



Leeco Road Campground Sewer Extension  
Project, Leslie County, Kentucky  
ID: EAXX-202-00-H2P-1728638201

Draft Environmental Assessment  
and  
Draft Finding of No Significant Impact

Leeco Road Campground Sewer Extension Project, Leslie County, Kentucky  
Section 531 Southern and Eastern Kentucky Environmental Infrastructure Program

ID: EAXX-202-00-H2P-1728638201

January 2025



United States Army Corps of Engineers  
Louisville District



## DRAFT FINDING OF NO SIGNIFICANT IMPACT

### Leeco Road Campgrounds Sewer Extension Project, Leslie County, Kentucky

The U.S. Army Corps of Engineers, Louisville District (USACE) has conducted an Environmental Analysis in accordance with the National Environmental Policy Act of 1969, as amended. The draft Environmental Assessment (EA) dated [PENDING] for the Leeco Road Campground Sewer Extension Project addresses the lack of sanitary sewer service and the release of untreated sewage from aging septic systems in the vicinity of Leeco Road near Hyden, Kentucky.

The Draft EA, incorporated herein by reference, evaluated various alternatives that would reduce the release of untreated sewage and provide sanitary sewer service within the study area. The recommended plan is an extension to the Hyden, Kentucky sanitary sewer system across the study area and includes:

- Construction of 22,700 linear feet of 4 inch CL 250 poly-vinyl-chloride (PVC) Force Main,
- Construction of 3,300 linear feet of 2 inch CL 250 PVC Force Main,
- Installation of a pump station, and
- Installation of 40 grinder pumps.

In addition to a “no action” plan, one action alternative was evaluated. The alternative included the extension of the existing Hyden, Kentucky sanitary sewer system to the vicinity of Leeco Road. For the “no action” plan, the sewer system would not be extended, and the forty-year-old septic systems would continue to be used for sanitary sewer needs.

For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the Recommended Plan are listed in Table 1.

Table i. Summary of Potential Effects of the Recommended Plan

	Insignificant effects	Insignificant effects due to mitigation	No effects	Positive Effects
Land Use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Climate Resiliency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
GHG Emissions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Terrestrial Habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Invasive Species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Aquatic Habitat/Water Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Floodplains	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



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	Insignificant effects	Insignificant effects due to mitigation	No effects	Positive Effects
Soils and Farmland	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Wetlands	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
HTRW	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cultural Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
T&E	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Migratory Birds	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Air Quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental Justice	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Aesthetics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transportation and Traffic	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Health and Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

All practical means to avoid or minimize adverse environmental effects were analyzed and incorporated into the Recommended Plan. Best management practices, as outlined in the EA (e.g., silt fences), would be implemented before, during, and after construction, and are expected to minimize the potential for deleterious effects to the environment. After construction is completed, re-seeding and re-vegetation would be performed to minimize erosion losses and protect surface soils.

No compensatory mitigation is required as part of the Recommended Plan.

Public review of the draft EA and Finding of No Significant Impact (FONSI) was initiated on [PENDING]. All comments submitted during the public review period were responded to in the Final EA and FONSI, and any necessary changes will be incorporated.

Pursuant to Section 7 of the Endangered Species Act of 1973, as amended, the USACE determined that the Recommended Plan will have no effect on federally listed species or their designated critical habitat.

Pursuant to section 106 of the National Historic Preservation Act of 1966, as amended, the USACE determined that the recommended plan has no effect on historic properties. The Kentucky Heritage Council concurred with the determination on 15 May 2024.



The Recommended Plan has no discharge of dredged or fill material or any other discharge into waters of the U.S. Therefore, a Section 404(b)(1) evaluation and Section 401 water quality certification, pursuant to the Clean Water Act of 1972, are not applicable.

All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed.

Technical, environmental, and economic criteria used in the formulation of alternative plans were those specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the Recommended Plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

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Date

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L. Reyn Mann  
Colonel, U.S. Army  
District Commander





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## 1.0 PROJECT DESCRIPTION

### 1.1 Project Background and Authorization

The purpose of this Environmental Assessment (EA) is to analyze potential environmental impacts that would result from the recommended plan and reasonable alternatives for the proposed sewer line extension (Project) near the City of Hyden, Leslie County, Kentucky. This EA will determine whether the preparation of an Environmental Impact Statement (EIS) is required.

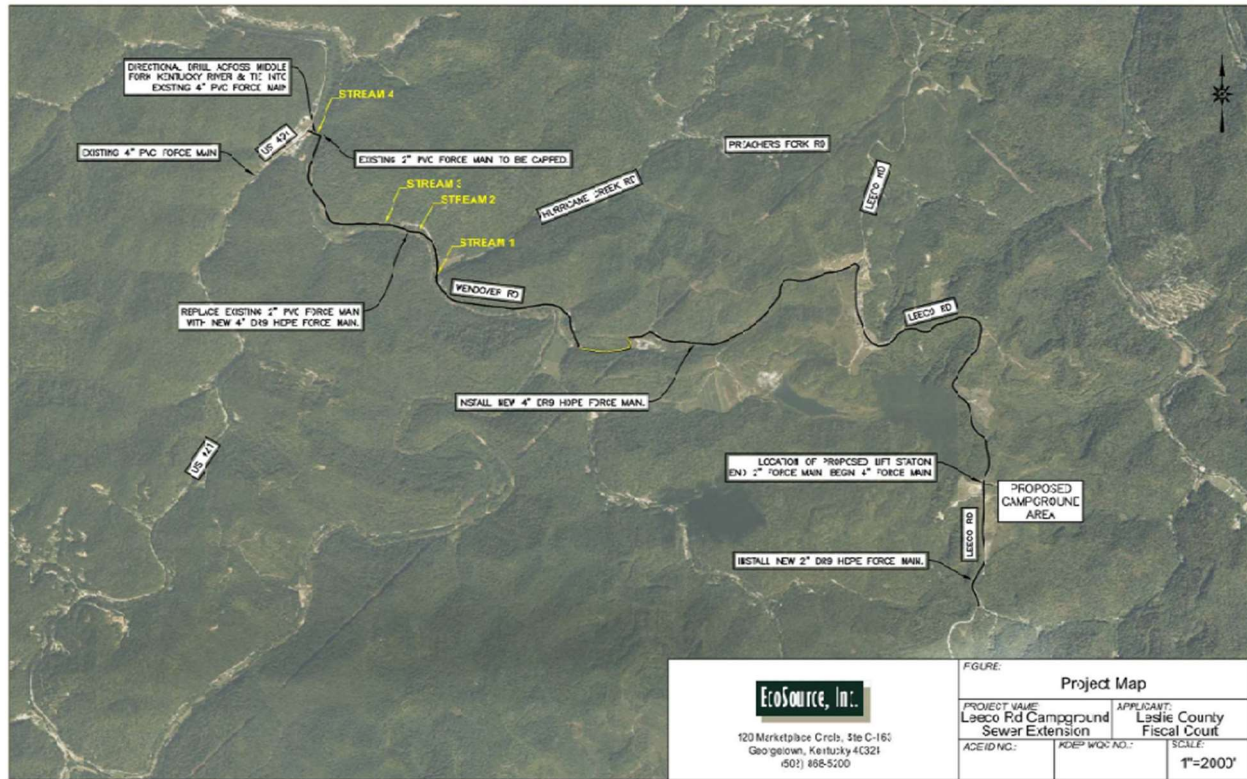
The Recommended Plan was developed through a public partnership agreement between the City of Hyden, Kentucky, the Leslie County Fiscal Court (LCFC) (Non Federal Sponsor), and the United States Army Corps of Engineers (USACE) Louisville District established under the authority of Section 531 of the Water Resources and Development Act (WRDA) of 1996 (Public Law 104-303) and amended by the WRDA of 1999 (Public Law 106-53) and by the WRDA of 2007 (Public Law 110-114).

Section 531 authorizes federal design and construction assistance to non-federal interests to carry out water-related environmental infrastructure, water resource protection and development, and environmental restoration projects in a 29-county area of southern and eastern Kentucky. These projects must address wastewater, water supply, and surface water resource related problems and can include design and construction assistance for wastewater treatment and related facilities, water supply and related facilities, and surface water resource protection and development. The program is also known as the "Southern and Eastern Kentucky Environmental Improvement Program."

This EA was prepared pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) Regulations (40 C.F.R. Parts 1500-1508), and USACE Regulation ER 200-2-2, *Policy and Procedures for Implementing NEPA* (33 C.F.R. Part 230). This EA was prepared to describe the existing conditions in the vicinity of the Project Area and evaluate the potential impacts associated with the Recommended Plan and reasonable alternatives.

### 1.2 Location

The Project area is located 2.5 miles southeast of Hyden, Kentucky within the central portion of Leslie County, Kentucky. (Figure 1). The proposed Project area begins on US Highway 421 on the west side of Middle Fork Kentucky River and terminates at the intersection of Leeco Road and Copper Lane, just south of the site of a proposed campground and amphitheater. The Project area lies within the Middle Fork Kentucky watershed (Hydrologic Unit Code (HUC) 8: 05100202) (USGS 2023).



**Figure 1.** General Location of the Leeco Road Sanitary Sewer Line Extension Project, Leslie County, Kentucky.

### 1.3 Purpose and Need

Residences along Leeco Road, Grace Mountain Lane, and Camp Creek Road near Wendover, Kentucky do not currently have access to a sanitary sewer system and rely on aging septic tank infrastructure. The Recommended Plan would provide sanitary sewer service, and potentially remove 40 aging septic tanks from service, many of which are starting to fail and release untreated wastewater into local watersheds. In addition to providing sanitary sewer service coverage to this new area, the Recommended Plan would also provide sanitary sewer coverage to a newly proposed campground and amphitheater complex near the system termination at Copper Lane.

## 2.0 RECOMMENDED PLAN AND ALTERNATIVES

To address the sanitary sewer needs of the residences, one action alternative was evaluated for its efficacy and affordability. Additionally, a No Action Alternative (NAA) was evaluated as a basis of comparison for environmental impacts.

### 2.1 No Action Alternative

The NAA would allow continuation of present conditions. Under this alternative, the residences would continue to rely on aging septic tanks for their wastewater needs and untreated wastewater discharges would become more frequent. The proposed campground and amphitheater would also lack sewage services. The NAA does not meet the purpose and need for this Project but is retained as a comparison for environmental impacts.





## 2.2 Alternatives Considered

### 2.2.1 Alternative 1

This alternative involves the construction of a 5-mile-long extension of the existing Hyden, Kentucky sanitary sewer system. This would include the installation of 22,700 feet of 4" SDR17 (CL250) Poly-vinyl-chloride (PVC) Force Main, 3,300 feet of 2" SDR17 (CL250) PVC Force Main, 40 grinder pump stations, electrical service for 40 grinder pump stations, 1 campground pump station, and 10 air release valves. This alternative would remove roughly 40 aging septic systems from service by providing sanitary sewer service to the residences along the proposed sewer line. It would also provide sanitary sewer service to the proposed campground and amphitheater. USACE's funding and planning support only covers the main line of the proposed sewer; however, the connection lines to the households and the subsequent removal of the septic tanks from service are so interlinked with the purpose and need of this Project, that they are included in the analysis in 3.0. This alternative was selected as the preferred alternative by the Non-Federal Sponsor.

## 3.0 ENVIRONMENTAL SETTING AND CONSEQUENCES

NEPA and the CEQ's NEPA Implementing Regulations require that an EA identify the likely environmental effects of a proposed project and that the agency determine whether those impacts may be significant. Impacts can be either beneficial or adverse and can be either directly related to the action or indirectly caused by the action. Direct effects are caused by the action and occur at the same time and place (40 CFR § 1508.8[a]). Indirect effects are caused by the action and are later in time or further removed in distance but are still reasonably foreseeable (40 CFR § 1508.8[b]).

The determination of whether an impact significantly affects the quality of the human environment must consider the context of an action and the intensity of the impacts (40 CFR § 1508.27).

The term "context" refers to the affected environment in which the proposed action would take place and is based on the specific location of the proposed action, taking into account the entire affected region, the affected interests, and the locality. The term intensity refers to the magnitude of change that would result if the proposed action were implemented.

