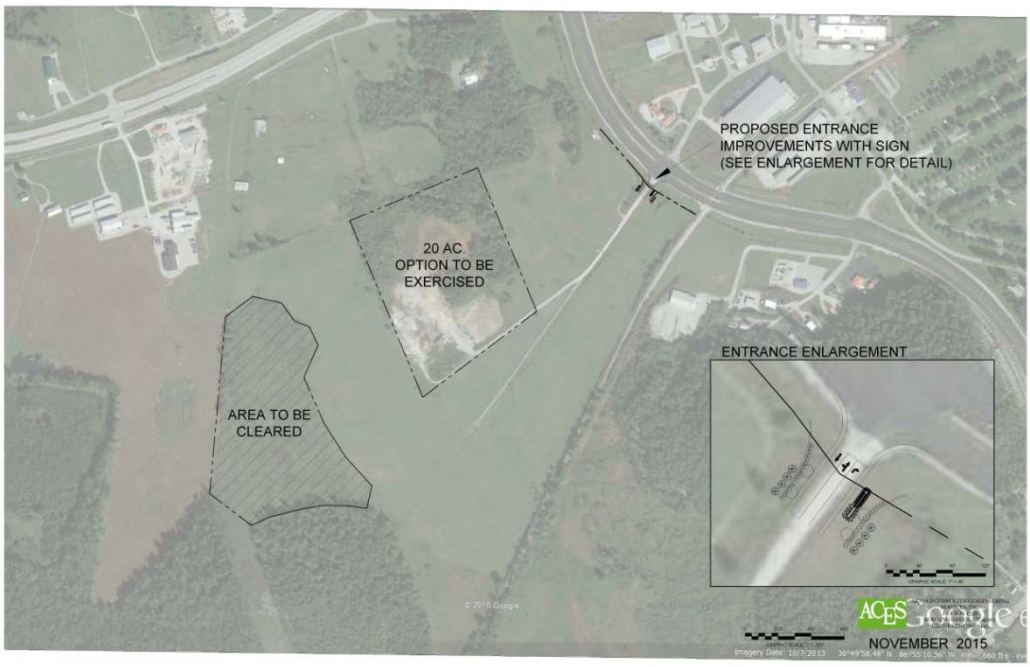

Figure 2. Aerial of the proposed actions

Other Environmental Reviews and Documentation

A Phase I Environmental Site Assessment of the West Industrial Park property was performed consistent with the procedures included in ASTM E 1527-13 (Standard Practice for Environmental Site Assessments) by Arnold Consulting Engineering Services, Inc. in May 2014. The primary purpose of this study was to determine if there were any environmental concerns or environmental liabilities on the subject property. The Phase 1 assessment revealed several abandoned drums and 5 gallon buckets as well as an apparent trash dumping area within the subject property. Arnold Consulting Engineering Services recommended that the drums, buckets, and trash be removed and disposed of properly. No known historical or suspected controlled, recognized environmental conditions associated with the property were identified.

TVA conducted an onsite survey of the proposed project area in May 2016 to identify sensitive environmental resources. No wetlands were identified within the proposed project area. Suitable summer habitat for Indiana and northern long-eared bats exists within the forested areas of the site. One portion of the current West Industrial Park property contains a limestone cedar glade within which the state-endangered plant species limestone fameflower occurs. This glade and the limestone fameflower does not occur within the proposed action area, it is located within other portions of the West Industrial Park.

The majority of the West Industrial Park property has been subject to a Phase I archaeological survey by Arrow Enterprise (Schock 2001) associated with the original 140 acre industrial site. In response to the Phase I archaeological survey, a Phase II archaeological survey was completed on one site identified during the Phase I survey with the result that no further investigations were recommended at that site. TVA contracted with Amec Foster Wheeler (AMEC) to conduct a Phase I cultural resources survey of the additional 13.3 acre area that was not covered in the 2001 Phase I survey and to revisit the

previously identified sites to verify the previous findings (Martin 2016). No newly identified archaeological resources were found within the 13.3 acre parcel. Within the previously recorded boundaries of one of the sites in the 2001 survey (15LO200), AMEC identified a small stone outbuilding and Civil War era grave marker. AMEC also identified several possible depressions located in a north-south line near the present location of the grave marker.

Permits, Licenses, and Approvals

The provision of economic development assistance to LEAD for the proposed activities is not subject to any TVA permits or licenses; however, the actions to be undertaken by LEAD could require the following permits:

- A general construction storm water permit would be needed since more than one acre would be disturbed. This permit also requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP would identify specific best management practices (BMPs) to address construction-related activities that would be adopted to minimize sedimentation during and following ground-disturbing activities. With proper implementation of these controls any impacts to surface waters are expected to be minor and temporary. No cumulative impacts are anticipated.

- U.S. Army Corps of Engineers 404 permits would be obtained for any stream alterations located within the project area and the terms and conditions of these permits would require mitigation from the proposed activities. Appropriate BMPs would be implemented during construction, operation, and maintenance of the proposed project. Thus, any direct, indirect, or cumulative impacts to aquatic ecology resulting from the proposed action would be temporary and insignificant.

LEAD is responsible for ensuring the proposed work is conducted in an environmentally responsible manner, including securing all necessary federal, state, and local permits and licenses, and implementing appropriate construction BMPs. LEAD is also responsible for ensuring that its contractors implement appropriate precautionary measures to prevent spills or accidental releases of fuels, lubricants, petroleum products, or other materials or chemicals. TVA assumes that LEAD will comply with all applicable federal, state, and local laws and regulations in undertaking the proposed site preparations.

Alternatives

TVA has determined that from the standpoint of the National Environmental Policy Act (NEPA), there are two alternatives available to TVA: the No Action Alternative and the Action Alternative.

No Action Alternative – Alternative A

Under the No Action Alternative, TVA would not provide the requested funding to LEAD. In this event, LEAD could seek alternative funding or not complete the project. If the project were not completed, the eventual development of the site could be delayed and West Industrial Park could lose prospective developers interested in a prepared site. However, LEAD may decide to develop the West Industrial Park without TVA assistance. Any

eventual development of the site would result in environmental consequences similar to the Action Alternative.

Action Alternative – Alternative B

Under the Action Alternative, TVA would provide the requested funding to LEAD for the proposed project. The West Industrial Park would be expanded by 20 acres, selected vegetation would be cleared, and the entrance road would be expanded. In the long-term, LEAD would determine how to develop the West Industrial Park. Activities associated with the likely eventual build-out, occupation, and future use of the site are considered beyond the scope of the environmental review as no plans currently exist for such future activities.

Preferred Alternative

TVA's preferred alternative is the Action Alternative, Alternative B. While the development of the West Industrial Park is expected to occur under either alternative, adopting Alternative B would improve the park in the near-term, potentially facilitating the development of industrial or commercial businesses, and supporting economic development.

Affected Environment and Anticipated Impacts

Site Description

The subject property consists of a large tract of land which lies along the south side of Hopkinsville Road (US 68/80) and west side of the US 68/80 Bypass. The property also lies along the north side of the railroad. Currently the tract is used for agricultural purposes. Surrounding land uses are primarily agricultural and industrial with some scattered residential uses.

In general the West Industrial Park has a gently sloping topography. A knoll is located in the southwestern portion of the West Industrial Park and the remainder of the property tends to slope to down to the north and east.

Impacts Evaluated

The development of the proposed project area is anticipated to result in few, if any, immediate, direct environmental effects. The following resources have the potential to be directly or indirectly affected by implementing the Action Alternative:

- Water Resources and Water Quality
- Aquatic Resources
- Terrestrial Resources
- Threatened and Endangered Species
- Wetlands
- Prime Farmland
- Cultural Resources
- Socioeconomics and Environmental Justice
- Air Quality
- Aesthetics
- Waste Materials

The detailed analysis focuses on those resource areas above that have the potential for significant impacts or those that typically interest the public. TVA determined there would be no impacts for the following resource areas:

- *Land Use:* The majority of the proposed project site is already designated for the West Industrial Park. The additional 20 acre parcel is surrounded on three sides by the West Industrial Park. This parcel is partially disturbed and is classified in the National Land Cover Database as developed, medium intensity. While some clearing would occur on this parcel and within the West Industrial Park, no impacts to Land Use are anticipated.

- *Recreation:* No public or private recreation facilities have been identified within 0.5-mile of the proposed project site. No known recreation activities occur within the proposed action area. Therefore, no impacts to recreation resources are foreseeable.

- *Floodplains:* There are no mapped 100-year (subject to a one-percent annual chance of flooding) floodplains in the 20-acre parcel or the West Industrial Park. Therefore, there would be no impacts to floodplains due to the proposed project

- *Navigation:* No navigable rivers are located within 2-miles of the subject property. Because no clearing or demolition would occur near navigable rivers, undertaking the proposed project would not affect navigation interests.

- *Transportation:* The majority of the proposed project site is already designated for the West Industrial Park. Both the construction and the likely future operations activities associated with the grant-related activities would be within the expected traffic levels associated with the construction and operation of the West Industrial Park. Therefore, there would be no anticipated impacts to transportation in association with the proposed action.

- *Noise:* The West Industrial Park property is currently undeveloped. It is primarily in a rural setting with some surrounding industrial and commercial land uses and bounded on the east/northeast by the US 68/80 Bypass. While overall noise levels across the property are consistent with typical rural activities, property closest to the bypass has somewhat elevated noise levels. Clearing and demolition would create some noise, mainly from construction equipment; however, noise levels are not expected to be excessive, and work would be conducted during normal working hours. No sensitive receptors (e.g., residences, schools, hospitals) are located adjacent to the area to be cleared. Noise attenuates with distance and enough distance separates the clearing site from nearby businesses so that overall, no significant noise-related impacts are anticipated.

Water Resources and Water Quality

The West Industrial Park lies within the Crawford-Mammoth Cave Uplands subregion of the greater Interior Plateau ecoregion (Woods et al. 2002), and is encompassed by the Mud River (0511000302) 10-digit HUC watershed. A May 2016 field survey of the project footprint documented three wet-weather conveyances / ephemeral streams within the 20 acre acquisition property. The surface water streams in the vicinity of this project are an unnamed tributary of Town Branch Creek and Dry Fork, an unnamed tributary of

Whipporwill Creek. One of these tributaries is located a few hundred feet north of the acquisition parcel, the other is located over 0.5 mile east of that parcel. Both of these streams are designated as warm water aquatic habitats. Precipitation in the general area of the proposed project averages about 51 inches per year. The average annual air temperature ranges from a monthly average of 44 degrees Fahrenheit in January to 89 degrees Fahrenheit in July (U.S. Climate Data 2016). Stream flow varies with rainfall and averages about 20.33 inches of runoff per year, i.e., approximately 1.50 cubic feet per second, per square mile of drainage area (USGS 2008).

The federal Clean Water Act requires all states to identify all waters where required pollution controls are not sufficient to attain or maintain applicable water quality standards and to establish priorities for the development of limits based on the severity of the pollution and the sensitivity of the established uses of those waters. States are required to submit reports to the U.S. Environmental Protection Agency (EPA). The term “303(d) list” refers to the list of impaired and threatened streams and water bodies identified by the state. Town Branch Creek (in the project vicinity) is listed on the Kentucky Department of Environmental Protection 303(d) list for impairment for Polychlorinated Biphenyls (PCBs) due to industrial point source discharge. Dry Fork is also listed on the 303(d) list for sedimentation/siltation due to silviculture harvesting; nitrate/nitrite and low DO due to crop production and livestock grazing and feeding; unrestricted cattle access and loss of riparian habitat (Kentucky Department of Environmental Protection 2012). The EPA has not developed total maximum daily loads for this stream. Additionally, all Kentucky waters are under a fish consumption advisory for mercury and no fish consumption should be from any portion of Town Branch in Logan County. (Kentucky Department of Fish and Wildlife Resources 2016).

In 2015, Earth Science Engineering, LLC conducted subsurface investigations at the West Industrial Park. The investigation report noted that karst terrain with bedrock that is susceptible to solutioning and sinkhole formation is present within the general project area. At the time and in the area of the investigation, no apparent voids or sudden drop of the drilling tools were noted during the field exploration; however Earth Science Engineering noted that the project area is prone to sinkhole risk (Earth Science Engineering 2015). The Arnold Consulting Engineering Services Phase I Environmental Site Assessment reports that according to the *Geology of the Russellville Quadrangle*, the area is underlain by Renault and Paint Creek Limestone. Both rock units are oolitic in nature. The Paint Creek Limestone is a limestone/shale mix (Arnold Consulting Engineering Services 2014).

Approximately 10 sinkholes were observed during field reviews of the project footprint in May 2016. These sinkholes are in forested fragments on the 20 acres recently purchased by LEAD and in forest fragments in the northeast corner of the proposed industrial park. Small openings typically covered in vegetation were observed at the bottom of several sinkholes suggesting these areas are supplied with inputs from groundwater. None of the subterranean holes at the bottom of these sink holes appeared very large. Most openings were covered in a significant amount of vegetation.

No Action Alternative: Under the No Action Alternative, TVA would not provide funding to LEAD for improvements to the existing West industrial Park in Logan County, Kentucky. If this grant were not provided it is assumed that the project would not proceed or would be delayed and therefore, no immediate environmental impacts to surface water or groundwater would occur. Changes to surface water and groundwater from natural processes would continue to occur. Should LEAD pursue future development of the site

with alternative funding sources, it would likely result in similar consequences to the Action Alternative.

Action Alternative: Under the Action Alternative, factors considered include potential impacts to and/or associated with surface runoff, domestic water use, equipment washing and dust control, and groundwater.

Surface Runoff - *C*onstruction activities have the potential to temporarily affect surface water via storm water runoff. Soil erosion and sedimentation can clog small streams and threaten aquatic life. LEAD would be obligated to comply with all appropriate federal, state and local permit requirements. Additionally, best construction practices include implementing appropriate BMPs and conducting project activities in a manner to ensure that waste materials are contained, and the introduction of pollution materials to the receiving waters is minimized. A general construction storm water permit would be needed since more than one acre would be disturbed. This permit would require the development and implementation of a SWPPP. The SWPPP would identify specific BMPs to address construction-related activities that LEAD would adopt to minimize storm water impacts. Proper implementation of these controls is expected to result in only minor temporary impacts to surface waters.

Impervious infrastructure prevents rain from percolating through the soil and may result in additional runoff of water and pollutants into storm drains, ditches, and streams. There would be a slight increase in impervious surfaces associated with widening the road. The permit requirements and application of BMPs will ensure that potential impacts associated with the related slight increase in stormwater runoff would be minor.

Domestic Sewage - Portable toilets would be provided for the construction workforce as needed. These toilets would be pumped out regularly, and the sewage would be transported by tanker truck to a publicly-owned wastewater treatment works that accepts pump out. Long term water and sewer service at the site would be supplied by the Town of Russellville, Kentucky and extraction of onsite groundwater for future water supplies is unlikely.

Equipment Washing and Dust Control – Equipment washing and dust control discharges would be handled in accordance with BMPs described in the Storm Water Pollution Prevention Plan for water-only cleaning.

Groundwater – Contamination of groundwater supplies can potentially occur from the introduction of contaminants into areas that serve as recharge areas for groundwater. Contaminants include soil sediment from construction, spilled fuel, petroleum products, and chemicals. The Arnold Consulting Engineering Services Phase I Environmental Site Assessment revealed no environmental concerns within a 0.5-mile radius of the site with the potential to impact groundwater (Arnold Consulting Engineering Services 2014). Use of stormwater and waste management BMPs would minimize these potential impacts. Given the facility status, distance, topography, and/or interpreted groundwater flow direction, potential impacts to groundwater associated with the Action Alternative are anticipated to be minor.

Over the long-term, several portions of the site are likely to be developed. Those long-term development activities would likely occur regardless of the TVA action. Long-term activities that could affect surface water and groundwater quality would be subject to state and

federal regulations, which would include the installation and maintenance of BMPs and therefore adverse impacts would not be anticipated. Water and sewer service at the site would be supplied by the Town of Russellville, Kentucky; therefore, extraction of onsite groundwater for future water supplies is unlikely. Thus, the proposed action is not expected to contribute to measurable cumulative impacts effects to water resources within the foreseeable future.

Biological Resources

Plants

Aerial photos, topographic maps, and a site visit indicate that the portions of the parcel where clearing would occur are comprised of a hayfield and a small section of heavily disturbed deciduous forest (about 9 acres). The herbaceous hayfield is heavily manipulated by frequent mowing, grazing, and other human-caused disturbance and possess no conservation value. The forested areas have all been previously cleared and are largely comprised of small trees less than 6 inches diameter at breast height.

While not within the areas where work funded by TVA would occur, one portion of the current West Industrial Park property contains a limestone cedar glade. Cedar glades, one of the more distinctive rare plant communities in the region, are a unique mixed grassland/forest vegetation type that are characterized by a mosaic of limestone outcroppings surrounded by gravel and/or very thin soil. Eastern red-cedar and other stunted hardwood species generally occur around the periphery of individual glades, which are often wet in the winter and very dry in the summer. Glade communities are rich in endemic plant species that grow in no other habitat (Baskin and Baskin 2002; Baskin and Baskin 1989).

Executive Order 13112 serves to prevent the introduction of invasive species and provides for their control to minimize the economic, ecological, and human health impacts that those species potentially cause. In this context, invasive species are nonnative species that invade natural areas, displace native species, and degrade ecological communities or ecosystem processes (Miller 2010). All areas where work would occur are dominated by invasive species, which reflects the frequency and magnitude of disturbance present on site. Disturbances associated with activities, such as agriculture, can encourage invasion and establishment of weedy plants.

No Action Alternative: Under the No Action Alternative, TVA would not provide the grant and portions of the West Industrial Park, including the limestone cedar glade, would remain in their current condition for some length of time. Changes to local plant communities resulting from natural ecological processes and human-related disturbance would continue to occur. Adoption of the No Action Alternative would not affect the terrestrial ecology of the region. Should LEAD pursue future development of the site with alternative funding sources, it would likely result in similar consequences to the Action Alternative.

Action Alternative: Adoption of the Action Alternative would not significantly affect the terrestrial ecology of the region. While some additional disturbance of the West Industrial Park would occur, areas to be disturbed have a high proportion of invasive plant species, do not support intact native plant communities, and possess no conservation value. TVA's decision to fund the grant would not result in direct impacts to the cedar glade. Future development of the site is at the discretion of the developer. The cedar glade is located a top a small knoll and within a transmission line right of way. The remainder of the project

site is lower, flat terrain. Because of the topography and the presence of the transmission line, it is likely that the cedar glade could be easily avoided during any potential future site development. Therefore, impacts to the cedar glade are expected to be unlikely.

Terrestrial Ecology

Field reviews of the project site were performed in May 2016. Approximately 9 acres of the project footprint is forested habitat, while the remaining portion is primarily comprised primarily of early successional fields. The 20 acres recently purchased by LEAD has been disturbed by grading and laying gravel for parking. Within this parcel several open-canopy forest fragments occur around sinkholes. Additional landscape features within the project footprint consist of wet-weather conveyances and gravel roads.

Early successional fields offer habitat to a multitude of common bird species such as brown-headed cowbird, brown thrasher, common grackle, dickcissel, eastern bluebird, eastern kingbird, eastern meadowlark, field sparrow, grasshopper sparrow, house finch, and red-winged blackbird (National Geographic 2002, Stokes 1996). Mammals likely present in this habitat include bobcat, coyote, eastern cottontail, red fox, striped skunk, Virginia opossum (Kays and Wilson 2002; Reid 2006). Emergent wetlands and saturated wet weather conveyances within field settings provide habitat for common amphibians and reptiles. Amphibians likely present include American bullfrog, American toad, southern leopard frog, spring peeper, as well as upland chorus frog (Conant and Collins 1998). Reptiles with the potential to occur in the project area include black kingsnake, five-lined skink, black rat snake, and black racer (Conant and Collins 1998, Gibbons and Dorcas 2005).

Upland deciduous forests and forested edge habitat around fields within the project area provide habitat for an array of common terrestrial animal species. Birds typically found in this type of habitat include American robin, barred owl, blue jay, common yellowthroat, downy and hairy woodpecker, eastern phoebe, eastern kingbird, eastern towhee, eastern wood-pewee, hooded warbler, indigo bunting, pileated woodpecker, prairie warbler, red-eyed vireo, red-tailed hawk, tufted titmouse, white-breasted nuthatch, white-eyed vireo, yellow-billed cuckoo, and yellow-rumped warbler (National Geographic 2002, Stokes 1996). This area also provides foraging and roosting habitat for several species of bat, particularly in areas where the forest understory is more open. Some examples of bat species likely found within this habitat include big and little brown, eastern red, evening, hoary, Rafinesque's big-eared, silver-haired, and tricolored. Eastern chipmunk, eastern woodrat, white-footed mouse, and woodland vole are other mammals that may be present within this habitat (Kays and Wilson 2002, Reid 2006, Whittaker 1996). Eastern box turtle, eastern fence lizard, eastern garter snake, North American racer, rat snake, and ring-necked snake are common reptiles of these forests in the project region (Conant and Collins 1998, Gibbons and Dorcas 2005).

Review of the TVA Regional Natural Heritage database and data supplied by the Kentucky State Nature Preserves Commission on June 1, 2016, indicated that no caves, aggregations of migratory birds, or colonial wading bird colonies are known within three miles of the project footprint.

Approximately 10 sinkholes were observed during field reviews of the project footprint in May 2016. These sinkholes are in forested fragments on the 20 acres recently purchased by LEAD and in forest fragments in the northeast corner of the proposed industrial park. Small openings typically covered in vegetation were observed at the bottom of several

sinkholes suggesting these areas are supplied with inputs from groundwater. None of the subterranean holes at the bottom of these sink holes appeared very large. Most openings were covered in a significant amount of vegetation. Therefore bat roosting in these sink holes is not likely.

No Action Alternative: Under the No Action Alternative TVA would not provide funding for proposed actions. Trees, other vegetation, and soils would remain in place in their current state. The No Action Alternative would not result in any direct or indirect impacts to wildlife. Changes to local communities resulting from natural ecological processes and human-related disturbance would continue to occur. In the event that TVA does not provide funding, LEAD could seek alternative funding or not complete the project. If LEAD obtained alternative funding the overall environmental consequences would be similar to the Action Alternative.