Determining whether an effect significantly affects the quality of the human environment also requires an examination of the relationship between context and intensity. In general, the more sensitive the context (i.e., the specific resource in the proposed action's affected area), the less intensive an impact needs to be in order for the action to be considered significant. Conversely, the less intense of an impact, the less scrutiny even sensitive resources need because of the overt inability of an action to effect change to the physical environment. The consideration of context and intensity also must account for the indirect effects from a proposed action. Starting with Section 3.1, this chapter describes the existing environmental conditions in the project area (affected environment) providing a baseline for measuring expected changes that would result from implementation of the considered alternatives.

This section presents the adverse and beneficial environmental effects (direct and indirect) of the NAA and the preferred alternative (Recommended Plan). While an effort was made to provide discrete effects analysis within this document that distinguishes between sections of the proposed Action that are funded by the Federal sponsor, the distinctions between the two are often difficult to partition due to the small footprint and linear and connected nature of the Project. The section is organized by resource type, with the effects of alternatives discussed under each resource. Impacts are quantified whenever possible. Qualitative descriptions of impacts are explained by accompanying text where used.





Qualitative definitions/descriptions of impacts as used in this section of the EA include:

Degree:

- No Effect, or Negligible – a resource would not be affected, or the effects would be at or below the level of detection, and changes would not be of any measurable or perceptible consequence.
- Minor – effects on a resource would be detectable, although the effects would be localized, small, and of little consequence to the sustainability of the resource. Mitigation measures, if needed to offset adverse effects, would be simple and achievable.
- Moderate – effects on a resource would be readily detectable, localized, and measurable. Mitigation measures, if needed to offset adverse effects, would be extensive and likely achievable.
- Significant – effects on a resource would be obvious and would have substantial consequences. The resource would be severely impaired so that it is no longer functional in the project area. Mitigation measures to offset the adverse effects would be extensive, and success of the mitigation measures would not be guaranteed.

Duration:

- Short term – temporary effects caused by the construction and/or implementation of a selected alternative.
- Long term – caused by an alternative and remain after the action has been completed and/or after it is in full and complete operation.

It is understood that the Non-Federal Sponsor will be responsible for obtaining all permits necessary for construction and implementation of the proposed Project.

### 3.1 Land Use

#### 3.1.1 Existing Condition

The proposed Project area is located within the Central Appalachians and Dissected Appalachian Plateau ecoregions of Kentucky (USEPA 2023a). Land use in this region generally includes surface mining, underground coal mining, logging, and both gas and oil production (USEPA 2023a). According to the Multi-Resolution Land Characteristics Consortium (MRLC) National Land Cover Database (NLCD), the majority of the Project area is within developed open space and developed, medium intensity areas (MRLC 2024). These corollate to the existing road ROW and residential housing along Leeco Road, Grace Mountain Lane, and Camp Creek Road. The remaining Project area crosses an undeveloped forested parcel (MRLC 2024).

#### 3.1.2 Environmental Consequences

##### 3.1.2.1 No Action

The NAA would have no effect on land use. The roads would continue to be cleared, open ROW, and the developed residential areas would also remain static.

##### 3.1.2.2 Recommended Plan

The Recommended Plan would not cause any changes to land use. The sanitary system will be placed within existing road ROWs and be installed underground; therefore, there will be no changes to the roadsides or residential areas. The proposed lift station and 40 grinder pumps would be installed within

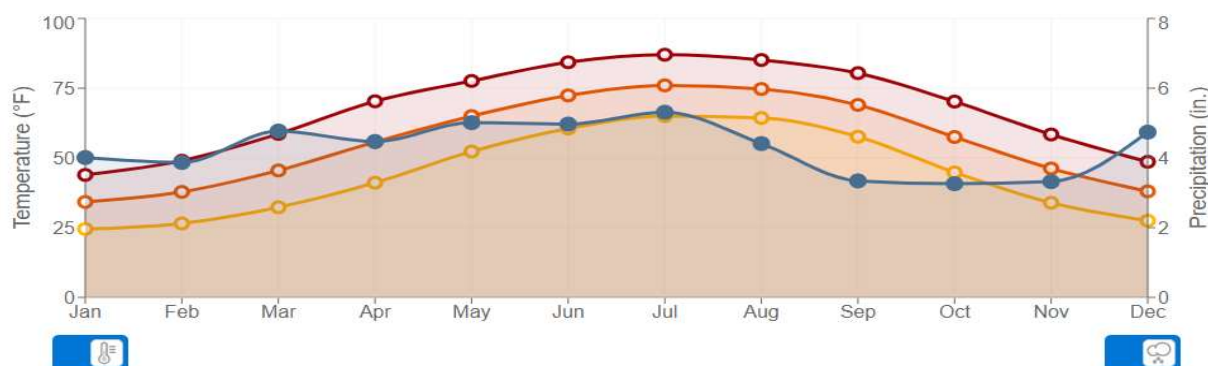


developed areas so land use wouldn't change. Horizontal directional drill (HDD) technology will be used to cross the undeveloped forested portion of the line; therefore, no changes to this land cover type will occur.

### 3.2 Climate Change Considerations

#### 3.2.1 Existing Condition

The climate of the Project area is humid and subtropical. Precipitation and temperature data collected by NOAA for the Ohio River Basin since 1952 indicates that there has been a slight increase in temperature and increased precipitation, particularly during the early fall season (Ohio River Basin Climate Change Pilot Study Report 2017). Figure 2 provides climate data for the proposed Project site derived from the Buckhorn Lake, Kentucky, weather station (USC00151080), which is 17.5 miles northwest of the Project area. Average temperatures range from 34.2°F in January to 76°F in July, with an annual average of 56.0°F. Monthly maximum temperatures range from 43.9°F in January to 87.0°F in July, and monthly minimum temperatures range from 24.5°F in January to 65.0°F in July. Average precipitation ranges from 5.31 inches in July to 3.26 inches in October with a total annual average of 51.48 inches (National Oceanic and Atmospheric Administration [NOAA] 2023). See Appendix B for detailed climate data.



Month	• MAX TEMP (°F)	• MIN TEMP (°F)	• AVG TEMP (°F)	• PRECIP (IN)
Jan	43.9	24.5	34.2	4.01
Feb	49.0	26.5	37.8	3.87
Mar	58.6	32.3	45.5	4.77
Apr	70.3	41.1	55.7	4.47
May	77.6	52.3	65.0	5.01
Jun	84.3	60.5	72.4	4.97
Jul	87.0	65.0	76.0	5.31
Aug	85.1	64.3	74.7	4.41
Sep	80.4	57.6	69.0	3.34
Oct	70.2	44.8	57.5	3.26
Nov	58.4	33.9	46.2	3.32
Dec	48.6	27.5	38.0	4.74

**Figure 2.** Monthly Climate Averages (1991-2020) at Buckhorn Lake, Kentucky (USC00151080) (NOAA 2023).

Based on climate change modeling performed for the Ohio River Basin Climate Change Pilot Study Report, the Kentucky-Licking HUC is projected to experience moderate flow increases overall (15–25%) and during spring maximum flows (5–15%). Conversely, the Kentucky and Licking River sub-basin drainages could experience a 35 - 50% reduction in rainfall and river flow of below the base years. In addition, the late summer-fall low-flow period will become droughty, particularly toward the end of the century. The most likely impacts of these changes could be manifest in a variety of ways, including increased stream habitat scouring and flood damage to human communities during the spring and lowered fish and mussel carrying capacity. The overall trend of decreased flows in late summer-fall and rising temperature could also trigger user conflicts from increased consumptive uses such as irrigation and wastewater dilution/permitting (Ohio River Basin Climate Change Pilot Study Report 2017).

Based on the Ohio River Basin Climate Change Pilot Study Report, most of the watersheds within the Ohio River Basin, which includes Middle Fork Kentucky River, will experience some level of sensitive fish and mussel and human impacts based on projections. A subset of watersheds are likely at greatest risk



due to the (1) severity of changes projected, (2) breadth and severity of the impacts of these changes to both human communities and sensitive aquatic organisms, and (3) current or anticipated watershed land use and functioning that would prevent or limit the ability of these areas to accommodate changes. Based on these criteria, the Allegheny, Kanawha, Kentucky-Licking, Middle Ohio, and Wabash watersheds appear to be at greatest risk. These watersheds contain significant distributions of sensitive aquatic organisms (Ohio River Basin Climate Change Pilot Study Report 2017).

### 3.2.2 Environmental Consequences

#### 3.2.2.1 No Action

Given the potential for increased flow and potential flooding, more of the failing septic systems could be affected by future flood events, leading to a minor long-term adverse impact if waste from failing systems gets washed into the Middle Fork Kentucky River or other nearby water conveyances.

#### 3.2.2.2 Recommended Plan

As failing septic systems would be removed and replaced by a sanitary sewer line, which is required to meet FEMA standards within the floodplain portion along the Middle Fork Kentucky River, the Recommended Plan would reduce potential wastewater discharge associated with increased flooding events, leading to a minor long-term beneficial impact to the surrounding environment.

### 3.3 Greenhouse Gas Emissions

#### 3.3.1 Existing Condition

The consideration of the impacts of greenhouse gas (GHG) emissions to the environment is required by a number of Federal regulations. These include: Executive Order (EO) 14096 Revitalizing our Nation's Commitment to Environmental Justice for All, which stipulates that projects should consider climate related impacts to communities with environmental justice concerns; EO 14008 Tackling the Climate Crisis at Home and Abroad,

Climate change is inherently a cumulative global issue. This means that one molecule of a GHG released anywhere on Earth has been assumed to have the same impact on climate regardless of its location. Consequently, the geographic scope for analyzing the effects of GHG emissions is vast, and it is best to evaluate these effects in relation to state and Federal GHG emission goals and standards. The state of Kentucky currently has no GHG emission goals or standards. EO 14057: *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*, sets specific Federal goals for GHG emissions including:

- 100% carbon pollution-free electricity on a net annual basis by 2030, including 50% 24/7 carbon pollution-free electricity.
- 100% zero-emission vehicle acquisitions by 2035, including 100% zero-emission light-duty vehicle acquisitions by 2027.
- A net-zero emissions building portfolio by 2045, including a 50% emissions reduction by 2032.
- A 65% reduction in scope 1 and 2 greenhouse gas emissions, as defined by the Federal Greenhouse Gas Accounting and Reporting Guidance, from Federal operations by 2030 from 2008 levels.



- Net-zero emissions from Federal procurement, including a Buy Clean policy to promote use of construction materials with lower embodied emissions.
- Climate resilient infrastructure and operations
- A climate- and sustainability-focused Federal workforce.

According to the EPA (2024), there are four sectors of the U.S. economy produce the majority of the GHG's that are emitted each year. They include:

1. Energy – The energy sector, particularly the combustion of fossil fuels for electricity generation, is a major contributor to GHG emissions. This includes emissions from power plants and other energy-related activities necessary to power commercial and residential buildings for lighting, heating, cooling, and operation of appliances.
2. Transportation – The transportation sector is a significant source of GHG emissions, primarily from the combustion of gasoline and diesel fuels in cars, trucks, airplanes, ships, and trains.
3. Industry – Industrial processes, including manufacturing, construction, and chemical production, release GHGs through activities such as burning fossil fuels for energy, chemical reactions, and the use of industrial equipment.
4. Agriculture – Agricultural activities contribute to GHG emissions through practices such as livestock digestion, manure management, use of gas- and diesel-powered machinery, and the use of synthetic fertilizers.

The relative amounts of GHG emissions produced by each sector can vary depending on the methodology of the analysis, as well as factors such as changes in technology and policy over time. However, as of recent assessments, a rough breakdown of GHG emissions by sector in the United States is as follows (USEPA, 2024b):

- Energy: Approximately 28-30%
- Transportation: Approximately 27-29%
- Industry: Approximately 22-24%
- Agriculture: Approximately 9-10%

Leslie County uses approximately 169,590 megawatt hours annually and produces 132,947,783 kilograms of carbon dioxide (CO<sub>2</sub>) annually across all users (Find Energy 2024). Though a quantitative method for calculation is not available, anerobic conditions within the existing septic systems would produce small amounts of hydrogen sulfide (H<sub>2</sub>S) and methane (CH<sub>4</sub>), however this would be roughly the same amount under both the NAA and Recommended Plan.

#### *3.3.2.1 No Action*

As no construction would occur, there would be no impacts to GHG emissions. Trace amounts of H<sub>2</sub>S, CH<sub>4</sub>, and (nitrous oxide) N<sub>2</sub>O would be emitted at deminimis levels due to anerobic conditions within existing septic tanks.