Action Alternative: Under the Action Alternative, TVA would provide funding for the project. Approximately 17 acres of shrub habitat would be cleared along with approximately 9 acres of forest (mature and secondary growth). Any wildlife (primarily common, habituated species) found in forested areas or areas with secondary growth, brushy habitat would be permanently displaced when vegetation and trees are removed. Direct effects of forest removal within the project area may occur to some individuals that may be immobile during the time of project activities (i.e. juvenile animals or eggs). This could be the case if project activities took place during breeding/nesting seasons. However, the actions are not likely to affect populations of species common to the area, as abundant similar forested habitat exists in the surrounding landscape. Additionally, clearing of forested areas would be restricted to occur only from October 15 through March 31 of any given year to avoid potential impacts to threatened and endangered species of bats. This restriction would also protect common wildlife in the rea that nest/breed during this period. Thus, this would minimize the potential for impacts during breeding/nesting periods.

Project associated disturbances and habitat removal likely would force wildlife to move into surrounding areas in an attempt to find new food sources, shelter, and to reestablish territories. In the event that the surrounding areas are already overpopulated, further stress to wildlife populations could occur to those species presently utilizing these areas as well as those attempting to relocate. However, the proposed project area and surrounding landscape is highly fragmented and influenced by human activity. It includes fragmented forests, agricultural fields, residential homes from the town of Russellville, industrial buildings, highways, and county roads. Given the small size of the habitat that would be affected on the project site, and the small number of species likely to be present in that habitat, compared to the larger fragments of habitat available in the surrounding area, it is unlikely that the species currently occupying habitat surrounding the project footprint would be negatively impacted by the influx of a small number of new residents. It is expected that over time any displaced individuals able to utilize early successional habitat would return to the project area upon completion of actions.

Aquatic Ecology

The proposed project footprint lies within the Crawford-Mammoth Cave Uplands subregion of the greater Interior Plateau ecoregion (Woods et al. 2002), and is encompassed by the Mud River (0511000302) 10-digit HUC watershed. A May 2016 field survey of the project footprint documented three wet-weather conveyances / ephemeral streams. The Crawford-Mammoth Cave Uplands subregion of the greater Interior Plateau ecoregion is

characterized by sandstone cliffs, dissected shale valleys, and less dissected limestone valleys with well-developed karst. In valleys underlain by limestone, stream density is often low, while sinkholes, caverns, springs, and subterranean drainage are often common. Where present, upland streams have relatively high gradients and are typically cool, rocky, and clear. A combination of forests, pasture, and cropland form the majority of this ecoregion.

Channelization and removal of riparian areas comprised the primary stream impacts observed within the project footprint. The ephemeral streams encountered during a May 2016 field survey were small (less than two meters in width) headwater tributaries of Town Branch, which feeds the Mud River of the Green River drainage. As described previously, sinkholes have been observed at various locations on the site. Appropriate application of the BMPs minimizes the potential for impacts to water quality and instream habitat for aquatic organisms.

No Action Alternative: Under the No Action Alternative, TVA would not provide funding to LEAD for improvements to the existing West Industrial Park. No impacts to aquatic ecology would occur. Changes to aquatic ecology would likely occur within the watershed over the long term due to factors such as the continuation of agricultural and industrial activities, as well as population growth. Should LEAD pursue future development of the site with alternative funding sources, it would likely result in similar consequences to the Action Alternative.

Action Alternative: Under the Action Alternative, TVA would provide funding and the park would be expanded and some vegetation removed. Aquatic ecology could be affected by the proposed action. Impacts would either occur directly by the alteration of habitat conditions within watercourses present within the project footprint, or indirectly due to modification of the riparian zone and storm water runoff resulting from construction activities within the project footprint. Siltation has a detrimental effect on many aquatic animals adapted to riverine environments. Turbidity caused by suspended sediment can negatively impact spawning and feeding success of fish and mussel species (Brim Box and Mossa 1999; Sutherland et al. 2002).

LEAD would have to obtain applicable U.S. Army Corps of Engineers 404 permits for any ephemeral stream alterations located within the project area and the terms and conditions of these permits may require mitigation from the proposed activities. Likewise, LEAD would implement appropriate BMPs during site preparation for future development. Thus, any direct, indirect, or cumulative impacts to aquatic ecology resulting from the proposed action would be temporary and insignificant.

Threatened and Endangered Species

The Endangered Species Act provides broad protection for species of fish, wildlife, and plants that are listed as threatened or endangered in the United States or elsewhere.

The Act outlines procedures for federal agencies to follow when taking actions that may jeopardize federally listed species or their designated critical habitat. The policy of Congress is that federal agencies must seek to conserve endangered and threatened species and use their authorities in furtherance of the Act’s purposes. Endangered species are those that have been determined to be in danger of extinction throughout all or a significant portion of their range. Threatened species are those determined to likely become endangered within the foreseeable future. Section 7 of the Endangered Species Act

requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) when a proposed action may affect endangered or threatened species or Designated Critical Habitat.

The State of Kentucky provides protection for species considered threatened, endangered, or deemed in need of management within the state in addition to those listed under the federal Endangered Species Act. The listing is handled by the Kentucky State Nature Preserves Commission, and both the Commission and TVA maintain databases of aquatic animal species that are considered threatened, endangered, or of special concern in Kentucky.

Threatened and Endangered Plants

Review of the TVA Natural Heritage Database (queried June 2016) indicates that seven state-listed and no federally listed plant species have been previously documented within a 5-mile vicinity of the West Industrial Park in Logan County, Kentucky (Table 1). No federally listed plant species or designated critical habitat is known from Logan County, Kentucky. No habitat capable of supporting state or federally listed plant species occurs in areas where planned work would occur.The state-endangered plant species limestone fameflower occurs on the open cedar glade located in the southwest corner of the West Industrial Park property as discussed previously. Hundreds of individual limestone fameflower plants were observed in that area during a 2014 site visit. This globally rare plant species occurs only in cedar glades in small portions of Alabama, Kentucky, and Tennessee (NatureServe Explorer 2016).

Table 1. Plant species of conservation concern previously reported from within 5 miles of the West Industrial Park in Logan County, Kentucky.[1]

Common Name	Scientific Name	Federal Status[2]	State Status[2]	State Rank[3]
PLANTS				
Carolina Larkspur	*Delphinium carolinianum*	-	THR	S1S2
Upland Swamp Privet	*Forestiera ligustrina*	-	THR	S2S3
Necklace Glade-cress	*Leavenworthia torulosa*	-	THR	S2
Soft False Gromwell	*Onosmodium molle* ssp. *molle*	-	HIST	SH
Limestone Fameflower	*Phemeranthus calcaricus*	-	END	S1
White Heath Aster	*Symphyotrichum priceae*	-	END	S1
Eggleston's Violet	*Viola egglestonii*	-	SPCO	S3

[1] Source: TVA Regional Natural Heritage Database, queried by June 2016.
[2] Status Codes: END = Listed Endangered; HIST= Historical in Kentucky; SPCO = Listed Special Concern THR = Listed Threatened.
[3] State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; SH = Possibly Extirpated (Historical); S#S# = Denotes a range of ranks because the exact rarity of the element is uncertain (e.g., S1S2)

No Action Alternative: Adoption of the No Action Alternative would not impact state or federally listed plant species because no habitat capable of supporting listed species occurs in the area where planned work would occur. The state-endangered plant species

limestone fameflower would not be affected by implementation of the No Action Alternative. Future development of the West Industrial Park is at the discretion of the developer. Changes to local plant communities resulting from natural ecological processes and human-related disturbance would continue to occur, but the changes would not be the result of TVA's decision. Should LEAD pursue future development of the site with alternative funding sources, it would likely result in similar consequences to the Action Alternative.

Action Alternative: Adoption of the Action Alternative would not significantly impact state or federally listed plant species because no habitat capable of supporting listed species occurs in the area where planned work would occur. TVA's decision to fund the grant would not result in direct impacts to the limestone fameflower. Future development of the site is at the discretion of the developer. The cedar glade is located a top a small knoll and within a transmission line right of way. The remainder of the project site is lower, flat terrain. Because of the topography and the presence of the transmission line, it is likely that the cedar glade could be easily avoided during any potential future site development. Therefore, impacts to the limestone fameflower would be insignificant.

Threatened and Endangered Terrestrial Ecology

A review of the TVA Regional Heritage database and data supplied by the Kentucky State Nature Preserves Commission on June 1, 2016, showed no state-listed, federally listed, or federally protected terrestrial animal species within three miles of the project footprint. However, records of the federally listed Bachman's warbler, gray bat, and Indiana bat do occur in Logan County, Kentucky. In addition, the USFWS has determined that the federally threatened northern long-eared bat has the potential to occur throughout the state of Kentucky (Table 2). Thus, a review of habitat suitability for these species is included in this assessment.

Table 2. Federal and State-Listed Terrestrial Animal Species located within Logan County, Kentucky and other species of conservation concern documented within three miles of the project site [1]

Common Name	Scientific Name	Federal Status	State Status[2] (Rank[3])
Birds			
Bachman's Warbler[4]	*Vermivora bachmanii*	LE	--
Mammals			
Gray bat[4]	*Myotis grisescens*	LE	T(S2)
Northern long-eared bat[4]	*Myotis septentrionalis*	LT	E(S3)
Indiana bat[5]	*Myotis sodalis*	LE	E(S1S2)

[1] Source: TVA Regional Natural Heritage Database, extracted 6/1/2016; Kentucky State Nature Preserves Commission shared data, reviewed 6/1/2016; USFWS Information for Planning and Conservation (http://ecos.fws.gov/ipac/), accessed 6/1/2016; Kentucky Bat Working Group species occurrence maps (http://biology.eku.edu/bats.htm), accessed 6/1/2016.
[2] Status Codes: E = Endangered; LE = Listed Endangered; LT = Listed Threatened; T = Threatened.
[3] State Ranks: S1 = Critically Imperiled; S2 = Imperiled, S3 = Vulnerable.
[4] Federally listed species known from Logan County, but not within three miles of the project action area.
[5] Federally threatened species that the USFWS has determined that has the potential to exist state-wide, though no records are currently known from Logan County, Kentucky.

Bachman's warblers were occasional summer residents in Kentucky in the early 1900s. Several birds were collected in northern Logan County in 1906. Since then only unconfirmed reports of the species are known from the state in the 1960s. This species is thought to be extirpated from the state and is possibly extinct (Palmer-Ball Jr 1996, NatureServe 2016). Where this species still occurs, it is found in forested and scrub shrub wetlands, upland deciduous and pine wetlands, and secondary forests. Although a small amount of habitat exists for this species in the project footprint, this species is not likely to occur in the project area given that it is extirpated from the state and possibly an extinct species.