### 3.3.2.1 Recommended Plan

The Recommended Plan would increase local power usage by roughly 13.43 megawatt hours per year based on estimated energy usage for the 40 proposed grinder pumps and the proposed pump station (Hingham-ma 2023, US Department of Energy 2012). This was based on known electrical usage of grinder pumps and a conversion of a pump station in Milford Connecticut, adjusted for the population size of the Project area. The MWh were then converted to GHG via the USEPA's conversion factor for electrical use within the SERC Tennessee Valley region. The annual increase of GHG due to the pump stations would include 5.68 metric tons of CO<sub>2</sub>, 499.52 grams of CH<sub>4</sub>, and 73.10 grams of N<sub>2</sub>O. These amounts were inputted into the Net Emissions Analysis Tool (NEAT) as O&M for the 50-year study period, in addition to the short-term construction emissions described below.

To quantify short-term construction related emissions, the Non-Federal Sponsor provided an estimate of what construction equipment would be necessary for the implementation of the project, as well as the approximate days each piece of equipment would be used. The total number of days was then converted to hours and multiplied by the estimated fuel efficiency (in gallons per hour) of each piece of equipment. The totals for each piece of equipment were added together to create the estimated total diesel fuel use for the entire construction Project, which was 24,272 gallons. The amount of GHG emitted by each gallon of diesel fuel is known, so the total was converted to grams of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O. These metrics were then inputted into NEAT, along with the long-term annual increase from the pump stations in order to calculate net emissions as well as social costs. The result of the NEAT tool's analysis indicated that the proposed sewer line construction would emit an estimated 532 metric tons of CO<sub>2</sub>, 35,025 grams of CH<sub>4</sub>, and 5,665 grams of N<sub>2</sub>O. Total social costs from construction and long-term O&M emissions are estimated to be \$93,040. These emissions represent a moderate long-term adverse impact to GHG emissions but would not cause USACE to miss federal GHG goals as spelled out by Engineering and Construction Bulletin 2024-9: Guidance for Incorporating Greenhouse Gas Emissions Analysis in National Environmental Policy Act Reviews. For a full view of calculations and a list of calculation assumptions, please refer to the full GHG analysis in Appendix C.

## 3.4 Terrestrial Habitat

### 3.4.1 Existing Condition

The Recommended Plan is located within the Dissected Appalachian Plateau Level IV EPA ecoregion within the Central Appalachians Level III EPA Ecoregion (EPA 2023). The Central Appalachians is a region is covered in a highly diverse mixed mesophotic forest (EPA 2023). This region consists of mostly steep slopes with narrow valleys and peaks creating a rugged landscape. Forested areas consist of American beech (*Fagus grandifolia*), tuliptree (*Liriodendron tulipifera*), sugar maple (*Acer saccharum*), eastern hemlock (*Tsuga canadensis*), American basswood (*Tilia americana*), buckeye (*Aesculus sp.*), chestnut oak (*Quercus montana*), red maple (*Acer rubrum*), black oak (*Quercus velutina*), poast oak (*Quercus stellata*), hickory (*Carya sp.*), and others (bplant 2024). The region has been extensively logged, however, 90% of the area is currently forested or in the process of regeneration. Many areas are managed as commercial woodlands (bplant 2024).

The Project area primarily consists of roadside habitat with 0.25 miles of ROW crossing an undeveloped forested between Camp Creek Road and Grace Mountain Lane.





### 3.4.2 Environmental Consequences

#### 3.4.2.1 No Action

The NAA would have no effect on terrestrial habitat.

#### 3.4.2.2 Recommended Plan

The Recommended Plan would have minor short-term adverse impacts to terrestrial habitat. Land disturbance would occur primarily within roadside habitat and consist of temporary trenching impacts. These short-term impacts would dissipate post construction as existing vegetation regrows, likely within the first growing season. Terrestrial impacts due to construction related erosion would be mitigated by Best Management Practices (BMP) such as silt fence, post construction seeding with native vegetation, or other erosion/sediment control devices. Impacts could be beneficial if disturbed land is reseeded with native plant species as they would replace existing roadside invasive species.

The Recommended Plan should involve construction sequencing or construction scheduling BMPs which involves following a specified schedule that coordinates the timing of earth-disturbing activities and the installation of erosion and sediment control (ESC) practices and post-construction stormwater controls. Construction procedures that limit land clearing provide for timely installation of ESC practices and quickly restore protective cover after completion, which can significantly reduce a site's erosion potential (Table 1).

**Table 1.** Scheduling Considerations for Construction Activities (adapted from MPCA 2018)

Construction Activity	Schedule Consideration
Construction planning	Before beginning construction activities, construction staff should identify natural features and sensitive areas (e.g., streams, wetlands, buffer zones), mark their locations on maps and site plans, and flag them on-site. ESC practices should be installed, as needed, to protect these features before construction activities. Additionally, construction staff should consider and coordinate the locations of cuts and fills of the land to minimize soil movement. ESC practices should be installed around areas where soil is stockpiled at the site.
Construction access, site entrance, construction routes, areas designated for equipment parking	As soon as construction begins, construction staff should stabilize any bare entrances and exits to the site and traffic routes with gravel and temporary vegetation. During construction sequencing for residential properties, residents who access recently constructed homes should be able to do so from a point that will not disturb active construction activities in another area of the site.
Sediment traps and barriers, basin traps, silt fences, inlet/outlet protection	Within the site, construction staff should install principal basins or other ESC practices—per approved plans—and add more traps and barriers as needed during grading. If existing inlets to the stormwater conveyance system are present on-site, construction staff should also apply ESC practices to these areas to prevent sediment and debris from entering the system during construction activities.
Stormwater control diversions, perimeter dikes, water bars, outlet protection	Construction staff should install ESC practices, per approved plans, during or before initial site access and before land grading. Additional stormwater control measures should be installed during grading, as needed.
Stormwater conveyance system, stabilization of stream banks, storm drains, channels, inlet and outlet protection, slope drains	If applicable, construction staff should stabilize stream banks as soon as possible and install a principal stormwater conveyance system with stormwater control measures. The remainder of the systems should be installed after grading.



Land clearing and grading, site preparation (cutting, filling, and grading; sediment traps; barriers; diversions; drains; surface roughening)	Construction staff should conduct major clearing and grading activities after installing principal ESC practices and key stormwater control measures. Additional ESC practices should be installed as grading continues. Construction staff should clear disposal areas as needed, and mark trees and buffer areas for preservation. Additional ESC practices should be installed as needed.
Surface stabilization, temporary and permanent seeding, mulching, sodding, riprap	Construction staff should immediately apply temporary or permanent stabilizing measures to any disturbed areas where work has either been completed or delayed.
Building construction, utilities installation, paving	During construction, staff should install any erosion and sediment control practices that are needed. These practices should be inspected regularly to ensure they are properly operating and adequately maintained.
Landscaping and final stabilization, topsoil application, trees and shrubs, permanent seeding, mulching, sodding, riprap	Construction staff should remove temporary ESC practices and stabilize all open areas to prevent erosion.

### 3.5 Invasive Species

#### 3.5.1 Existing Condition

Exotic plant species possess characteristics of invasive species and spread easily into native plant communities and displace native vegetation (Kentucky Exotic Pest Plant Council 2013). Table 2 outlines the exotic plant species that pose a severe threat as determined by the Kentucky Exotic Pest Plant Council. The Kentucky Exotic Pest Plant Council also provides a watch list of exotic plants species that pose significant and moderate threats. The proposed Project site does not have an existing inventory of invasive species and their presence is not well known; however, it is anticipated that invasive species will be abundant due to the disturbed roadside setting that most of the proposed Project footprint falls in.

**Table 2.** Invasive Species listed as Severe Threat for Kentucky (Kentucky Exotic Pest Plant Council 2013)

Scientific Name:	Common Name:
<i>Achyranthes japonica</i>	Japanese chaff flower
<i>Ailanthus altissima</i>	Tree-of-heaven
<i>Alliaria petiolata</i>	Garlic mustard
<i>Ampelopsis brevipedunculata</i>	Porcelain berry
<i>Arthraxon hispidus</i>	Hairy jointgrass
<i>Carduus nutans</i>	Musk thistle
<i>Celastrus orbiculatus</i>	Oriental bittersweet
<i>Cirsium arvense</i>	Canada thistle
<i>Clematis terniflora</i>	Leatherleaf clematis
<i>Conium maculatum</i>	Poison hemlock
<i>Securigera varia</i>	Crown vetch
<i>Dioscorea polystachya</i>	Chinese yam
<i>Elaeagnus umbellata</i>	Autumn olive
<i>Euonymus alatus</i>	Burning bush
<i>Euonymus fortunei</i>	Wintercreeper
<i>Festuca arundinacea</i>	Kentucky 31 fescue
<i>Glechoma hederacea</i>	Ground ivy
<i>Lespedeza cuneata</i>	Sericea lespedeza
<i>Kummerowia stipulacea</i>	Korean lespedeza
<i>Ligustrum sinense</i> , <i>L. vulgare</i>	Privet
<i>Lonicera japonica</i>	Japanese honeysuckle
<i>Lonicera maackii</i> , <i>L. fragrantissima</i> , <i>L. standishii</i>	Bush honeysuckles
<i>Lysimachia nummularia</i>	Moneywort
<i>Lythrum salicaria</i>	Purple loosestrife





<i>Melilotus alba</i>	White sweet clover
<i>Melilotus officinalis</i>	Yellow sweet clover
<i>Microstegium vimineum</i>	Japanese stiltgrass
<i>Miscanthus sinensis</i>	Chinese silver grass
<i>Paulownia tomentosa</i>	Princess tree
<i>Phragmites australis</i>	Common reed
<i>Polygonum cuspidatum</i>	Japanese knotweed
<i>Pyrus calleryana</i>	Callery pear
<i>Pueraria lobata</i>	Kudzu
<i>Ranunculus ficaria</i>	Lesser celandine
<i>Rhamnus cathartica</i>	European buckthorn
<i>Rosa multiflora</i>	Multiflora rose
<i>Sorghum halepense</i>	Johnson grass
<i>Stellaria media</i>	Chickweed

### 3.5.2 Environmental Consequences

#### 3.5.2.1 No Action

The NAA would have no effect on invasive species.

#### 3.5.2.2 Recommended Plan

The Recommended Plan is anticipated to have no or negligible beneficial impacts on invasive species. The Project area consists of previously disturbed ROW and any ground disturbance will be revegetated with native plant species, which could provide negligible long term beneficial impacts. Heavy equipment BMP's will be followed to further limit potential spread of invasive species.

## 3.6 Aquatic Habitat/Water Quality

### 3.6.1 Existing Conditions

Section 303(d) of the Clean Water Act (CWA) requires States, Territories, and authorized Tribes to list and prioritize waters for which technology-based limits alone do not ensure attainment of water quality standards. The CWA and the United States Environmental Protection Agency (USEPA) regulations require that Total Maximum Daily Load (TMDL) be developed for all waters on the section 303(d) lists. A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation or attribution of that amount to the pollutant's sources. Lists of 303(d) waters are made available to the public and submitted to the USEPA and the OEPA. The process of formulating TMDLs for specific pollutants is a method by which impaired water body segments are identified and restoration solutions are developed. Ultimately, the goal of TMDL process is full attainment of biological and chemical WQS and, subsequently, removal of water bodies from the 303(d) list (USEPA 2009).

The proposed Project area is part of the Middle Fork Kentucky watershed (Hydrologic Unit Code (HUC) 8: 05100202) (USGS 2023). A portion of the proposed Project area along Camp Creek Road lies beside and within the 100-year flood plain of the Middle Fork Kentucky River (FEMA 2023). The Middle Fork Kentucky River 77.6 to 85.4 segment (Muncy Creek to Greasy Creek) is in full support for warm aquatic habitat and is an outstanding state water resource. Primary contact recreation, secondary contact recreation, fish consumption, and domestic water supply data was not available for this segment (USEPA 2024b).

In terms of aquatic fauna for the Middle Fork Kentucky River, a total of 91 fish species from multiple families were inventoried within the 877 square kilometer watershed including lampreys, gars, herrings



and shads, mooneyes, pikes, carps and minnows, suckers, catfishes, killifishes and livebearers, silversides, temperate basses, perches and darters (Branson and Batch 1984).

The Non-Federal Sponsor provided USACE with a wetlands and waterbodies delineation in support of the Recommended Plan. It was found that the proposed Project area contained four relatively permanent waterbodies, one of which was the Middle Fork Kentucky River (EcoSource Inc., 2024). The full delineation report can be found in Appendix D.

### 3.6.2 Environmental consequences

#### 3.6.2.1 No Action

Under the NAA, moderate long-term adverse impacts to aquatic habitat would occur. Untreated sewage would continue to be released from failing septic systems into the watershed introducing fecal coliform and degrading water quality and habitat.

#### 3.6.2.2 Recommended Plan

The Recommended Plan would have negligible short-term adverse impacts to aquatic habitat. The portion of the line alongside the Middle Fork Kentucky River could see de minimus amounts of sediment runoff during construction activities. This would be mitigated with a Stormwater Pollution Prevention Plan (SWPPP) and appropriate BMPs. The proposed route crosses four relatively permanent waterways, one of which is the Middle Fork Kentucky River. All waterbodies are to be avoided entirely via HDD methodology, avoiding potential impacts. Moderate long-term beneficial impacts would occur due to the removal of aging/failing septic systems, which release raw sewage into the environment. While no impacts to surface waters are anticipated due to proposed Project activities, the Non-Federal Sponsor will be responsible for any applicable Clean Water Act (CWA) Section 404 and Section 401 permitting related to the Recommended Plan.

### 3.7 Floodplains

#### 3.7.1 Existing Condition

Executive Order 11988 requires Federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. The proposed sewer line partially falls within a Zone A (100 year) floodplain associated with the Middle Fork Kentucky River along Camp Creek Road (FEMA 2023) (Figure 3; Appendix E).

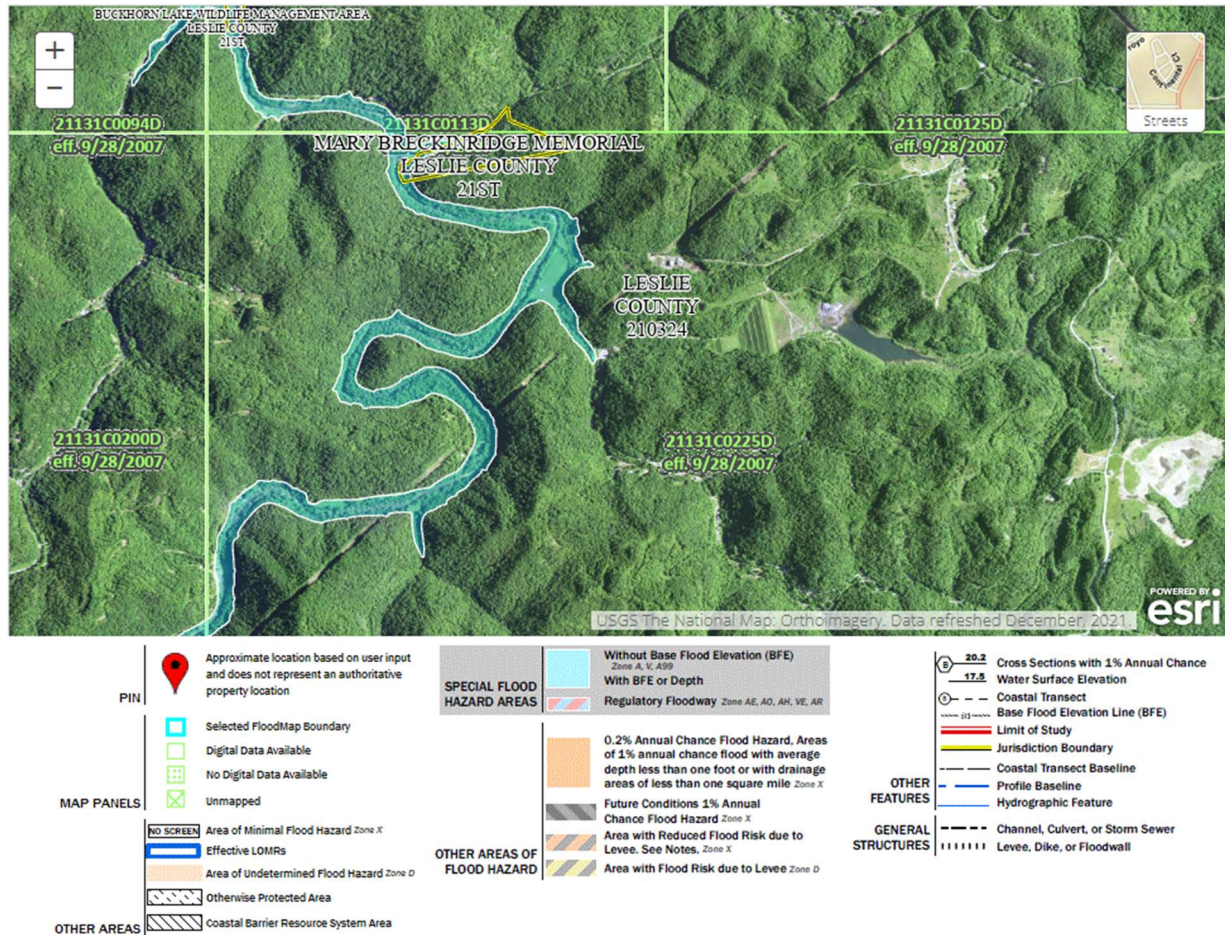


Figure 3. Floodplain Map of the Recommended Plan Project Area (FEMA 2023).

### 3.7.2 Environmental Consequences

#### 3.7.2.1 No Action

The NAA would have no adverse effects on floodplains, as no construction within the floodplain would occur.

#### 3.7.2.2 Recommended Plan

The Recommended Plan would have no adverse effects on floodplains. Implementation of the Recommended Plan would require construction in the floodplain for installation of the sewer line extension and any supporting infrastructure near the Middle Fork Kentucky River. Because it would be buried below grade, construction of the sewer line extension would not change the Base Flood Elevation or adversely affect the floodplain. Any manhole covers or other such above grade construction would represent negligible impacts due to their combined footprint within the floodplain being small. Additionally, the proposed sewer installation would occur within a disturbed road footprint, further reducing potential impacts. The Non-Federal Sponsor will be responsible obtaining applicable floodplain development permits.



### 3.8 Soils and Prime and Unique Farmland

#### 3.8.1 Existing Condition

The Farmland Protection Policy Act (FPPA) urges federal agencies to minimize the unnecessary and irreversible conversion of farmland to nonagricultural uses. A desktop review conducted via the NRCS Web Soil Survey application indicates ten soil map units and one non-soil unit (i.e., Water) occur within the Project area. Two soil map units, Grigsby fine sandy loam, 0 to 3 percent slopes (UGrig) and Combs silt loam, 0 to 4 percent slopes, occasionally flooded Combs silt loam, 0 to 4 percent slopes, occasionally flooded (uComB), are either prime farmland or considered prime farmland if protected from flooding or not frequently flooded during the growing season. These soil map units occur within approximately 7.0% of the Project area on the western side of the proposed line near the Middle Fork Kentucky River (NRCS 2024). See table 3 below for information on the prime farmland designation of each soil map unit and its approximate percentage within the Project area. See Appendix F for detailed soil map unit descriptions and a soil map of the Project area.

**Table 3.** Predominant soils of the Leeco Road Campground Sewer Line Extension Project, Leslie County, Kentucky (NRCS 2024).

Soil Map Unit	Prime Farmland Designation	Approximate Percentage of Project Area
Fairpoint and Bethesda soils, 2 to 70 percent slopes, benched, stony (FaF)	Not prime farmland.	25.0%
Fairpoint soils, undulating (FaB)	Not prime farmland.	22.3%
Matewan-Marrowbone-Latham complex, 20 to 80 percent slopes, very rocky (DLF)	Not prime farmland.	9.1%
Shelocta-Highsplint-Gilpin complex, 20 to 70 percent slopes, very stony (uShgF)	Not prime farmland.	12.3%
Udorthents-Urban land complex, 15 to 35 percent slopes (uUdoD)	Not prime farmland.	9.8%
Matewant-Marrowbone-Latham complex, 20 to 80 percent slopes, very rocky (DLF)	Not prime farmland.	7.7%
Grigsby fine sandy loam, 0 to 3 percent slopes, frequently flooded (UGrig)	Prime farmland if protected from flooding or not frequently flooded during the growing season.	6.5%
Shelocta-Cutshin-Gilpin complex, 20 to 75 percent slopes, very stony (SCF)	Not prime farmland.	6.3%
Water (W)	Not prime farmland.	5.6%
Udorthents-Urban land complex, 0 to 15 percent slopes (uUdoC)	Not prime farmland.	2.9%





Udorthents-Urban land-Grigsby complex, 0 to 6 percent slopes, occasionally flooded (uUdrB)	Not prime farmland.	1.1%
Combs silt loam, 0 to 4 percent slopes, occasionally flooded Combs silt loam, 0 to 4 percent slopes, occasionally flooded (uComB)	All areas prime farmland.	0.5%

### 3.8.2 Environmental Consequences

#### 3.8.2.1 No Action

The NAA would have no effect on soils or prime and unique farmland because no construction would occur.

#### 3.8.2.2 Recommended Plan

The Recommended Plan would have no adverse effects on soils, and no conversion of agricultural land classified as Prime or Statewide Important Farmland would occur. While prime farmland designated soil map units do occur within the Project area, proposed Project activities are to occur within an existing ROW and are below grade. Due to this, no conversion of prime farmland is anticipated to occur. Furthermore, as the Project disturbance area would be above 1 acre, erosion control BMPs and soil stabilization practices would be implemented in association with a stormwater pollution prevention plan (SWPPP) as stipulated by CWA Section 402. The Non-Federal Sponsor will be responsible for obtaining applicable CWA Section 402 NPDES permits.

### 3.9 Wetlands

#### 3.9.1 Existing Condition

The U.S. Fish and Wildlife Service (USFWS), National Wetlands Inventory (NWI) Wetland Mapper was reviewed for the proposed Project area. Unconsolidated bottom pond habitat and intermittent riverine habitat was observed within the Project area. In addition palustrine emergent (PEM) wetland habitat was identified within the portion of the line crossing from Camp Creek Road to Grace Mountain Lane (Appendix G)(USFWS 2024a). PEM wetlands are defined as freshwater wetland habitat consisting of less than 30% aerial coverage of woody tree and shrub species. Common species within a PEM wetland include cattails (*Typha spp.*), sedges (*Carex spp.*), bulrushes (*Scirpus spp.*), smart weed (*Persicaria spp.*), and other semi aquatic species (FGDC 2013). The Non-Federal Sponsor performed a wetland delineation covering the length of the ROW. The section containing the NWI mapped PEM habitat was not surveyed since the revised plan would avoid this area completely via HDD. No wetlands were identified by this field effort (EcoSource Inc. 2024).

#### 3.9.2 Environmental Consequences

##### 3.9.2.1 No Action

The NAA would have minor long-term adverse impacts to wetlands as potential releases of raw sewage from failing septic tanks could cause an increase in nitrates and phosphates within aquatic ecosystems.

##### 3.9.2.2 Recommended Plan

The Recommended Plan would have no effect on wetland habitat. While NWI mapped wetlands do occur within the Project area, they would be completely avoided via HDD technology (USFWS 2024a). Offsite



impacts due to runoff from Project activities would be mitigated via the usage of sediment control best management practices (BMP). While no impacts to wetland are anticipated, the Non-Federal Sponsor will be responsible for obtaining any necessary CWA Section 404 and Section 401 permits for construction.

### 3.10 Hazardous, Toxic, and Radioactive Waste (HTRW)

#### 3.10.1 Existing Condition

A Phase I HTRW Environmental Site Assessment was conducted by the Non-Federal Sponsor using ASTM E-1527-21 Standards to identify environmental conditions and to identify the potential presence of HTRW contamination located in and around the project's construction work limits (see Appendix H for the full report). This investigation included a Federal and state environmental database search, site reconnaissance, review of historical aerial and topographic mapping, and personal interviews. The investigation revealed that there is no evidence of HTRW that could impact the proposed Project (Nesbitt Engineering 2024).

#### 3.10.2 Environmental Consequences

##### 3.10.2.1 No Action

The NAA would have no effect on existing HTRW resources and would not produce any new HTRW sites since no construction would occur.

##### 3.10.2.2 Recommended Plan

The Recommended Plan would have no effect on HTRW resources since no HTRW sites were documented in or near the Project area. Additionally, the Recommended Plan is not expected to produce HTRWs as a result of implementing the proposed Project.