The gray bat inhabits caves throughout the year, migrating among different caves across seasons (Brady et al. 1982, Tuttle 1976). During summer, bats disperse from colonies at dusk to forage for insects over streams, rivers and reservoirs (Harvey 1992). One summer occurrence of gray bat exists approximately 7.6 miles from the project area. One small gray bat hibernacula has also been documented in a cave located approximately 10.7 miles from the proposed project footprint. No caves have been documented within a three-mile radius of the project footprint. Several sinkholes were observed in the project footprint during field reviews in May 2016. However none of these sinkholes appeared to be suitable for roosting bats (no air flow, small openings covered in vegetation unsuitable for bat navigation). Ephemeral foraging habitat and drinking water for gray bat exists in proposed project area over wet-weather conveyances.

Indiana bats hibernate in caves during winter and inhabits forest areas around these caves for swarming (mating) in the fall and staging in the spring, prior to migration to summer habitat. During summer, Indiana bats roost under exfoliating bark, and within cracks and crevices of trees, typically located in mature forests with an open understory and a nearby source of water. Indiana bats are known to change roost trees frequently throughout the season, yet still maintain site fidelity, returning to the same summer roosting areas in subsequent years (Pruitt and TeWinkel 2007, Kurta et al. 2002). A historical record of this species occurs approximately six miles from the project footprint. One Indiana bat was observed in a building at this location in 1963. The proposed project area does not occur in any known summer or winter habitat for Indiana bat (USFWS 2015a). No caves have been documented within a three-mile radius of the project footprint. Several sinkholes were observed in the project footprint during field reviews in May 2016. However none of these sinkholes appeared to be suitable for roosting bats (no air flow, small openings covered in vegetation unsuitable for bat navigation). No other winter roosting habitat was observed within the project footprint. Ephemeral foraging habitat and drinking water for Indiana bat exists in proposed project area over wet-weather conveyances. Additional foraging habitat exists over forested areas within the project footprint.

The northern long-eared bat predominantly overwinters in large hibernacula such as caves, abandoned mines, and cave-like structures. During the fall and spring they utilize entrances of caves and the surrounding forested areas for swarming and staging. In the summer, northern long-eared bats roost individually or in colonies beneath exfoliating bark or in crevices of both live and dead trees. Roost selection by northern long-eared bat is similar to Indiana bat, however it is thought that northern long-eared bats are more opportunistic in roost site selection. This species also is known to roost in abandoned buildings and under bridges. Northern long-eared bats emerge at dusk to forage below the canopy of mature forests on hillsides and roads, and occasionally over forest clearings and along riparian areas (USFWS 2014). The USFWS has determined that this species has the potential to occur statewide in Kentucky; however, no records are known from Logan County (USFWS

2014, 2015a, 2015b, KYBWG 2016). The closest known records of northern long-eared bat are greater than 20 miles away in Montgomery and Robertson Counties, Tennessee, and Warren, Butler and Muhlenberg Counties, Kentucky. No caves have been documented within a three-mile radius of the project footprint. Several sinkholes were observed in the project footprint during field reviews in May 2016. However none of these sinkholes appeared to be suitable for roosting bats (no air flow, small openings covered in vegetation unsuitable for bat navigation). No other suitable winter roosting structures occur within the project footprint. Ephemeral foraging habitat and drinking water for Indiana bat exists in proposed project area over wet-weather conveyances. Additional foraging habitat exists over forested areas within the project footprint.

Field review following the 2016 Indiana Bat Summer Survey Guidelines (USFWS 2016) in May 2016 indicated that approximately 16.4 acres of suitable summer roosting habitat for both Indiana bat and northern long-eared bat exists within the West Industrial Park and 20 acre acquisition property. These areas were comprised of white oaks, red oaks, chestnut oak, hickories, cedars, redbuds, maples, and snags. Suitability was determined by the presence of trees with exfoliating bark (typical white oaks, shagbark hickories, and snags) and density of the understory.

No Action Alternative: Under the No Action Alternative TVA would not provide funding for proposed actions. Environmental conditions would remain the same within the project areas. Changes to local communities resulting from natural ecological processes and human-related disturbance would continue to occur. Alternative A would not result in adverse impacts to protected terrestrial animal species or their habitats. If LEAD obtained alternative funding the overall environmental consequences would be similar to the Action Alternative.

Action Alternative: Under Action Alternative B, TVA would provide funding for the project. Approximately 17-acres of shrub habitat would be cleared along with approximately 6.7 acres of forest (mature and secondary growth). Activities associated with the eventual build-out, occupation, and future use of the site are beyond the scope of the environmental review as no plans currently exist for such future activities. Bachman's warbler is thought to be extirpated from Logan County, thus proposed actions would not impact this species.

No caves or other suitable winter hibernacula for gray bat, Indiana bat, and northern long-eared bat exists in the West Industrial Park and 20 acre acquisition property. Sinkholes in the project area are not suitable for roosting bats due to lack of airflow and impediment of entry into the entrance holes from vegetation. Winter roosting habitat for gray bat, Indiana bat, and northern long-eared bat would not be impacted by the proposed actions.

Foraging habitat for gray bat, Indiana bat and northern long-eared bat exists within the project footprint over bodies of water. When filled with water, wet-weather conveyances and one small wetland within the project footprint these provide sources of water and foraging for these bats. Use of BMPs around these bodies of water would prevent impacts to hydrology, making these waterbodies available for use by foraging bats during and after project actions.

Only portions of the forested habitat on the West Industrial Park and 20 acre acquisition property offer suitable foraging and summer roosting habitat for Indiana and northern long-eared bats. Approximately 2.3 acres of forest within the newly purchased 20 acre plot is primarily comprised of cedars, very young hardwood species (less than three inches in

diameter at breast height), privet, briars, and blackberry. This section of forest is very dense and would not provide optimal foraging or summer roosting habitat for Indiana or northern long-eared bat under the forest canopy due to high clutter hindering ease of travel and lack of suitable roosting trees. Removal of higher quality foraging habitat within the project footprint would result in loss of a relatively small amount of habitat for these bat species. Similarly forested habitat also is plentiful in the surrounding area. Removal of vegetation that may provide foraging habitat would have no measurable effect on foraging bats.

The remaining 4.4 acres of forest located in the 20 acre parcel is suitable for summer roosting and foraging Indiana and northern long-eared bats. Suitable summer roosting habitat in the 20 acre parcel is comprised of mature, deciduous forest dominated by hickory, red oaks, and maples. Habitat in the project footprint was identified as moderately suitable summer roosting habitat due to the presence of 20 snags with exfoliating bark and four live shagbark hickories. LEAD would remove this habitat only between October 15 and March 31 of any given year.

An additional 12 acres of suitable summer roosting habitat exits outside of the area of impact, most of which occurs in the mature, hardwood, forested habitat on the hillside at the western end of the project footprint. These forested areas would not be impacted by the proposed actions.

Consultation with USFWS was initiated on July 14, 2016 to address impacts to gray bat, Indiana bat, and northern long-eared bats. TVA determined that the proposed actions are not likely to adversely affect the gray bat. TVA also determined that proposed actions may have indirect adverse effects on northern long-eared bat that result in ‘take” as defined by the Endangered Species Act, and that this ‘take’ is excepted from ESA Section 9 Take Prohibitions per the 2016 Programmatic Biological Opinion on Final 4(d) Rule for Northern Long-Eared Bat and Activities Excepted from Take Provisions. TVA also proposed to enter into a Conservation Memoranda of Agreement with USFWS to address removal of summer roosting habitat for the Indiana Bat. In a letter dated August 2, 2016 the USFWS concurred with TVA’s species impact determinations and acknowledged that TVA’s responsibilities under Section 7(a)(2) of the Endangered Species Act have been fulfilled for this project. Therefore, impacts to threatened and endangered species associated with the proposed actions would be minor.

Threatened and Endangered Aquatic Ecology

A review of the TVA and Kentucky Natural Heritage Databases (May 31, 2016) indicated seven state-listed species (two crayfishes, three fishes, and two mussels) within the Mud River (0511000302) 10-digit HUC watershed of the proposed project and/or within Logan County, Kentucky and a 10-mile radius of the project footprint (Table 3). No federally listed species are known to occur within the aforementioned areas. Designated critical habitat for the federally threatened rabbitsfoot occurs in the Red River in Logan County, Kentucky, but is located outside of the Mud River (0511000302) 10-digit HUC watershed and greater than 10 miles from the proposed project area.

The Mammoth Cave crayfish is found in subterranean streams and is often subject to isolation and/or desiccation resulting from flooding events in multilevel watercourses (Hobbs et al. 1977). The Mud River crayfish occurs in creeks, and small rivers with cobble, gravel, and mud substrates, and is most commonly encountered in shallow riffles or amongst vegetation in slower moving areas (Taylor 2000). The pallid shiner typically

inhabits sandy and silty pools in medium to large rivers. The redspotted sunfish occurs in a variety of habitats including rivers, reservoirs, swamps, lowland streams, and oxbow lakes. The chestnut lamprey inhabits lakes and streams, and adults are known to ascend streams to spawn (Page and Burr 2011). Both the little spectaclecase and mountain creekshell typically occur in small streams and small to medium-sized rivers in substrates comprised of mud, sand, or gravel (Cicerello and Schuster 2003). Given the aforementioned habitat preferences, none of the watercourses documented within the proposed project area would provide suitable habitat for any of the aquatic species listed in Table 3. Therefore, given the lack of suitable habitat and the lack of records of occurrence, there would be no impacts to aquatic threatened and endangered species for either alternative.

Table 3. Records of Federal and State-listed aquatic animal species within the Mud River (0511000302) 10-digit HUC watershed and/or within Logan County, Kentucky and a 10-mile radius of the proposed project.[1]

Common Name	Scientific Name	Element Rank[2]	Federal Status[3]	State Status[3] (Rank)[4]
CRAYFISHES				
Mammoth Cave Crayfish	*Orconectes pellucidus*	E	-	S (S3)
Mud River Crayfish	*Orconectes ronaldi*	C	-	T (S2S3)
FISHES				
Chestnut Lamprey	*Ichthyomyzon castaneus*	H	-	S (S2)
Pallid Shiner	*Notropis amnis*	E	-	H (SH)
Redspotted Sunfish	*Lepomis miniatus*	E	-	T (S2)
MUSSELS				
Little Spectaclecase	*Villosa lienosa*	E	-	S (S3S4)
Mountain Creekshell	*Villosa vanuxemensis*	A	-	T (S2)

[1] Source: TVA Regional Natural Heritage Database, queried on 6/1/2016; Tennessee Natural Heritage Program; Kentucky State Nature Preserves Commission
[2] Heritage Element Occurrence Rank: A = Excellent estimated viability; C = Fair estimated viability; E = Verified extant; H = Historical
[3] Status Codes: H = Historical; S = Special Concern; T = Threatened
[4] State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S4 = Apparently Secure; SH = Historic, possibly extirpated

Wetlands

The U.S. Army Corps of Engineers regulates the discharge of fill material into waters of the United States, including wetlands pursuant to Section 404 of the Clean Water Act (33 USC 1344). Additionally, EO 11990 (Protection of Wetlands) requires federal agencies to avoid, to the extent possible, adverse impact to wetlands and to preserve and enhance their natural and beneficial values.

As defined in the Section 404 of the Clean Water Act, wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that 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. Wetlands and wetland fringe areas can also be found along the edges of many watercourses and impounded waters (both natural and man-

made). Wetland habitat provides valuable public benefits including flood storage, erosion control, water quality improvement, wildlife habitat, and recreation opportunities.