### 3.11 Cultural Resources

#### 3.11.1 Existing Conditions

The Project area has undergone extensive environmental changes in the past 50 years. A 1977 aerial image of the proposed sewer line path shows the majority of the Project area as undisturbed terrain; however, by 1997 the majority of the roadways were constructed and by 2022 the existing houses and the area where the lift station is to be constructed have all been developed. These data demonstrate the roadway and exiting houses are all less than 50 years old.

The background review identified five (n=5) surveys within two kilometers of the Project area. Of these five surveys, four (n=4) were located completely outside the current Project area and only one survey incorporated a small portion of the existing Project area (Stephenson et al. 2009). Furthermore, the background review did not identify any known archaeological or cultural-historic resources within the Project area (hereinafter referred to as the APE). In fact, there are only 2 (n=2) archaeological resources and only five (n=5) above ground resources (Table 4) within two kilometers of the Project area.



**Table 4:** Identified cultural resources within 2-km of the APE.

Site No.	Type	NRHP	Location in relation the APE
15Ls11	Morgan Homestead; single dwelling; 1825-1849 Historic Euro-American residence	Eligible	120 meters southwest of the 4-inch pipe APE
15Ls5	Wendover Frontier Nursing Service; 1900-1924	National Historic Landmark	560 meters northwest of the 4-inch pipe APE
15Ls74	Finley Mine (Hurricane Creek Mine Disaster 12/30/1970)	Undetermined	1.1 km north of the 4-inch pipe APE
15Ls48	Chappel Grocery Store; 1925-1949 commercial building	Undetermined	1.9 km north of the 4-inch pipe APE
15Ls47	Stone house on old 80; single dwelling; 1925-1945; Historic Euro-American Residence	Undetermined	1.95 km north of the 4-inch pipe APE
15Ls42	Historic Euro-America; historic farm / residence	Unassessed	1.3 km southeast of the 2-inch pipe APE
15Ls200	Indetermined Prehistoric; rockshelter	Unassessed	0.4 km west of 2-inch pipe APE

Of the two archaeological sites within two kilometers of the APE, one is an indeterminate prehistoric rockshelter and the other is a Euro-American historic residence. Both archaeological sites are considered unassessed for the Nation Register of Historic Places (NRHP), and both are outside the current APE. Of the 5 above-ground resources three (n=3) are unassessed for the NRHP and all three are located over a kilometer north of the Project area (15Ls47, 15Ls48, and 15Ls74). One resource (15Ls11) is considered eligible for the NRHP and consists of the Morgan Homestead—an 1825-1849 historic Euro-America residence—which is located approximately 120 meters north of the Project area. The last above-ground resource is the Wendover Frontier Nursing Service building (15Ls5) which is listed as a National Historic Landmark. This property is located approximately 560 meters west of the Project area.

### 3.11.2 Environmental Consequences

#### 3.11.2.1 No Action

The NAA would have no effect to cultural resources or Historic Properties. Under the NAA, no environmental alterations or effects would occur through construction or demolition activities, and therefore, would result with no effects to historic properties whether present or not.

#### 3.11.2.2 Recommended Plan

The Project area was subject to a Phase I archaeological survey conducted by USACE. This survey included pedestrian survey and subsurface testing using shovel test probes (STPs). The pedestrian survey included the entire proposed sewer route, and subsurface testing was required in the location of the lift



station and along the span along Coal Branch. A total of twelve (n=12) STPs were excavated. Overall, there were no cultural resources or historic properties identified by the Phase I Survey (Appendix I/), and USACE determined this Project would have no effect to historic places. This determination was coordinated and consulted with the Kentucky State Historic Preservation Officer (SHPO), The Absentee Shawnee Tribe of Indians, The Eastern Shawnee Tribe of Oklahoma, the Shawnee Tribe of Oklahoma, The Cherokee Nation, The Eastern Band of Cherokee Indians, The United Keetoowah Band of Cherokee Indians in Oklahoma, The Delaware Nation, and The Delaware Tribe of Indians in Oklahoma. SHPO accepted the Phase I Survey Report and concurred with USACE's determination of no effect on 13 May 2024; no response was received from any Native American Tribes consulted.

### 3.12 Threatened and Endangered Species

#### 3.12.1 Existing Condition

Section 7 of the Endangered Species Act (ESA) of 1973 requires Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any Project that is conducted, permitted, funded, or licensed by any Federal agency. Listed species and their designated critical habitats are managed by the Ecological Services Program of the USFWS and the fisheries division of the NOAA Fisheries. Desktop analysis conducted via the USFWS's Information for Planning and Consultation (IPaC) tool indicates that eight threatened, endangered, proposed listed, or candidate species have ranges that intersect with the Project area. No designated critical habitat exists within or nearby to the Project area. All threatened and endangered species and their status are provided in Table 5. The full IPaC report for the Recommended Plan Project area is provided in Appendix J (USFWS 2024b).

**Table 5.** Threatened and Endangered Species Potentially Present on or Near Recommended Plan Project Area (USFWS 2024)

Common Name	Scientific Name	Status
Gray bat	<i>Myotis grisescens</i>	Endangered
Indiana bat	<i>Myotis sodalis</i>	Endangered
Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened
Tricolored bat	<i>Perimyotis subflavus</i>	Proposed Endangered
Round Hickorynut	<i>Obovaria subrotunda</i>	Threatened
Salamander Mussel	<i>Simpsonaias ambigua</i>	Proposed Endangered
Kentucky arrow darter	<i>Etheostoma spilotum</i>	Threatened
Monarch butterfly	<i>Danaus plexippus</i>	Candidate

The gray bat was listed as endangered in 1976. The gray bat occurs in limestone karst areas, meaning a landscape marked by caves, sinkholes, springs, and other features, of the southeastern and midwestern United States. Unlike some *Myotis* species in the Midwest and Southeast, gray bats roost on the ceilings of caves and rear young in places where humans can disturb them with their presence through physical touch, noise, and artificial lighting. At the time of listing, the main historical threats to the gray bat were human disturbance to roosting bats, environmental contamination, impoundment of waterways and roost modification or destruction. The species is also negatively impacted by cave commercialization, improper gating, and natural calamities like cave-ins and flood events. Emerging threats, like interactions with wind turbines and climate change, have been added as potential threats, since the gray was first federally listed (USFWS 1997).





The Indiana bat was listed by USFWS as endangered in 1967. Indiana bats hibernate during winter in caves. For hibernation, they require cool, humid caves with stable temperatures under 50° F but above freezing. Very few caves within the range of the species have these conditions. If bats are disturbed or cave temperatures increase during hibernation, more energy is needed, and hibernating bats may starve (USFWS 2006). In the spring, Indiana bats emerge from hibernation and migrate to summer roost sites where they usually roost under loose tree bark of dead or dying trees. During summer, males roost alone or in small groups, while females roost in larger groups of up to 100 bats or more. Indiana bats forage in or along the edges of forested areas. Indiana bats are found over most of the eastern half of the United States. Almost half of all Indiana bats (207,000 in 2005) hibernate in caves in southern Indiana. The 2005 population estimate was about 457,000 Indiana bats, half as many as when the species was listed as endangered in 1967 (USFWS, 2006). Loss and fragmentation of forest habitat are among the major threats to Indiana bat populations. Other threats include white-nose syndrome, winter disturbance, and environmental contaminants (USFWS 2006).

The northern long-eared bat was listed as threatened by USFWS in 2015 and later reclassified as endangered on November 30, 2022. The bats spend the winter months hibernating in caves and mines. During the summer months, the bats roost singly or in colonies underneath bark or in cavities or crevices of both snags and live trees (USFWS, 2015). The primary threat to this species is white nose syndrome, which caused severe population losses in all hibernacula that were infected. Additional threats include loss of summer habitat, which includes roosting trees and other forested areas, and wind turbine strikes (USFWS, 2015).

The tricolored bat was proposed as endangered on September 13<sup>th</sup>, 2022. This species occurs in caves and mines during the winter months. In its extreme southern range, species would make use of culverts, man-made structures, and trees for hibernacula. During the summer months, this species makes use of waterways, wetlands, and other riparian areas for forage and roosts in the leaf clusters or bark of trees (USFWS 2024c). The primary threats to this species are wind turbines and white nose syndrome. In addition, clearing of forested forage habitat also has adverse impacts on this species (NatureServe 2024).

The round hickorynut is a threatened species and has a range that intersects with the Project area. It was listed on March 9<sup>th</sup>, 2023. It is typically found in sand or gravel in riffle, run, and pool habitats within medium to large streams. In addition, they also thrive in shallow habitats with a depth of less than 1 foot with abundant American water-willow. In larger streams, they can be commonly found in depths up to 6.5 feet. This species' diet consists of algae, bacteria, detritus, and other microscopic organisms. The primary threats to this species are habitat loss, degraded water quality from chemical contamination/erosion, and direct mortality from dredging activities (USFWS 2024d).

The salamander mussel was proposed as endangered on August 21, 2023. As a proposed endangered species, it does not currently have full protection under the ESA, however projects must not take actions that could potentially jeopardize the specie's existence. This species ranges throughout Kentucky drainages including the Ohio River, Green River, and Kentucky River basins. No records of this species have been reported from the Tennessee and Cumberland River drainages (Haag and Cicerello 2016). This species is found in upland streams ranging in size from the largest river to small creeks. It is restricted to streams that support its only host, the mudpuppy (*Necturus maculosus*). It prefers habitat within fine sediments under large non-embedded flat rocks in deeper water or slow current areas. It can also be found in gravel riffles within beds of water willow (*Justicia americana*; Haag and Cicerello 2016).



The Kentucky arrow darter is a small benthic fish that typically occupies rocky pools in headwater streams of the upper Kentucky River drainage in eastern Kentucky. The species once occurred in small streams throughout the drainage, but it has now been eliminated from large portions of its historical range, including 35 of 74 historical streams (HUC 4 watersheds). The Kentucky arrow darter currently occupies 52 small stream systems across 10 Kentucky counties (USFWS 2022). However, most remaining populations are isolated and restricted to short stream reaches and, of the species' 52 extant streams, USFWS considers 27 of these populations to be "vulnerable" to extirpation. The species faces ongoing threats from poor water quality and altered habitats caused by coal mining, oil and gas exploration, logging, agriculture, poor land use practices, and development (USFWS 2022). The species' fragmented distribution, lack of gene flow, and low genetic diversity increases its vulnerability to extirpation from chemical spills, habitat disturbance, and catastrophic weather events (e.g., drought, floods).

The monarch is a candidate species and has a range that intersects with the Project area. Monarch butterflies are a species with an annual, multigenerational, migratory life cycle and a cross-continental migratory range covering portions of Canada, the US and Mexico. To complete their life cycle, monarch caterpillars must feed on milkweed (*Asclepias spp.*) plants while adults feed on nectar from a variety of blooming plants. Threatened by habitat loss, climate change, pesticide applications, natural enemies, and other abiotic and biotic stressors, however, monarch butterfly populations are in decline (USFWS 2024e, Monarch Joint Venture 2024).

### 3.12.2 Environmental Consequences

#### 3.12.2.1 No Action

The NAA would result in no adverse effects to threatened or endangered species because no construction or land disturbance would occur.

#### 3.12.2.2 Recommended Plan

**Gray bat, Indiana bat, long-eared bat, and tricolored bat-** No caves or cave-like features are located within or near the proposed Project area. As the one wooded section along the proposed line is to be avoided via HDD and no trees exist in the roadside ROW, no bat habitat is anticipated to be impacted by the Recommended Plan. Due to this, the Recommended Plan is anticipated to have *no effect* on listed bat species.

**Kentucky Arrow Darter-** The United States Environmental Protection Agency's NEPAAssist web application indicates that the nearest Kentucky arrow darter designated critical habitat is 4 miles west of the Project area (USEPA 2024c). Aquatic habitat within the Project area is limited to a portion of Middle Fork Kentucky River and three other relatively permanent waterways. All waterways are to be avoided via HDD, meaning no potential habitat or individuals would be impacted. Furthermore, habitat present is either lacustrine in nature (Middle Fork Kentucky) or intermittent stream, neither of which represent suitable habitat for this species. Due to this, the Recommended Plan is anticipated to have *no effect* on the Kentucky Arrow Darter.

**Round Hickorynut and Salamander Mussel** – Under the Recommended Plan, all waterbodies would be avoided via HDD methodology and sediment controls would be in place for land construction to reduce possible sedimentation. Due to this, the Recommended Plan is anticipated to have *no effect* to listed or proposed listed mussel species.



**Monarch Butterfly** – The monarch butterfly does not currently have protections under the ESA as a candidate species. The Project area is primarily disturbed roadside and lacks the large milkweed patches the species relies on. It would provide moderate forage habitat as wildflowers are present. Project activities would only temporarily impact this habitat as once the Project is complete, revegetation with native species would occur, resulting in improved forage habitat. In addition, the impacted areas are limited in scope and an abundance of wildflower resources are nearby, which would better suit the species needs. Due to these factors, Project activities are anticipated to have *no effect* on the monarch butterfly.

### 3.13 Migratory Birds and Eagles

#### 3.13.1 Existing Condition

The MBTA of 1918 (16 United States Code [U.S.C.] 703-712) implements the 1916 Convention between the United States (U.S.) and Great Britain (for Canada) for the protection of migratory birds. Later amendments implemented additional treaties between the U.S. and Mexico (1936), the U.S. and Japan (1972), and the U.S. and the former Union of Soviet Socialistic Republic (1976). These four treaties and their enabling legislation established federal responsibilities for the protection of nearly all species of migratory birds, their parts, eggs, and nests. Under the provisions of the MBTA, it is unlawful to "...pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird or any part, nest, or egg of any such bird..." (16 U.S.C. § 703).

The term "take" means "...to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect..." (50 C.F.R 10.12). Intentional take is a take that is the purpose of the action. Unintentional take (incidental take) is a take that is not the purpose of the action but occurs as a result of an otherwise legal action. The MBTA makes no mention of habitat modification or destruction, unlike the Endangered Species Act (ESA) that identifies habitat modification or destruction as "harm" under the definition of "take."

Under the provisions of the MBTA, the unauthorized take of migratory birds is a strict liability criminal offense that does not require knowledge or specific intent on the part of the offender. As such, even when engaged in an otherwise legal activity where the intent is not to kill or injure migratory birds, violations can occur if a bird death or injury results. Even though the MBTA itself is enforceable only by the federal government, federal agencies may incur civil liability if their on-going or new actions take birds in violation of the MBTA. This is because the Administrative Procedure Act allows a private party to request that a court enjoin an agency action that does not comply with the MBTA (injunctions usually last until the action is brought into compliance or dropped). USFWS Office of Law Enforcement can use enforcement discretion, especially when organizations are willing to work with the USFWS to avoid or minimize impacts to migratory birds.

The USFWS IPaC report identified one bird of conservation concern (BCC) with a range that intersect the Project area, the red headed woodpecker (*Melanerpes erythrocephalus*) (USFWS, 2024b). This species is listed as a BCC range wide indicating that care should be taken to not negatively affect these birds wherever they are found.



No bald or golden eagles, which are protected under the Bald and Golden Eagle Protection Act (BGEPA), were identified by IPaC to be within the Project area.

### 3.13.2 Environmental Consequences

#### 3.13.2.1 No Action

As no construction would occur, no impacts to migratory birds would be anticipated under the NAA.

#### 3.13.2.2 Recommended Plan

As construction would occur within roadside habitat and no trees are to be removed under the Recommended Plan, Project activities are anticipated to have no potential to affect the red headed woodpecker. While activities are unlikely to cause a take of MBTA species, if contractors find MBTA nests during construction activities, a “stop work” call would be implemented, and USACE biologists would be contacted for guidance on obtaining applicable USFWS permits.

### 3.14 Air Quality

#### 3.14.1 Existing Condition

The Clean Air Act of 1970 (CAA) allows the USEPA to set air quality standards for pollutants considered harmful to public health and welfare. The National Ambient Air Quality Standards (NAAQS) set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. These standards have been established for six criteria pollutants including carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), and sulfur dioxide (SO<sub>2</sub>), and each state is required to develop implementation plans for each pollutant. Areas are generally designated as being either in “attainment” of the standards for the pollutants listed above or in “nonattainment”.

Nonattainment areas are required by the CAA to comply with the NAAQS standards through the evaluation and development of a maintenance plan. The U.S. EPA makes a conformity determination to assure that the actions within the maintenance plan conform to the respective state’s implementation plan for each nonattainment pollutant.

According to the EPA Green Book, which tracks Nonattainment/Maintenance Area status for each county by year for all criteria pollutants, Leslie County is classified as in “attainment” for criteria pollutants as of October 25th, 2024 (USEPA 2024d).

### 3.14.2 Environmental Consequences

#### 3.14.2.1 No Action

The NAA would have no effect on air quality because no construction activities utilizing heavy equipment would occur, and no new infrastructure would be built.

#### 3.14.2.2 Recommended Plan

Construction of the Recommended Plan would have the potential to cause minor, localized, and short-term adverse effects to air quality. Potential sources of these impacts include emissions from heavy equipment operation, which include diesel fuel fumes and exhaust. Because the Recommended Plan would not require around the clock construction, equipment downtime would allow for dispersion of fumes and exhaust generated during construction. The Recommended Plan is exempt from the requirement to make a conformity determination, since Leslie County is in attainment (40 C.F.R. Part 93)



(USEPA 2024d). While the electricity needed to power the new facilities would permanently increase pollutant output at local power plants, the amount is negligible and would not impact local air quality. Due to the lack of methodology, quantification of CH<sub>4</sub>, NO<sub>2</sub>, and CO<sub>2</sub> emissions related to increased flow to the WWTP and current emissions from local septic systems can't be quantified. The potential differences are anticipated to be negligible between the two methods of waste disposal.

### 3.15 Noise

#### 3.15.1 Existing Condition

The Project area is located along several rural roads south of Hyden, Kentucky. As such, noise in the vicinity of the proposed Project area is characterized by light street level vehicular traffic, and other residential activities.

Noise is measured as Day Night average noise levels (DNL) in “A-weighted” decibels that the human ear is most sensitive to (dBA). There are no Federal standards for allowable noise levels. The USACE Safety and Health Requirements Manual provides criteria for short-term permissible noise exposure levels for consideration of hearing protection or the need to administer sound reduction controls, which is concurrent with Occupational Safety and Health Administration (OSHA) standards (Table 6; USACE 2014).

**Table 6.** Non-Department of Defense Continuous Noise Exposures (OSHA Standard)

Duration/day (hours)	Noise level (dBA)
8	85
4	88
2	91
1	94
0.5	97
0.25	100

#### 3.15.2 Environmental Consequences

##### 3.15.2.1 No Action

The NAA would have no effect to noise levels because no construction related to the proposed Project would occur, so no increase to local ambient noise levels would occur.

##### 3.15.2.2 Recommended Plan

The proposed Project will result in minor, short-term adverse effects to the local ambient noise levels outlined in the existing conditions. Temporary noise associated with the Recommended Plan would be limited to that generated during construction operations during daylight hours, so resident exposure to these noise levels would occur if and/or when residents are home and outdoors. Permeant noise associated with the Recommended Plan would be limited to one lift station 130 feet north of Leslie Horse Park. The pump station output is expected to be below the 85 decibel threshold, and therefore represent a negligible long-term adverse impact.

### 3.16 Socioeconomic Conditions and Environmental Justice

#### 3.16.1 Existing Conditions

Executive Order 12898 *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (Exec. Order No. 12,898, 1994) requires that, to the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National



Performance Review, each Federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands.

Executive Order 13985 *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government* (Exec. Order No. 13,985, 2021) promotes racial equity and support for underserved communities and allocation of resources to address the historic failure to invest sufficiently, justly, and equally in underserved communities, as well as individuals from those communities.

Executive Order 14008 *Tackling the Climate Crisis at Home and Abroad* (Exec. Order No. 14,008, 2021) established the Justice40 Initiative with the goal that 40 percent of the overall benefits of certain investments, including climate change and clean water infrastructure flow to disadvantaged communities.

The CEQ created the Climate and Economic Justice Screening Tool (CEJST) to help Federal agencies identify disadvantaged communities that have been historically marginalized, underserved, and/or overburdened by pollution. The tool identifies these communities through publicly available nationally consistent datasets. Under the current formula, a census tract will be identified as “disadvantaged” in one or more categories of criteria if the census tract is above the threshold for one or more environmental or climate indicators and the census tract is above the threshold for the socioeconomic indicators. A search of the CEJST for Leslie County Tract #21131920100 indicates that this area is identified as a “disadvantaged” community because it meets more than one burden threshold and the associated socioeconomic threshold. Factors that indicate this community is disadvantaged include, expected population loss rate, projected flood risk, energy costs, diabetes rate, heart disease rate, low life expectancy, lack of indoor plumbing, nearby abandoned mine land, transportation barriers, poverty rate, below high school education rate, and low-income rate (CEQ 2024).

Additionally, the USEPA environmental justice tool (EJSCREEN) was used to analyze demographics and environmental justice indices for the proposed Project area with a five-mile buffer. The detailed demographic report can be found in Appendix K. According to EJSCREEN, people of color in the proposed Project area compose 4% of the population (16% state average, 40% national average). The income per capita within the EJSCREEN buffer area was \$18,641. Only 16% of the population obtained a bachelor’s degree or higher and 19% have less than a high school diploma in terms of education. The primary language spoken is English and most housing is owner occupied. EJSCREEN identified that the Project area had comparatively high readings for drinking water non-compliance (89<sup>th</sup> percentile statewide, 73<sup>rd</sup> percentile nationwide), low life expectancy (75<sup>th</sup> percentile statewide, 89<sup>th</sup> percentile nationwide), heart disease (87<sup>th</sup> percentile statewide, 95<sup>th</sup> percentile nationwide), asthma (85<sup>th</sup> percentile statewide, 94<sup>th</sup> percentile nationwide), and percentage of persons with disabilities (86<sup>th</sup> percentile statewide, 96<sup>th</sup> percentile nationwide). No superfund sites, 74 permitted water dischargers, 1 Kentucky brownfield site, and one air pollution site were identified within the five-mile search area. (USEPA 2024e).





### 3.16.2 Environmental Consequences

#### 3.16.2.1 No Action

The NAA would result in releases of untreated wastewater discharge within the Project area due to aging septic tank infrastructure. The newly proposed public facilities, which would benefit local residence, would lack sanitary sewer services. Minor, long-term adverse impacts could occur to local disadvantaged populations in the event of wastewater contamination of groundwater and potential contamination of the Middle Fork Kentucky River.

#### 3.16.2.2 Recommended Plan

The recommended plan would have moderate long-term beneficial impacts to low-income and minority populations as sanitary sewer service would replace the existing septic tank systems. The recommended plan would reduce the potential for wastewater discharge into local drinking water as well as provide services to new potential public facilities. Minor short-term adverse noise and aesthetic impacts would occur during the construction of the sewer system; however, these would not impact low income or minority populations any more than the general population. Connection to the sanitary line is mandatory and will incur a cost of \$300 per household, so minor short-term adverse impacts could result for residents.

### 3.17 Aesthetics

#### 3.17.1 Existing Conditions

The Project area lies near the confluence of Hurricane Creek and Middle Fork Kentucky River in the foothills of the Cumberland Plateau, offering the scenic beauty of the Appalachian foothills of eastern Kentucky. The small community is surrounded by this rugged landscape and plateau that is deeply traversed by a series of narrow, winding valleys separated by steep watersheds and covered by a network of continuously branching streams (USEPA 2023a). Most of the Project area is open roadside ROW with smaller amounts of residential housing, and one equestrian park. There are plots of deciduous forest just outside the ROW in areas that are too steep for development.

#### 3.17.2 Environmental Consequences

##### 3.17.2.1 No Action

Under the NAA, no adverse effects to aesthetics would occur because no construction or ground disturbances would occur.

##### 3.17.2.2 Recommended Plan

The Recommended Plan would have negligible short-term adverse effects on aesthetics. The proposed line will be underground and placed in an existing ROW, which will result in very little change in roadside scenery. The proposed lift station going to the proposed campground will cause negligible long-term adverse impact in scenery as it is anticipated to be placed 130 feet north of the horse park. Any foul odor emitted from this station should dissipate before reaching any park guests. The roadside habitat impacted by this lift station is small in amount and common throughout the region, and therefore, not significant.



### 3.18 Transportation and Traffic

#### 3.18.1 Existing Condition

The proposed Project area is located approximately 2.6 miles south by southeast of Hyden, Kentucky. The sanitary sewer extension will be constructed along Camp Creek Road, Grace Mountain Lane, and Leeco Road within the existing road and other right-of-ways (ROWS). These roads are in a rural portion of Kentucky and traffic is sparse, even at busier times during the day.