The West Industrial Park is located within the Western Pennyroyal Karst Plain subdivision of the Interior Plateau Ecoregion; wetlands in this area are typically associated with forested oak “flatwoods” and floodplains (Griffith et al. 2001).

A field survey conducted in May 2016 indicated there is one small scrub-shrub/emergent wetland located along an unnamed tributary to Town Branch (Figure 3). The tributary has been straightened along an existing road (Figure 4) and hydrology altered such that wetland vegetation has colonized shallow portions of the stream channel. The wetland is less than 0.10-acre in size, and exhibits wetland soil characteristics. Dominant vegetation includes tall fescue (*Schedonorus arundinacea),* black willow (*Salix nigra),* soft rush (*Juncus effusus)* and St. Johns wort (*Hypericum spp.).*

The TVA Rapid Assessment Method was used to assess wetland condition and identify wetlands with potential ecological significance (Mack 2001). Using the TVA Rapid Assessment Method, the wetland was classified as a Category 2 wetland (moderate quality).

No Action Alternative: Under the No Action Alternative TVA would not provide funding to LEAD. There would be no disturbance at the site and thus there would be no impacts to wetlands. LEAD could seek alternative funding or not complete the project. Changes to wetlands resulting from natural ecological processes would continue to occur. The likely eventual development of the site would result in environmental consequences similar to the Action Alternative.

Action Alternative: Under the Action Alternative TVA would provide funding for vegetation clearing and road improvements for the project. The wetland present on the site lies outside of the areas proposed for clearing and road improvements, thus there would be no direct impacts to wetlands associated with this alternative. There is the potential for minor, indirect effects on wetlands associated with sedimentation and land clearing. Appropriate BMPs will minimize these effects to an insignificant level. There will be no direct impacts to wetlands associated with this project, and overall cumulative impacts will be insignificant.

Impacts to wetlands could be associated with future site development. TVA will provide LEAD with site information showing the location of the existing wetland to enable LEAD to ensure future development of the site is in compliance with state and federal wetland regulations.

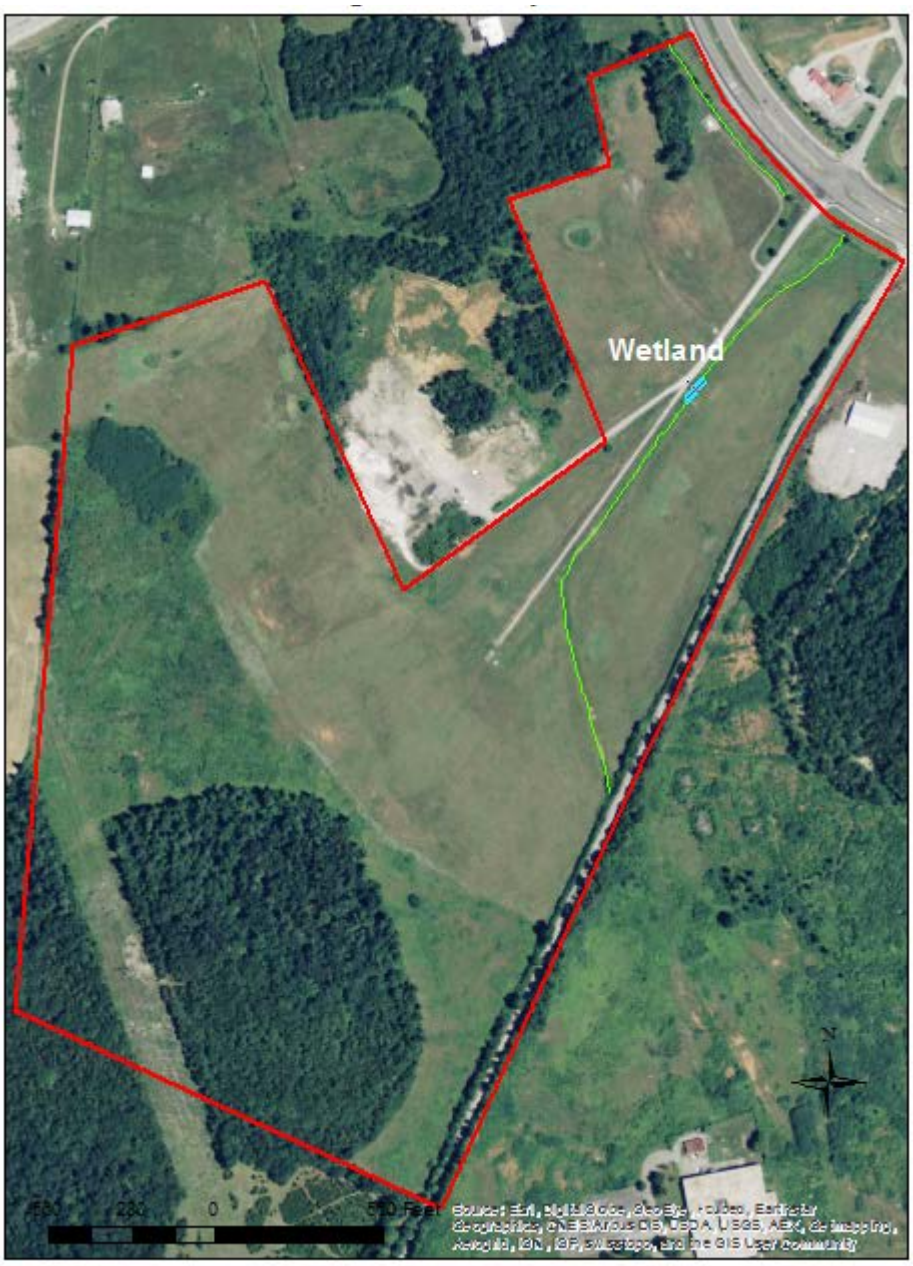

Figure 3. Wetlands at the West Industrial Park, Logan County, Kentucky

Figure 4. Segment of the tributary with colonized wetland vegetation

Prime Farmland

Prime farmland is land that is the most suitable for economically producing sustained high yields of food, feed, fiber, forage, and oilseed crops. Prime farmlands have the best combination of soil type, growing season, and moisture supply and are available for agricultural use (i.e., not water or urban built-up land). The Farmland Protection Policy Act (7 United States Code [U.S.C.] 4201 et seq.) requires Federal agencies to take into account the adverse effects of their actions on prime or unique farmlands. The purpose of the Act is "to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses."

Soils present on the 20-acre parcel and within the area on the West Industrial Park property that would be cleared include prime farmlands and farmland of statewide importance as shown in Table 4.

Table 4. Prime Farmland and Farmland of Statewide Importance

Map unit symbol	Map unit name	Rating	Acres	Percent of Area
20-acre acquisition parcel				
CrB	Crider silt loam, 2 to 6 percent slopes	All areas are prime farmland	0.3	1.6%
FeC	Fredonia rocky silty clay loam, 2 to 12 percent slopes	Farmland of statewide importance	5.1	25.5%
Ne	Newark silt loam	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	0.5	2.3%
PeB	Pembroke silt loam, 2 to 6 percent slopes	All areas are prime farmland	14.1	70.6%
Total for 20-acre acquisition parcel			**20.0**	**100.0%**
Clearing Area on West Industrial Park				
CrB	Crider silt loam, 2 to 6 percent slopes	All areas are prime farmland	1.7	10.2%
FeC	Fredonia rocky silty clay loam, 2 to 12 percent slopes	Farmland of statewide importance	0.9	5.4%
PeB	Pembroke silt loam, 2 to 6 percent slopes	All areas are prime farmland	7.2	42.8%
TcD	Talbott-Colbert rocky silt loams, 2 to 20 percent slopes (caneyville rocky)	Not prime farmland	7.0	41.5%
Total for Clearing Area on West Industrial Park			**16.8**	**100.0%**

Source: U.S. Department of Agricultural Natural Resources Conservation Service 2015

No Action Alternative: Under the No Action Alternative TVA would not provide funding for the proposed action. There would be no impact to prime farmland as a result of the No Action Alternative. The site would remain in its current condition and changes to prime farmlands resulting from natural processes and human-related disturbance would continue to occur. If LEAD obtained alternate funding, the overall environmental consequences would be similar to the Action Alternative.

Action Alternative:
Prime farmlands and farmlands of statewide importance are present on both the area to be cleared on the West Industrial Park property and the 20-acre parcel that would be acquired. Both parcels are located within the Russellville City Limits and are thus already considered urban land (7 C.F.R. § 658.2). The West Industrial Park property is already planned for industrial uses. The 20-acre acquisition property is owned by a stone company and soils on portions of the site have been heavily disturbed.

For comparison, Table 5 provides a summary of farming in Logan County and overall in the State of Kentucky. The change in farming and farming acreages from 2007 to 2012 is also included.

Table 5. Farming Statistics for Logan County, Kentucky

	Number of Farms	Percentage of Total Area in Farms	Land in Farms (Acres)	Average Size of Farms (Acres)	Change from 2007 to 2012		
					Number of Farms	Land in Farms (Acres)	Average Size of Farms (Acres)
Logan County	1,060	78.1	275,836	190	-112	-14,095	+13
Kentucky	77,064	51.6	13,049,347	169	-8,196	-943,774	+5

Source: U.S. Department of Agriculture 2012

Though the proposed actions would impact prime farmlands and farmland of statewide importance on the West Industrial Park and the 20-acre acquisition parcel, the land in question is already within city limits and already designated for commercial and industrial land uses. Additionally, the amount of prime farmland and farmland of statewide importance that would be removed from agricultural use is minor in comparison to the total acres of farmland in Logan County and in the State of Kentucky. Therefore, impacts to prime farmlands are minor.

Natural Areas

Natural areas include areas managed for their recreational, biological, historic and scenic resources, as well as ecologically significant sites, Wild and Scenic Rivers, and Nationwide Rivers Inventory streams. These areas are owned by federal and state agencies, local governments, non-governmental organizations such as the Nature Conservancy, and regional land trusts and private corporations and individuals.

This section addresses natural areas that are on, immediately adjacent to (within 0.5 mi), or within the region of the proposed project (5 mi radius).

There are no natural areas within the proposed project footprint. There are three natural areas within five miles of the proposed project:

- Baker Natural Area (0.9 miles northeast) - A 66-acre environmental education area featuring trails and habitat protection for grassland habitat and woodland glades.
- Logan County Glade State Natural Area (2.5 miles northeast) - A 42-acre preserve protecting limestone glades and an 810-foot high knob located within the city limits of Russellville.
- Log House Prairie Registered Natural Area (3.7 miles southeast) - 10-acre prairie remnant managed by the Kentucky State Nature Preserves Commission for its rare plant community.

No Action Alternative: Under the No Action Alternative TVA would not provide funding for the proposed action. There would be no impact to natural areas as a result of the No Action Alternative. The site would remain in its current condition and changes to natural areas resulting from natural ecological processes and human-related disturbance would continue to occur. If LEAD obtained alternate funding, the overall environmental consequences would be similar to the Action Alternative.