#### 3.18.2 Environmental Consequences

##### 3.18.2.1 No Action

Under the NAA, no effect to traffic is anticipated because there would be no construction related to the NAA.

##### 3.18.2.2 Recommended Plan

The Recommended Plan is anticipated to have minor short-term adverse effects on traffic during construction, however, traffic is expected to be light even during peak hours. Construction could involve some short-term minor delays and potential detours in the normal traffic flow. The Kentucky Transportation Cabinet (KYTC) and the Local Road Department would be notified of construction and any potential impacts. All appropriate KYTC guidelines for traffic control would be implemented, and emergency access would be maintained. The Recommended Plan would create no new permanent traffic patterns, and no long-term adverse impacts would occur.

### 3.19 Health and Safety

#### 3.19.1 Existing Condition

According to the CEQ's CEJST, Leslie County tract 21131920100 is in the 88<sup>th</sup> percentile for share of people who have been diagnosed with Asthma, 90<sup>th</sup> percentile for share of people who have diabetes, 97<sup>th</sup> percentile for share of people diagnosed with heart disease, and 92<sup>nd</sup> percentile for low life expectancy (CEQ 2023). According to US News's Healthiest Communities Report, the median life expectancy is 68.8 years, which is below the national median of 75.8. In addition, the smoking rate is 29.1%, which is above the national average of 19% (US News 2024). Within the Project area, 40 aging septic tanks are present, which occasionally fail and release uncontrolled wastewater into the local watershed.

#### 3.19.2 Environmental Consequences

##### 3.19.2.1 No Action

Under the NAA, aging underground septic tanks would continue to degrade and have uncontrolled releases into local waterways, leading to degradation of water quality. This would produce minor long-term adverse effects on local health due to direct exposure to waste via water. These additional sources of pollution would worsen existing point source pollution issues identified in section 3.16.1.

##### 3.19.2.2 Recommended Plan

The Recommended Plan would provide sanitary sewer service for 40 households and remove their septic tank systems from service, reducing potential uncontrolled wastewater discharges. This would produce a minor long-term beneficial impacts on health since residence wouldn't be exposed as frequently to uncontrolled wastewater, and local water quality would improve.





### 3.20 Summary of Impacts

Anticipated impacts for the NAA and Recommended Plan are summarized in Table 7 below.

**Table 7.** Impacts Summary Table for NAA and Recommended Plan.

Resource	NAA	Recommended Plan
Land Use	No effect	No effect
Climate Change Considerations	Minor long term adverse effect	Minor long-term beneficial effect
GHG Emissions	No effect	Minor long-term adverse effect Minor short-term adverse effect
Terrestrial Habitat	No effect	Minor short-term adverse effect
Invasive Species	No effect	Negligible long-term beneficial effect
Aquatic Habitat/Water Quality	Moderate long-term adverse effect	Negligible short-term adverse effect Moderate long-term beneficial effect
Floodplains	No effect	No effect
Soils and Farmland	No effect	No effect
Wetlands	Minor long-term adverse effect	No effect
HTRW	No effect	No effect
Cultural Resources	No effect	No effect
T&E	No effect	No effect
Migratory Birds	No effect	No effect
Air Quality	No effect	Negligible short-term adverse effect
Noise	No effect	Negligible short-term adverse effect Negligible long-term adverse effect
Environmental Justice	Minor long-term adverse effect	Minor long-term beneficial effect, Minor short-term adverse effect
Aesthetics	No effect	Negligible short-term adverse effect
Transportation and Traffic	No effect	Negligible short-term adverse effect
Health and Safety	Minor long-term adverse effect	Minor long-term beneficial effect



#### 4.0 STATUS OF ENVIRONMENTAL COMPLIANCE

The Recommended Plan is in full compliance with all local, State, and Federal statutes as well as Executive Orders. Compliance is documented below in Table 8.

**Table 8.** Status of Environmental Compliance with the Village of Buckhorn Sanitary Sewer Relocation, Raw Water Intake, and Water Treatment Plant Project.

Statute/Executive Order	Full	In Progress
National Environmental Policy Act		X
Fish and Wildlife Coordination Act	X	
Endangered Species Act	X	
Clean Water Act	X	
Wild and Scenic Rivers Act	X	
Clean Air Act	X	
National Historic Preservation Act	X	
Archeological Resources Protection Act	X	
Comprehensive, Environmental Response, Compensation and Liability Act	X	
Resource Conservation and Recovery Act	X	
Toxic Substances Control Act	X	
Quiet Communities Act	X	
Farmland Protection Act	X	
Executive Order 11988 Floodplain Management	X	
Executive Order 11990 Protection of Wetlands	X	
Executive Order 12898 Environmental Justice in Minority Populations and Low-Income Populations	X	

#### 5.0 PUBLIC REVIEW AND COMMENTS

This draft EA and unsigned FONSI will be made available for public review for a period of 30 days beginning on [PENDING], as required by CEQ regulations. The draft EA will be posted on the Louisville District webpage and Notice of Availability letters will be sent to the local community and local, state and Federal government agencies for a 30-day review/comment period. A list of persons, agencies, and organizations that will be notified for public review can be found in Table 9. All agency and tribal correspondence can be found in Appendix L.

**Table 9.** Agencies, Organizations, Persons, and Tribes to be contacted for public review of the Leeco Road Sewer Line Project, Leslie County, Kentucky.

Stakeholder Type	Agency/Organization/Person/Tribe
Tribes	The Absentee Shawnee Tribe of Indians
	The Eastern Shawnee Tribe of Oklahoma
	The Shawnee Tribe of Oklahoma
	The Cherokee Nation
	The Eastern Band of Cherokee Indians
	The United Keetoowah Band of Cherokee Indians in Oklahoma
	The Delaware Nation
	The Delaware Tribe of Indians in Oklahoma.
State Agencies	Kentucky Department of Fish and Wildlife Resources
	Office of Kentucky Nature Preserves
	Kentucky Heritage Council
	Kentucky Division of Water



	Kentucky Department for Natural Resources
	Kentucky Division for Air Quality
	Kentucky Division of Waste Management
	Kentucky Transportation Cabinet
Federal Agencies	Kentucky Department for Environmental Protection
	U.S. Fish and Wildlife Service, Kentucky Field Office
	Environmental Protection Agency, Region 4 Office
	U.S. Geological Survey Ohio-Kentucky-Indiana Water Science Center
Local Agencies	National Resource Conservation Service, Kentucky Office
	Leslie County Fiscal Court
Elected Officials	Kentucky River Area Development District
	United States Congressman - Hal Rogers
	United States Senator – Mitch McConnell
	United States Senator – Rand Paul
	Kentucky State Representative – Chris Fugate
Non-governmental Organizations	Kentucky State Representative – Brandon Smith
	The Nature Conservancy, Kentucky Chapter
	Sierra Club, Kentucky Chapter
	Kentucky Environmental Foundation
	Kentucky Heartwood
	Kentucky Waterways Alliance
	Kentucky Resources Council
	River Fields

## 6.0 CUMULATIVE EFFECTS

The USACE must consider the cumulative effects of the proposed Project on the environment as stipulated by NEPA. Formally defined, cumulative effects are “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions”. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 C.F.R. Part 1508(i)(3)).

The cumulative effects analysis is based on the potential effects of the proposed Project when added to similar impacts from other projects in the region. An inherent part of the cumulative effects analysis is the uncertainty surrounding actions that have not yet been fully developed. The CEQ regulations provide for the inclusion of uncertainties in the analysis and states that “when an agency is evaluating reasonably foreseeable significant adverse effects on the human environment... and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking” (40 C.F.R. 1502.21(1)).

Temporal and geographical limits for this project must be established to frame the analysis. The temporal limits for assessment of impacts would initiate in 1970 with the passing of the NEPA and would end 50 years after the completion of each alternative in 2075. The geographical extent considered is the US Census Tract (Leslie County #21131920100) that the Project area is within.

Currently, one other Project is known that would contribute cumulatively to the Recommended Plan. A campground and amphitheater are in the process of being built near where the Recommended Plan terminates. The Recommended Plan would provide sewer services to this new park, though the park would still be built without the Recommended Plan. The park area has been partially cleared but no construction has occurred yet.



Historically, the region's general land uses were oil and gas production, mining, residential use, recreation, and transportation corridors. Mining activities caused significant degradation of the environment due to acidification of streams (UEPA 2023a). Currently, the region is seeing improvements in mining techniques reducing acidic runoff (UEPA 2023a), and residential use is slowly expanding.

#### 6.1 NAA

The NAA would not contribute cumulatively with the following resources due to lack of any construction occurring: land use, climate change, GHG, terrestrial habitat, invasive species, floodplains, soils, prime farmland, wetlands, HTRW, cultural resources, T&E, air quality, noise, EJ, aesthetics, and transportation and traffic.

The NAA would contribute to minor adverse long-term impacts to water quality, wetlands, and health safety. This is due to the continued release of raw sewage due to failing septic systems. This would further exacerbate historical environmental degradation and residential health and safety. Due to the small amount of release from the septic systems, the scope of these adverse impacts is minor. Due to this, they would not contribute significantly to historical adverse impacts to these resources.

#### 6.2 Recommended Plan

The Recommended Plan will provide sanitary sewer service to 40 residents living near Hyden, Kentucky. It would remove 40 septic tank systems from service and reduce untreated wastewater discharges.

The Recommended Plan contributes negligible long-term impacts to terrestrial habitat with the permanent conversion of the pump station area to light intensity use. The new park expansion is to occur within a disturbed herbaceous area with small amounts of forested land within the disturbance footprint of a former mine (MLCP 2024, Nesbitt 2024). The park would convert small portions of this herbaceous open space to developed light intensity use, representing a similar long-term negligible adverse impact. Given that previously disturbed herbaceous habitat is common in this region and each Project contributes minimally, these minor long-term adverse impacts are not considered significant cumulatively.

The sanitary sewer system will contribute negligibly to the overall climate of the area. The addition of the park would marginally increase emissions in the area; however, in the broader region and state, it would only represent a negligible adverse impact.

The Recommended Plan would have negligible to minor beneficial impacts on invasive species due to native plants being used to revegetate the disturbed areas; therefore, it would not contribute meaningfully to cumulative effects on this resource.

The Recommended Plan has negligible adverse impacts to aquatic habitat and water quality. Deminimus amounts of sedimentation mitigated by BMP's could occur. HDD would be implemented to avoid impacts to stream habitat. The proposed park is unlikely to contribute further to aquatic habitat degradation outside of similarly nominal sediment runoff.

The Recommended Plan has negligible adverse impacts to floodplain function since the majority of the infrastructure is below grade. The proposed park is not within a floodplain; therefore, there would be no cumulative impact to this resource.

The Recommended Plan would not convert any prime or unique farmland; therefore, it would not contribute to cumulative impacts.



The Recommended Plan would have no effect on existing wetland resources; therefore, it would not contribute to cumulative adverse impacts. Additionally, the proposed park infrastructure site associated with the sanitary sewer system Project does not have any NWI mapped wetlands nearby and would also not contribute adverse cumulative impacts to this resource.

No HTRW resources were present within the Recommended Plan and no new HTRW sites would be produced. Due to this, the Recommended Plan would not contribute cumulatively to HTRW resource impacts.

The Recommended Plan will have no effect to historic properties. This determination was consulted with the SHPO who concurred with this determination on 13 May, 2024. The proposed park and amphitheater are to occur on a previously disturbed mining site; therefore, cultural resources would have either been removed or stripped of their cultural context prior to recent development. Due to this, the development of this park will not result with a cumulative effect to cultural resources.

The Recommended Plan would have no impact to listed, proposed listed, or candidate species; therefore, it could not contribute cumulatively to this resource.

The Recommended Plan would have minor short term adverse effects on air quality due to emissions from temporary construction activities. Similar minor short-term effects would occur during the construction of the proposed park. Due to the temporary nature of both of these impacts, they would not be considered significant cumulatively.

The Recommended Plan and associated park would have negligible impacts to noise, and therefore would not contribute cumulatively to adverse noise impacts.

The Recommended Plan would have minor to moderate beneficial impacts concerning environmental justice. The sanitary sewer system itself would provide essential sewer services in an area where uncontrolled wastewater release was becoming more common due to failing septic systems. Additionally, the associated proposed park would provide amenities for all residents to use, also producing a cumulatively moderate long-term beneficial environmental justice effect. The Recommended Plan would cause moderate short-term adverse impacts as hook up is mandatory and would cost each resident \$300.