Action Alternative: Under the Action Alternative, TVA would provide funding to LEAD for site preparation. There would be no impacts to natural areas. There are no natural areas within the proposed project boundaries. The three natural areas within five miles are of a sufficient distance (0.9-3.7 miles) such that intervening vegetation, roads, and structures block views of the project site from these natural areas. Additionally, no construction related effects (such as noise, fugitive dust, traffic) would be experienced at these distances. Therefore, there would be impacts to natural areas associated with the proposed action, or long-term development of the industrial park.

Cultural Resources

Kentucky has been an area of human occupation for the last 12,000 years. This includes five broad cultural periods: Paleo-Indian (11,000-8,000 BC), Archaic (8000-1600 BC), Woodland (1600 BC-AD 1000), Mississippian (AD 1000-1700), and Historic (AD 1700- to present). Prehistoric land use and settlement patterns vary during each period, but short- and long-term habitation sites are generally located on flood plains and alluvial terraces along rivers and tributaries. Specialized campsites tend to be located on older alluvial terraces and in the uplands. During the early contact period, the area that is now Kentucky was primarily a hunting ground for a number of Native American tribes. Trappers and hunters explored the area and throughout the 18th century and westward expansion by Euro-Americans displaced tribes occupying the region. Logan County attained its status in 1792. Throughout the early 1800s both Euro-American and enslaved populations grew and commercialization of farms in the area led to clustering of plantations in areas of higher soil quality. Initially when the Civil War began in 1861, Kentucky leaders attempted to keep the state neutral. Neutrality however did not last long and troops from both sides began entering Kentucky with Confederate bases in southern Kentucky and Union bases in northern Kentucky.

Historic and cultural resources, including archaeological resources, are protected under various federal laws, including: the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act, and the National Historic Preservation Act (NHPA). Section 106 of the NHPA requires federal agencies to consult with the respective State Historic Preservation Officer (SHPO) when proposed federal actions could affect these resources.

With regards to cultural resources the area of potential effects (APE) is defined at 36 CFR §800.16(d) (a section of the federal regulations implementing Section 106 of the National Historic Preservation Act) as “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist.” TVA has defined the APE for both archaeological and architectural resources for the proposed actions as the area in which the undertaking would result in ground-disturbing activities.

The majority of the APE has been subject to a Phase I archaeological survey by Arrow Enterprise (Schock 2001) associated with the original 140 acre industrial site. Five archaeological sites were identified, three of which were recorded within or directly adjacent to the current APE (15LO200, 15LO201 and 15LO204). In 2001, a Phase II archaeological survey was completed on site 15LO204 and found no buried deposits were found and no further investigations were recommended. TVA contracted with Amec Wheeler Foster (AMEC) to conduct a Phase I cultural resources survey of the additional 13.3 acre area that was not covered in the 2001 Phase I survey and revisit those sites located within the

current APE (Martin 2016). No archaeological resources were identified within the parcel that was not covered in the 2001 survey. The revisit of site 15LO200, 15LO201, 15LO204 revealed that soils have been heavily deflated and disturbed. Within the previously recorded boundaries of site 15LO200, AMEC identified a small stone outbuilding and grave marker with the inscription ("John Taylor", "TENN", "CSA"). AMEC also identified several possible depressions located in a north south line near the present location of the marker.

No Action Alternative: Under the No Action Alternative TVA would not provide funding for the proposed action. There would be no project-related effects to historic or archaeological resources under this alternative. Kentucky statues related to projection of graves would apply to future work conducted in the West Industrial Park. Should LEAD pursue future development of the site with alternative funding sources, it would likely result in similar consequences to the Action Alternative..

Action Alternative: No archaeological resources were identified within the additional parcel surveyed in 2016. The revisit of sites 15LO200, 15LO201, 15LO204 revealed that soils have been heavily deflated and disturbed. TVA found all three sites ineligible for the National Register of Historic Places. Within the previously recorded boundaries of site 15LO200, AMEC identified a grave marker with the inscription ("John Taylor", "TENN", "CSA"). AMEC also identified several possible depressions located in a north south line near the present location of the marker. Because of the potential for intact burials, LEAD will place a 20-meter buffer around the possible grave depressions and no disturbance activities funded by TVA would take place in this location. With this protection in place, TVA finds that no historic properties would be affected by the proposed undertaking. On August 10, 2016, the Kentucky SHPO concurred with TVA's determination that no historic properties would be affected by the proposed undertaking. This determination is based upon the condition that LEAD establishes the 20-meter exclusion buffer and complies with all Kentucky statutes related to the protection of graves.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding historic properties within the proposed project's APE that may be of religious and cultural significance and are eligible for the NRHP. To date TVA has received no response from federally recognized tribes.

Socioeconomic Conditions and Environmental Justice

The U.S. Census Bureau American Community Survey 2010-2014 estimates were used to determine the socioeconomic characteristics for the town of Russellville, Logan County, the State of Kentucky, and the United States. The population estimates are included for comparison in Table 6.

No Action Alternative: Under the No Action Alternative TVA would not provide funding for the proposed action. There would be no anticipated impacts to socioeconomic resources or environmental justice in association with the No Action Alternative. Should LEAD pursue future development of the site with alternative funding sources, it would likely result in similar consequences to the Action Alternative..

Action Alternative: The proposed clearing activities and modification of the roadway is expected to require a workforce of 10 or less and over a period up to approximately 6 months. Thus, the proposed actions are expected to have only minor direct, indirect or cumulative effects to the local economy or workforce. In the near term and for the

foreseeable future, no disproportionate effects are anticipated to any minority or economically disadvantaged populations.

Table 6. Socioeconomic Characteristics of Russellville, Logan County, the State of Kentucky, and the United States of America

	Russellville	Logan County	State of Kentucky	United States
Total Population[1]	6,998	26,844	4,383,272	314,107,084
Race[1]				
White	78.4%	90.6%	87.7%	73.8%
Black or African American	18.5%	6.6%	7.9%	12.6%
American Indian and Alaska Native	0.8%	0.3%	0.2%	0.8%
Asian	0.1%	0.0%	1.2%	5.0%
Native Hawaiian and Other Pacific Islander	0.0%	0.0%	0.0%	0.2%
Some Other Race	0.6%	0.5%	0.9%	4.7%
Two or More Races	1.5%	2.0%	2.0%	2.9%
Ethnicity[1]				
Hispanic or Latino	2.6%	2.6%	3.2%	16.9%
Income[2]				
Median Household	$30,606	$42,935	$44,621	$53,482
Mean Household	$39,389	$61,094	$62,344	$74,596
Per Capita	$17,046	$26,083	$24,811	$28,555
Living Below the Poverty Level[2]				
Individuals	28.8%	21.4%	18.9%	15.6%
Families	22.9%	15%	14.4%	11.5%
Unemployed[2]	7.9%	8.8%	9.3%	5.8%

[1] Source: U.S. Census Bureau. 2014a.
[2] Source: U.S. Census Bureau. 2014b.

Air Quality

The EPA uses an Air Quality Index (AQI) to characterize air quality at a given location. AQI categories range from Good (i.e., values from 0 to 50) to Hazardous (values from 301 to 500). The AQI for Logan County was 97 in 2014 (USA.Com 2016), which corresponds to a rating of “Moderate”.

A nonattainment area is an area were air pollution levels exceed the National Ambient Air Quality Standards promulgated under the federal Clean Air Act Amendments of 1970. The criteria air pollutants considered in determining nonattainment include ozone, sulfur dioxide, carbon monoxide, particulate matter, lead, and nitrogen dioxide. Logan County is in attainment for all these criteria air pollutants (U.S. Environmental Protection Agency 2016).

No Action Alternative: Under the No Action Alternative TVA would not provide funding for the proposed action. There would be no anticipated impacts to air quality from the No Action Alternative. Natural changes associated with ecological process and human

activities would continue to occur. Should LEAD pursue future development of the site with alternative funding sources, it would likely result in similar consequences to the Action Alternative..

Action Alternative: The proposed clearing and demolition would generate some air pollution in the form of fugitive dust, particulate matter in equipment exhaust, and possibly, smoke from burning debris. Additionally, carbon monoxide and sulfur dioxide would be generated by equipment exhaust. Because of the short time period required to complete this work, any effects to local air quality would be temporary and localized. These effects are expected to be minor and would not have a major influence on the air quality of Logan County.

Future activities, including any potential industrial park construction are not presently forseeable. Future activities that produce air pollutants, including additional site preparation and the siting of industrial or commercial tenants in the Industrial Park would be subject to various applicable air quality regulations including applicable Clean Air Act permits and thus any associated impacts to air quality would be anticipated to be minor. Given the brief period of activity (a few months) associated with the proposed action of acquiring the 20 acre parcel, clearing of portions of the site, and widening of the road, the proposed action would not be anticipated to contribute to any cumulative impacts to air quality.

Aesthetics

The proposed project site is in a relatively rural setting surrounded by undeveloped, residential, commercial, and industrial properties. An industrial facility, Jimmy Sanders, Inc., is located northwest of the West Industrial Park. New Vision Community Church and Roys Bar-B-Que are located east of West Industrial Park. Several commercial properties are located northeast of the proposed project site across the US 68/80 Bypass. Undeveloped or residential areas comprise the remainder of the surrounding area.

No Action Alternative: Under the No Action Alternative TVA would not provide funding for the proposed action. There would be no anticipated impacts to aesthetics from the No Action Alternative. Natural changes associated with ecological process and human activities would continue to occur. Should LEAD pursue future development of the site with alternative funding sources, it would likely result in similar consequences to the Action Alternative..

Action Alternative: Clearing of onsite vegetation could create some temporary minor visual discord during clearing operations for surrounding property owners and residents. Construction vehicles would be visible within the largely undeveloped site. Additionally, fugitive dust mobilized by clearing activities could produce visual effects. The clearing areas are not immediately adjacent to any of the surrounding businesses or residences; thus, once clearing and demolition are complete, the overall visual character of the site would be comparable with the remainder of the West Industrial Park property. Thus, any changes in visual quality associated with construction activities would be minor.

The eventual development of the West Industrial Park expansion could cause localized visual changes as the site is converted from a predominantly undeveloped/agricultural setting to a commercial or industrial area. From a visual standpoint, the development of the site for industrial or commercial use would be consistent with the visual character of nearby properties and would constitute a minor cumulative long-term effect to the visual character of the area.

Waste Materials

A records review conducted as part of the Phase I Environmental Site Assessment (Arnold Consulting Engineering 2014) determined that there were no outstanding environmental concerns regarding the release of hazardous wastes on the site.

No Action Alternative: Under the No Action Alternative TVA would not provide funding for the proposed action. There would be no development of waste at the site and thus no associated impacts under the No Action Alternative. Should LEAD pursue future development of the site with alternative funding sources, it would likely result in similar consequences to the Action Alternative..

Action Alternative: LEAD is responsible for disposal of all debris and other materials associated with the proposed clearing and demolition in an environmentally responsible manner. This responsibility includes the disposal of any special wastes or hazardous materials in landfills or disposal facilities approved for handling such wastes and in a manner consistent with all applicable local, state, and federal regulations. Thus, any potential direct, indirect or cumulative effects related to wastes associated with the proposed site preparations are expected to be minor.