The Recommended Plan would have negligible impacts on aesthetics, so would not contribute meaningfully to cumulative impacts. The related campground and other infrastructure would convert a portion of forested land to a park like environment and a portion of herbaceous habitat to medium intensity developed, which would have a negligible adverse impact on aesthetics since the area is a previously disturbed mining site.

The Recommended Plan would only have minor, temporary adverse effects to traffic and no long-term adverse effects; therefore, it would not contribute meaningfully to a cumulative adverse effect on traffic conditions.

The Recommended Plan would have minor to moderate beneficial effects to health and safety as it would remove forty aging septic systems where a few have failed causing uncontrolled wastewater to enter the environment. This replacement would see a minor to moderate positive impacts. The proposed park infrastructure would not impact existing health and safety conditions; therefore, there would be no impact cumulatively.



## 7.0 CONCLUSION

This EA has been prepared in accordance with NEPA, the CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 C.F.R. Parts 1500-1508), and the USACE Policy and Procedure for Implementing NEPA (33 C.F.R. Part 230).

This EA concludes that impacts of the Recommended Plan for the Leeco Road Sanitary Sewer System Project in Leslie County, Kentucky would be beneficial to the community by providing reliable sewer service. The overall lack of significant adverse effects associated with the proposed Project, as documented in this EA, demonstrates both the benign nature and limited adverse effects based on the relatively small environmental footprint of the Recommended Plan. Identified adverse effects include short-term, negligible/minor construction-related adverse effects and minor short-term adverse effects to EJ communities based on the mandatory buy in of \$300 per household. The use of BMPs would reduce the potential for these adverse impacts to occur.

Without the construction of the Recommended Plan, any enhancements and/or improvements that could be made to the area would be forfeited. Any adverse effects associated with the construction of the proposed Project, when added to other past, present, and reasonably foreseeable future actions are collectively negligible.

Based on the conclusions of this Draft EA, preparation of an EIS is not required. Therefore, a Draft Finding of No Significant Impact (FONSI) is presented at the beginning of this Draft EA. If the District Engineer determines that an EIS is not necessary, the Draft FONSI would be finalized, and the Recommended Plan implemented.





## 8.0 REFERENCES

- Bplant 2024. Dissected Appalachian Plateau. Available at: Dissected Appalachian Plateau - bplant.org. Accessed October 2024.
- Branson, B.A., and Batch, D.L. 1984. Fishes of the Middle Fork of the Kentucky River, Kentucky Fishes of the Middle Fork of the Kentucky River, Kentucky. Southeastern Fish Council Proceedings. Volume 1, Number 15. 8.1-1984, Article 3.  
[https://trace.tennessee.edu/sfcproceedings/vol1/iss15/3?utm\\_source=trace.tennessee.edu%2Fsfcp%2Fvol1%2Fiss15%2F3&utm\\_medium=PDF&utm\\_campaign=PDFCoverPages](https://trace.tennessee.edu/sfcproceedings/vol1/iss15/3?utm_source=trace.tennessee.edu%2Fsfcp%2Fvol1%2Fiss15%2F3&utm_medium=PDF&utm_campaign=PDFCoverPages)
- City of Durham. 2019. Lift Station Design Standards. Available at:  
[extension://efaidnbmnnnibpcajpcgglefindmkaj/https://www.durhamnc.gov/DocumentCenter/View/26106/City-of-Durham-DWM-LS-Design-Standards---March-2019](https://www.durhamnc.gov/DocumentCenter/View/26106/City-of-Durham-DWM-LS-Design-Standards---March-2019). Accessed May 2023.
- Council of Environmental Quality (CEQ) 2024. Climate and Economic Justice Screening Tool. Available online: <https://screeningtool.geoplatform.gov/en/#12.97/37.10137/-83.33235>. Accessed October 2024.
- EcoSource, Inc 2024. Wetland Delineation Report Letter. July 31<sup>st</sup>, 2024.
- Find Energy 2024. Leslie County Electricity Rates and Statistics. Available online:  
<https://findenergy.com/ky/leslie-county-electricity/>. Accessed October 2024.
- FEMA 2023. FEMA Flood Map Service Center. Available at:  
<https://msc.fema.gov/portal/search?AddressQuery=city%20of%20buckhorn#searchresultsanchor>. Accessed May 2023.
- Haag, W.R., and R.R. Cicerello 2016. A Distributional Atlas of the Freshwater Mussels of Kentucky. Scientific and Technical Series 8. Kentucky State Nature Preserves Commission, Frankfort, KY.
- Hingham Ma 2023. Grinder Pump Information Sheet. Available at: [chrome-extension://efaidnbmnnnibpcajpcgglefindmkaj/https://www.hingham-ma.gov/DocumentCenter/View/255/Grinder-Pump-Information-Sheet-PDF](https://www.hingham-ma.gov/DocumentCenter/View/255/Grinder-Pump-Information-Sheet-PDF). Accessed May 2023.
- Kentucky Exotic Invasive Plant Council. 2013. Exotic Invasive Plants of Kentucky. Available at:  
<https://www.se-eppc.org/ky/list.htm>
- Leeco Road Campground Sewer Extension Project, Preliminary Engineering Report 2022. Leslie County Fiscal Court, Leslie County County, KY. Prepared by Nesbitt Engineering, Inc. December 2022.
- Minnesota Pollution Control Agency (MPCA). (2018). Planning, scheduling, and sequencing for construction. In Minnesota stormwater manual.
- Monarch Joint Venture 2024. Monarch Butterfly. Migration. Available online:  
<https://monarchjointventure.org/monarch-biology/monarch-migration>. Accessed October 2024.



Multi-Resolution Land Characteristics Consortium 2024. MRLC Viewer. Available at: MRLC Viewer. Accessed October 2024.

National Oceanic and Atmospheric Administration 2023. U.S. Climate Normals Quick Access. Available at: <https://www.ncei.noaa.gov/access/us-climate-normals/#dataset=normals-monthly&timeframe=30&station=USC00151080>. Accessed May 2023.

NatureServe 2024. Tricolored Bat (*Perimyotis subflavus*). Available online: [https://explorer.natureserve.org/Taxon/ELEMENT\\_GLOBAL.2.102580/Perimyotis\\_subflavus](https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.102580/Perimyotis_subflavus). Accessed October 2024.

Nesbitt Engineering 2024. Hazardous, Toxic, Radioactive Waste Report: Leeco Road Sanitary Sewer System. April 2024.

NRCS (Natural Resources Conservation Service) 2024. Web Soil Survey. Available at: <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx> Accessed May 2024.

Ohio River Basin Climate Change Pilot Study Report. 2017. Institute for Water Resources–Responses to Climate Change Program Ohio River Basin Pilot Study. Pages 5,47,52. Available at: [https://www.lrh.usace.army.mil/Portals/38/docs/orba/USACE%20Ohio%20River%20Basin%20C%20Report\\_MAY%202017.pdf](https://www.lrh.usace.army.mil/Portals/38/docs/orba/USACE%20Ohio%20River%20Basin%20C%20Report_MAY%202017.pdf)

Stephenson, David, Brian Del Castello, and Tanya Fabers. 2009. A Cultural Resources Survey of the Proposed ICG Hazard, LLC Coal Mine Operation along Camp Creek in Leslie County, Kentucky. On File with Kentucky Office of State Archaeology.

USACE (U.S. Army Corps of Engineers) 2014. Engineering Manual 385-1-1. “Safety and Health Requirements.” Available at: <https://www.usace.army.mil/Missions/Safety-and-Occupational-Health/Safety-and-Health-Requirements-Manual/>

USDE (US Department of Energy) 2012. Case Study – The Challenge: Saving Energy at a Sewage Lift Station Through Pump System Modifications. Available at: [extension://efaidnbmnnnibpcajpcgclefindmkaj/https://www.energy.gov/eere/amo/articles/case-study-challenge-saving-energy-sewage-lift-station-through-pump-system](https://efaidnbmnnnibpcajpcgclefindmkaj/https://www.energy.gov/eere/amo/articles/case-study-challenge-saving-energy-sewage-lift-station-through-pump-system). Accessed May 2023.

United States Environmental Protection Agency (USEPA) 2009. Fact Sheet: Introduction to Clean Water Act Section 303(d) Impaired Waters Lists

USEPA 2024a. Ecoregions of Kentucky. The Dissected Appalachian Plateau. Available at: [extension://efaidnbmnnnibpcajpcgclefindmkaj/https://gaftp.epa.gov/EPADDataCommons/ORD/Ecoregions/ky/ky\\_front.pdf](https://efaidnbmnnnibpcajpcgclefindmkaj/https://gaftp.epa.gov/EPADDataCommons/ORD/Ecoregions/ky/ky_front.pdf). Accessed May 2023.

USEPA 2024b. How’s My Waterway. Available online: <https://mywaterway.epa.gov/community/051002020401/overview>. Accessed October 2024.

USEPA 2024c. NEPAassist Web Tool. Available online: <https://nepassisttool.epa.gov/nepassist/nepamap.aspx>. Accessed October 2024.



- USEPA 2024d. Greenbook: Kentucky Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. Available online: [https://www3.epa.gov/airquality/greenbook/anayo\\_ky.html](https://www3.epa.gov/airquality/greenbook/anayo_ky.html). Accessed October 2024.
- USEPA 2024e. Environmental Justice Screening Tool. Available online: <https://www.epa.gov/ejscreen>. Accessed October 2024.
- USFWS (U.S. Fish and Wildlife Service) 1997. Gray Bat: *Myotis grisescens*. Available at: [www.fws.gov/sites/default/files/documents/508\\_gray%20bat%20fact%20sheet.pdf](http://www.fws.gov/sites/default/files/documents/508_gray%20bat%20fact%20sheet.pdf). Accessed May 2023.
- USFWS 2006. Indiana bat: *Myotis sodalis*. Available at: [www.fws.gov/sites/default/files/documents/508\\_Indiana%20bat%20fact%20sheet.pdf](http://www.fws.gov/sites/default/files/documents/508_Indiana%20bat%20fact%20sheet.pdf). Accessed May 2023.
- USFWS 2015. Northern long-eared bat: *Myotis septentrionalis*. Available online: [https://www.fws.gov/sites/default/files/documents/508\\_NLEB%20fact%20sheet.pdf](https://www.fws.gov/sites/default/files/documents/508_NLEB%20fact%20sheet.pdf). Accessed May 2023.
- USFWS 2022. Kentucky Arrow Darter (*Etheostoma spilotum*). Status Review: Summary and Evaluation, September 2022. 19pp.
- USFWS 2024a. Wetlands Mapper. Available at: <https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper>
- USFWS 2024b. IPaC: Information for Planning and Consultation. Project Code 2023-0076767. Available at: <https://ipac.ecosphere.fws.gov/>. IPAC generated October 08<sup>th</sup>, 2024.
- USFWS 2024c. Tricolored Bat. Available online: <https://fws.gov/species/tricolored-bat-perimyotis-subflavus>. Accessed May 2023.
- USFWS 2024d. Round Hickorynut. Available online: <https://www.fws.gov/species/round-hickorynut-obovaria-subrotunda>. Accessed May 2023.
- USFWS 2024e. Monarch Butterfly. Available at: <https://www.fws.gov/species/monarch-butterfly-danaus-plexippus>. Accessed May 2023.
- USGS (United States Geological Survey) 2023. Locate Your Watershed. Available at: Science in Your Watershed: Locate Your Watershed By HUC - Mapping Interface ([usgs.gov](https://usgs.gov)). Accessed May 2023.
- U.S. News 2024. Healthiest Communities 2022- Leslie County, KY. Available at: <https://www.usnews.com/news/healthiest-communities/kentucky/leslie-county>. Accessed October 2024.

## Appendix A: Project Map

## Appendix B: Climate Data

## Appendix C: Greenhouse Gas Analysis



## Appendix D: Wetland Delineation and Waterbodies Report

## Appendix E: FEMA Floodplain Map

## Appendix F: NRCS Soils Report

## Appendix G: USFWS NWI Map

## Appendix H: HTRW Limited Phase 1 Report

## Appendix I: Cultural Phase 1 Report



## Appendix J: USFWS IPaC Report

## Appendix K: Environmental Justice Reports

## Appendix L: Agency and Tribal Correspondence