The eventual occupation and use of the proposed industrial site could result in the production of solid wastes in the form of construction debris and wastes from manufacturing and processing operations. The EPA regulates industrial, manufacturing, and commercial solid and hazardous wastes under the Resource Conservation and Recovery Act (RCRA). Producers of such wastes would be subject to RCRA regulations; therefore, any long-term foreseeable effects related to waste production are expected to be minor.

Cumulative Impacts

Based on the level of anticipated impacts to the resources described above which would result from TVA's action of providing an economic development grant, TVA has determined that the proposed action would not result in any adverse cumulative impacts.

Mitigation Measures

To minimize or reduce the environmental effects of the proposed project, LEAD or its contractors will ensure all earth-disturbing activities are in compliance with stormwater, U.S. Army Corps of Engineers, and air permitting requirements; will comply with all Kentucky statutes related to the protection of graves; and will utilize applicable BMPs to minimize and control erosion and fugitive dust during the proposed actions.

TVA would include the commitments prescribed below in in its financial assistance grant to LEAD in order to reduce, minimize or mitigate environmental impacts associated with the future construction activities:

- BMPs would be utilized around ephemeral streams and sinkholes within the project action areas to minimize disturbance of riparian areas, erosion, and sediment inputs to groundwater.
- Tree clearing would only occur between October 15 and March 31 of any given year.

- A 20 meter buffer will be flagged around the grave marker and possible depressions. No disturbance activities funded by TVA would take place within this buffer.

TVA Preparers

Rachel B. Crickmar, Economic Development, Program Manager – Project Management

Adam J. Dattilo, Botanist – Biological Resources, Terrestrial Ecology, and Threatened and Endangered Species

Patricia B. Ezzell, Program Manager – Tribal Relations

Carol Butler Freeman, Contract Senior NEPA Specialist – Document Preparation

Elizabeth Burton Hamrick, Zoologist – Biological Resources, Terrestrial Animals, and Threatened and Endangered Species

Michaelyn S. Harle, Archaeologist – Cultural Resources, National Historic Preservation Act Compliance

Amy B. Henry, Manager – NEPA Compliance and Document Review

Craig L. Phillips, Aquatic Biologist – Biological Resources, Aquatic Ecology

Kim Pilarski-Hall, Wetlands and Natural Areas Specialist – Wetlands and Natural Areas

Matt Reed, Aquatic Ecology Contractor – Biological Resources, Aquatic Ecology

A. Chevales Williams, Environmental Engineer – Water Resources

Carrie C. Williamson, Civil Engineer – Floodplains

Agencies and Others Consulted

The following federal and state agencies and federally recognized Indian Tribes were consulted.

Kentucky Heritage Council / Kentucky State Historic Preservation Officer
Cherokee Nation
Absentee Shawnee Tribe of Oklahoma
Kialegee Tribal Town
Eastern Shawnee Tribe of Oklahoma
Eastern Band of Cherokee Indians
Shawnee Tribe
Coushatta Tribe of Louisiana
United Keetowah Band of Cherokee Indians in Oklahoma
Thlopthlocco Tribal Town

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Appendices

A – Response from the Tennessee State Historic Preservation Officer

B – Response from U.S. Fish and Wildlife Service

Appendix A – Response from the Kentucky State Historic Preservation Officer

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902

June 13, 2016

Mr. Craig Potts
State Historic Preservation Officer
and Executive Director
Kentucky Heritage Council
300 Washington Street
Frankfort, Kentucky 40601

Dear Mr. Potts:

TENNESSEE VALLEY AUTHORITY (TVA), PROPOSED ECONOMIC DEVELOPMENT GRANT FOR IMPROVEMENTS TO WEST INDUSTRIAL PARK, LOGAN COUNTY, KENTUCKY

TVA proposes to provide a grant to the Logan Economic Alliance for Development (LEAD) for improvements to the existing zoned West Industrial Park located in Logan County, Kentucky. LEAD has recently proposed to purchase an additional 20 acres which will increase the West Industrial Park from 140 acres to 160 acres. TVA funding would be used to complete a boundary survey on the new parcel and clear any standing timber present on the 20 acre parcel. In addition, TVA funding would be used to clear an overgrown area on the existing 140 acre park and improve the existing entrance road by widening the road and installing signage. The subject property consists of a large tract of land which lies along the south side of Hopkinsville Road (US 68/80) and west side of the US 68/80 Bypass. The property also lies along the north side of the railroad. TVA determined the area of potential effects (APE) to be the 20 acre additional parcel, footprint of the proposed access road improvements, and the portion within the 140 acre existing industrial park that TVA is funding to clear.

The majority of the APE has been subject to a Phase I archaeological survey by Arrow Enterprise associated with the original 140 acre industrial site. Five archaeological sites were identified, two of which were recorded within the APE (15LO201 and 15LO200) and one site (15LO200) immediately adjacent to APE. 15LO201 and 15LO200 were recommended ineligible for the National Register of Historic Places (NRHP). In 2001, a Phase II archaeological survey was completed on site 15LO204. The Phase II survey identified no buried deposits, and thus, no further investigations were recommended. TVA contracted with Amec Wheeler Foster (AMEC) to conduct a Phase I cultural resources survey of the additional 13.3 acre area that was not covered in the 2001 Phase I survey and revisit those sites located within the current APE. Please find enclosed the resulting report, titled *Phase I Archaeological Survey of a 20-Acre Parcel of Property and the Reexamination of Three Archaeological Sites (15LO200, 15LO201 and 15LO204) for the Economic Development Grant Proposal for Site Improvements at West Industrial Park, Logan County Kentucky.*

No archaeological resources were identified within the parcel that was not covered in the 2001 survey. The revisit of sites 15LO200, 15LO201, 15LO204 revealed that soils have been heavily deflated and disturbed. Based on the findings of the survey, TVA finds 15LO200, 15LO201, 15LO204 ineligible for listing on the NRHP. During the revisit of 15LO200, AMEC identified a stone structure and a grave marker with the inscription ("John Taylor", "TENN", "CSA"). AMEC also identified four depressions located in a north south line near the present location of the marker. The location of these features are located outside the footprint of the proposed road improvements, however, because of the potential for burials at this area, a 20 meter buffer will be flagged around the possible depressions and no disturbance activities funded by TVA would take place in this location.

TVA finds that no historic properties would be affected by the proposed undertaking. Pursuant to 36 CFR Part 800.4(d)(1), we are seeking your concurrence with TVA's finding.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding historic properties within the proposed project's APE that may be of religious and cultural significance and are eligible for the NRHP.

Should you have any questions or comments, please contact Michaelyn Harle at mharle@tva.gov or (865) 632-2248.

Sincerely,

Clinton E. Jones
Manager, Biological and Cultural Compliance
Safety, River Management and Environment
WT11C-K

MSH:CSD
Enclosure

PHASE I ARCHAEOLOGICAL SURVEY

20-Acre Parcel of Property and the Reexamination of Three Archaeological Sites (15LO200, 15LO201 and 15LO204) for the Economic Development Grant Proposal for Site Improvements at West Industrial Park, Logan County Kentucky.

June 2016

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REGINA STIVERS
DEPUTY SECRETARY

CRAIG A. POTTS
EXECUTIVE DIRECTOR
& STATE HISTORIC
PRESERVATION OFFICER

Received 8/15/16

August 10, 2016

Mr. Clinton E. Jones
Manager, Biological and Cultural Compliance
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, TN 37902

Re: Proposed Economic Development Grant for Improvements to West Industrial Park, Logan County, Kentucky -- Phase I Archaeology Survey: 20-Acre Parcel of Property and the Reexamination of Three Archaeological Sites (15Lo200, 15Lo201, and 15Lo204) for the Economic Development Grant Proposal for Site Improvements at West Industrial Park, Logan County, Kentucky by Marc Wampler

Dear Mr. Jones:

Thank you for the above referenced report. We understand that this grant will expand an industrial park by 20 acres and that much of this project area has been previously surveyed. This project entailed pedestrian survey and screened shovel testing within the project area to cover areas that were not previously surveyed and to revisit three previously identified sites. Sites 15Lo200, 15Lo201, and 15Lo204 were determined to lack integrity and are not considered eligible for listing on the National Register of Historic Places (NRHP). The authors recommend that an area with a grave marker and several associated depressions in site 15Lo200 is avoided with a 20 meter buffer and that additional work may be needed to identify the nature and extent of the depressions in this area. No other work is recommended.

I accept the above-referenced report without further revision and concur with the consultant's findings and recommendations regarding the archaeological resources. We concur with TVA's determination that no historic properties would be affected by the proposed undertaking.

We understand that a 20-meter buffer will be maintained around the grave and associated depressions and no disturbance activities funded by the TVA would take place in this location. However, we would like to remind the TVA and any non-federal entities associated with this project that several Kentucky statutes protect graves and will need to be followed by the landowners regardless of funds associated with future activities.

Should the project plans change, or should additional information become available regarding cultural resources or citizens' concerns regarding impacts to cultural resources, please submit that information to our office as additional consultation may be warranted. Should you have any questions, feel free to contact Nick Laracuente of my staff at 502.564.7005, extension 122.

Sincerely,

Craig A. Potts,
Executive Director and
State Historic Preservation Officer

CP:nrl KHC # 47186 cc: George Crothers (OSA)

Appendix B – Response from U.S. Fish and Wildlife Service

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902

July 14, 2016

Mr. Lee Andrews
Field Supervisor
U. S. Fish and Wildlife Service
J C Watts Federal Building, Room 265
300 West Broadway
Frankfort, Kentucky 40601

Dear Mr. Andrews:

TENNESSEE VALLEY AUTHORITY ECNOMONIC GRANT AT WEST INDUSTRIAL PARK, LOGAN COUNTY, KENTUCKY

The Tennessee Valley Authority (TVA) proposes to provide a grant to the Logan Economic Alliance for Development (LEAD) for improvements to the existing acre zoned West Industrial Park located in Logan County, Kentucky. An integral part of TVA's mission is to promote the economic development of the TVA service area. LEAD has recently proposed to purchase an additional 20 acres, which will increase the West Industrial Park from 140 acres to 160 acres. TVA is proposing to award a grant to LEAD to enhance the marketability and facilitate the development of the West Industrial Park. TVA funding would be used to clear 6.7 acres of standing timber, clear 17.7 acres of overgrown shrub vegetation, and improve the existing entrance road by widening the road and installing signage. The Park property consists of a large tract of land, which lies along the south side of Hopkinsville Road (US 68/80) and west side of the US 68/80 Bypass. The property also lies along the north side of the railroad. Currently the tract is used for agricultural purposes. Total acreage of the West Industrial site, after purchase of the 20 acre addition, is approximately 160 acres. Of this total, approximately 6.7 acres of forested habitat would be removed and potentially developed. Approximately 4.4 acres of forest to be removed may provide suitable roosting habitat for Indiana bat and northern long-eared bat. See attached Technical Report for more detailed project description, figures, and photos.

Review of the TVA Regional Natural Heritage database and the U.S. Fish and Wildlife Service IPaC website indicated fourteen species listed as endangered, threatened, a candidate for listing, or proposed for listing under the Endangered Species Act occur in in the project area, Logan County, Kentucky, or within 10 miles of the project area. These species include six mussels (fanshell, fluted kidneyshell, littlewing pearlymussel, rabbitsfoot, ring pink, and slabside pearlymussel), and three mammals (gray bat, Indiana bat, and northern long-eared bat) that have the potential to occur within Logan County based on historic range, proximity to known occurrence records, biological characteristics and/or physiographic characteristics (Table 1).

Field reviews were conducted on May 19, 2016, to determine whether suitable habitat for federally listed species occurs within the project action area. No habitat for federally listed

aquatic species was found within the project footprint. Best Management Practices (BMPs) would be utilized around ephemeral streams and sinkholes found within the project action areas in order to minimize disturbance in riparian areas, erosion, and sediment inputs in groundwater. TVA has determined that the proposed actions would have no effect on fanshell, fluted kidneyshell, littlewing pearlymussel, rabbitsfoot, ring pink, and slabside pearlymussel.

Phase 1 Habitat Assessments (2016 Range-Wide Indiana Bat Summer Survey Guidelines, April 2016) were conducted on March 19, 2016. No winter roosting habitat was observed during field reviews. Suitable summer roosting habitat for federally-listed endangered Indiana bat and federally-listed threatened northern long-eared bat (NLEB) was identified within the project area. In total, only 4.4 acres of potentially suitable Indiana bat and NLEB roosting trees would be removed for the improvement of the LEAD property. All requested information is contained within the Technical Report (e.g., project description, methods, survey locations, maps, summary of results, habitat assessment sheets, photos etc.).

No caves are known within 3 miles of the proposed project area, and none were observed during field reviews. Several sinkholes were observed in the project footprint during field reviews in May 2016. However, none of these sinkholes appeared to be suitable for roosting bats (no air flow, small openings covered in vegetation making them unsuitable for bat navigation). No other winter roosting habitat was observed within the project footprint during field review.

Foraging habitat for gray bat, Indiana bat, and NLEB exists over wet weather conveyances and one small wetland. Best Management Practices would be used in and along all bodies of water potentially impacted by the proposed actions. Forested foraging habitat for Indiana bat and NLEB exists over and within forest fragments.

Two areas of suitable summer roosting habitat for Indiana bat and northern long-eared bat were identified within the project footprint (4.4 acres in total). Habitat was identified as moderately suitable summer roosting habitat due to the presence of 20 snags with exfoliating bark and 4 live shagbark hickories. Suitable summer roosting habitat was comprised of mature, deciduous forest dominated by hickory, red oaks, and maples. One area of unsuitable forest was also identified within the action area (2.3 acres). This area was dominated by young Japanese honeysuckle, as well as locust and cedar trees. Suitable roosting trees do not occur within this fragment and the high density of the forest understory is unsuitable for bat navigation.

According to Kentucky USFWS maps (known forest-dwelling bat habitat in Kentucky and within 20 miles, March 2015), the proposed action area does not occur in any known summer or winter habitat for Indiana bat or NLEB. One historical record of Indiana bat exists in Logan County, approximately 6.0 miles from the project footprint. This record is of one Indiana bat observed in a building in 1963. The closest known winter record of Indiana bat is from Bellamy Cave (42.8 miles away, Montgomery County, Tennessee). No records of NLEB are known from Logan County, Kentucky. The closest known NLEB winter and summer records are approximately 22.6 and 24.3 miles away, respectively. The winter record is from Whiskey River Cave,

approximately 22.6 miles away (Robertson County, Tennessee). The summer record is from Warren County, Kentucky. The details of the record are unknown.

One summer occurrence of gray bat exists approximately 7.6 miles from the project area. One small gray bat hibernacula has also been documented in a cave located approximately 10.7 miles from the proposed project footprint. No gray bat roosting habitat (caves) occurs within the project footprint. Gray bat foraging habitat within the project footprint occurs over ephemeral streams and a small wetland. Best management practices would be used around bodies of water potentially impacted by the proposed actions. TVA biologists have determined that the proposed activities may affect but are not likely to adversely affect gray bat.

The quality of potential summer roosting habitat for Indiana bat has led TVA biologists to determine that 4.4 acres of the proposed action area could present suitable summer roosting habitat for Indiana and northern long-eared bats. Wet weather conveyances, one small wetland, and forested habitat on site provides foraging habitat. The project proposes to clear these areas of potentially suitable summer roosting bat habitat between October 15 and March 31. TVA has determined that removal of this habitat during the clearing window is not likely to adversely affect Indiana bats.

TVA proposes that a memorandum of agreement be entered into by TVA and the U.S. Fish and Wildlife Service to address removal of this habitat. A contribution of $6,930 to Kentucky's Imperiled Bat Conservation Fund would be provided by TVA to promote the conservation and recovery of imperiled bats in Kentucky, per the Kentucky Field Office's Conservation Strategy for Forest-Dwelling Bats.

As per the 2016 Programmatic Biological Opinion (BO) on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Provisions (2016 BO), this clearing schedule avoids removal of trees during the NLEB pup season (June 1 to July 31). No known NLEB maternity roosting sites are present within 150 feet of the project area. No known NLEB hibernacula are present within 0.25 miles of the project area. All tree removal would occur outside of the time (June 1 - July 31) when northern long-eared bat pups would be present in maternity roosts. Therefore TVA has determined that while removal of suitable roosting habitat would have indirect adverse effects on northern long-eared bat and result in 'take' as defined in the Endangered Species Act (ESA), this 'take' is excepted from ESA Section 9 Take Prohibitions. Determinations regarding potential effects on NLEB were made per the Key to Northern Long-Eared Bat 4(d) Rule for Federal Actions that May Affect Northern Long-Eared Bats (USFWS - January 2016) and the Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions (2016 BO).

TVA requests concurrence from your office with our determination that this project is not like to adversely affect Indiana bat. TVA also requests confirmation from your office that any incidental take of NLEB (as measured by removal of suitable roosting habitat) resulting from this action is covered by the 2016 BO. It is our understanding that TVA's actions are in compliance with the Conservation Strategy, and that TVA's obligations regarding ESA compliance would be fulfilled following contributions to the Kentucky's Imperiled Bat Conservation Fund.

Should you have any questions or wish to discuss the project in more detail, please contact Liz Hamrick at 865-632-4011.

Sincerely,

John T. Baxter, Jr.
Manager, Endangered Species Act Compliance
Safety, River Management and Environment

EBH:CSD
Enclosures

INTERNAL COPIES:

John Baxter, WT11C-K
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Elizabeth Hamrick, WT11C-K
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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

August 2, 2016

Mr. John T. Baxter, Jr.
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, Tennessee 37902

Re: FWS 2016-B-0671; Tennessee Valley Authority; Economic Grant for Logan Economic Alliance for Development at West Industrial Park; Logan County, Kentucky

Dear Mr. Baxter:

The U.S. Fish and Wildlife Service (Service) has reviewed recent correspondence regarding this proposed project. Tennessee Valley Authority (TVA) proposes to provide a grant to the Logan Economic Alliance for Development to improve the existing West Industrial Park. The improvements are proposed to occur on a 17.7 acre site. The Service offers the following comments in accordance with the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*).

Indiana Bat (*Myotis sodalis*)
Northern Long-eared Bat (*Myotis septentrionalis*)
Your July 14, 2016 correspondence states that the project area does not contain caves are similar features that could potentially provide winter habitat for these species. The project area does contain suitable summer roosting habitat. We have received a copy of a July 29, 2016 receipt acknowledging the $7,150.00 contribution TVA made to Kentucky Natural Lands Trust for the Imperiled Bat Conservation Fund. Your project adheres to the conservation measures associated with the Kentucky Field Office's 2015 *Conservation Strategy for Forest-Dwelling Bats* (Conservation Strategy) and the 2015 Biological Opinion: *Kentucky Field Office's Participation in Conservation Memoranda of Agreement for the Indiana Bat and/or Northern Long-eared Bat* (KFO BO). The contribution made is the appropriate amount, following the process in the Conservation Strategy, to mitigate for the removal of the "potential" Indiana bat habitat for this project as described in your July 14, 2016 correspondence and attachments. Specifically, 4.4 acres of forested habitat removal will occur from October 15 – March 31. Through the adherence to the Conservation Strategy, the Service has already analyzed the effects of your action under the KFO BO and has concluded that the project is not likely to jeopardize the

continued existence of the Indiana bat or result in the destruction or adverse modification of designated critical habitat for this species. Any incidental take of Indiana bats that will or could result from the forest habitat removal associated with your project is authorized under the KFO BO. If tree clearing must occur during the occupied timeframe (April 1- October 14), then TVA should notify the Service in advance of tree clearing to account for the direct adverse effects to Indiana bats that may occur as a result of tree clearing during the occupied timeframe. In addition, if additional forested areas not previously considered are to be removed, then TVA should coordinate with the Service to determine if additional compensation is necessary to be in ESA compliance.

Northern Long-eared Bat (*Myotis septentrionalis*)
TVA has determined that the proposed action is consistent with the northern long-eared bat final 4(d) rule and the Service's January 5, 2016, intra-Service Programmatic Biological Opinion (4(d) BO) on the final 4(d) rule for the northern long-eared bat. The project does not (1) propose impacts to any known northern long-eared bat hibernacula; (2) propose tree clearing within 0.25-mile of a known northern long-eared bat hibernacula; or, (3) propose cutting or destroying known occupied maternity roost trees, or any other trees within a 150-foot radius from the maternity roost tree from June 1 through July 31. This project may affect the northern long-eared bat; however, there are no effects beyond those previously disclosed in the Service's 4(d) BO. Any taking that may occur incidental to this project is not prohibited under the final 4(d) rule (50 CFR §17.40(o)). Therefore, the programmatic biological opinion satisfies TVA responsibilities under ESA section 7(a)(2) relative to the northern long-eared bat for this project.

Gray Bat (*Myotis grisescens*)
Your July 14, 2016 correspondence states that the project area does not contain caves are similar features. Therefore the proposed project is not likely to impact gray bat hibernacula or roosting habitat. Wet weather conveyances and a small wetland provide potential foraging habitat for the gray bat. Because of the small scale of the permanent impacts of the tree clearing, the temporary nature of the disturbance that may occur during construction, and the implementation of BMPs to limit indirect effects to foraging resources, we believe that any impacts to gray bat foraging habitat and resources would be insignificant and/or discountable. Based on this information, the Service concurs that the proposed project is not likely to adversely affect the gray bat.

In addition to the species listed above, TVA made "no effect" determinations for the following species: fanshell (*Cyprogenia stegaria*), fluted kidneyshell (*Ptychobranchus subtentum*), littlewing pearlymussel (*Pegias fabula*), rabbitsfoot (*Quadrula c. cylindrica*), ring pink (*Obovaria retusa*), and slabside pearlymussel (*Lexingtonia dolabelloides*). The Service has no further comments regarding these species.

In view of these findings we believe that the requirements of section 7 of the Endangered Species Act have been fulfilled for this project. Your obligations under section 7 must be reconsidered, however, if: (1) new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated.

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 Jessica Blackwood Miller at (502) 695-0468 extension 104 or jessica_miller@fws.gov.

Sincerely,

Virgil Lee Andrews, Jr.
Field Supervisor