

REVISED FINAL ENVIRONMENTAL IMPACT STATEMENT FOR PROPOSED UNITED STATES PENITENTIARY AND FEDERAL PRISON CAMP

Letcher County, Kentucky

Prepared for:



United States Department of Justice
Federal Bureau of Prisons
Capacity Planning and Construction Branch

March 2016

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**REVISED FINAL ENVIRONMENTAL IMPACT STATEMENT
FOR PROPOSED UNITED STATES PENITENTIARY AND FEDERAL PRISON CAMP**

LETCHER COUNTY, KENTUCKY

March 2016

Lead Agency: Federal Bureau of Prisons

Title of Proposed Action: United States Penitentiary and Federal Prison Camp, Letcher County, Kentucky

Point of Contact: Mr. Issac Gaston, Site Selection Specialist
Federal Bureau of Prisons
320 First Street NW
Washington, DC 20534
igaston@bop.gov

Abstract

The Federal Bureau of Prisons (Bureau) has prepared this Revised Final Environmental Impact Statement (EIS) to evaluate the potential environmental impacts of site acquisition and development of a proposed United States Penitentiary (USP) and Federal Prison Camp (FPC) in Letcher County, Kentucky. This Revised Final EIS supersedes the Final EIS published in July 2015. The Bureau withdrew the July 2015 Final EIS after consideration of comments received following its publication and to correct inconsistencies in the Final EIS. Also, as a result of comments received following release of the Final EIS, the Bureau concluded that written notice of availability of the Final EIS had not been directly provided to at least 22 parties who had requested it. With publication of this Revised Final EIS, the public, including any parties who may not have received timely notice of the Final EIS publication, are being afforded a new 30-day review period within which to submit comments so that they can be considered by the Bureau prior to and in connection with a Record of Decision for the proposed action.

The Revised Final EIS makes no change to the proposed action, which is to acquire the property and construct and operate a new USP, FPC, ancillary facilities, and access roads. The purpose of the proposed federal correctional facility in Letcher County, Kentucky, is to develop additional high-security facilities to increase capacity for current inmate populations in the Mid-Atlantic Region based on an identified need for additional bedspace. The Bureau has determined that there is a need for additional high-security facilities within this region to reduce the demonstrated overcrowding that compromises the mission of the Bureau.

The Revised Final EIS analyzes the direct, indirect, and cumulative impacts of the No Action Alternative and two build alternatives, Alternative 1 – Payne Gap and Alternative 2 – Roxana, with regard to land use and zoning, topography, geology, and soils, socioeconomics and environmental justice, community facilities and services, transportation and traffic, air quality, noise, infrastructure and utilities, cultural, water, and biological resources, and hazardous substances. The Bureau has identified Alternative 2 – Roxana as the preferred alternative.

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EXECUTIVE SUMMARY

INTRODUCTION

The Federal Bureau of Prisons (Bureau) has prepared this Revised Final Environmental Impact Statement (EIS) to analyze the impacts associated with the proposed construction and operation of a new United States Penitentiary (USP), Federal Prison Camp (FPC), and associated ancillary facilities in Letcher County, Kentucky. The Bureau published the *Final Environmental Impact Statement for Proposed United States Penitentiary and Federal Prison Camp, Letcher County, Kentucky* on July 31, 2015. In consideration of comments received following publication of the Final EIS and to correct inconsistencies in the Final EIS, the Bureau concluded the Final EIS would be withdrawn and a Revised Final EIS would be issued. A Revised Final EIS would enable the Bureau to provide more complete discussion of some topics addressed in the Final EIS, and provide more complete responses to comments received on the Draft EIS than were provided in the FEIS. Also, as a result of comments received following release of the Final EIS, the Bureau concluded that written notice of availability of the Final EIS had not been directly provided to at least 22 parties who had requested it; therefore, those parties received less than the intended, full 30-day review period in which to submit comments on the Final EIS. By publishing this Revised Final EIS and by providing a 30-day review period, the public, including any parties who may not have received timely notice of the Final EIS publication, are being afforded a new 30-day review period within which to submit comments on the Revised Final EIS so that they can be considered by the Bureau prior to and in connection with a Record of Decision for the proposed action.

This EIS has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, the Council on Environmental Quality regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500–1508), and the U.S. Department of Justice procedures for implementing NEPA (28 CFR 61).

PURPOSE AND NEED

The purpose of the proposed federal correctional facility in Letcher County, Kentucky, is to provide an additional high-security penitentiary and an associated prison camp to increase capacity for current inmate populations in the Mid-Atlantic Region based on an identified need for additional bedspace. The Bureau has determined that there is a need for additional high-security facilities within this region to reduce the demonstrated overcrowding that compromises the mission of the Bureau.

PROPOSED ACTION

This Revised Final EIS makes no change to the proposed action. The proposed action evaluated in this Revised Final EIS is the acquisition of property and the construction and operation of a federal correctional facility in Letcher County, Kentucky. The Bureau proposes to acquire approximately 800 acres (324 hectares) to construct a USP (approximately 61,654 square meters or 663,638 square feet) and FPC (approximately 6,063 square meters or 65,262 square feet) in Letcher County. The proposed facilities would house approximately 1,216 total inmates: approximately 960 within the USP and approximately 256 within the FPC. Inmates housed in the USP would be high-security male inmates and those housed in the FPC would be minimum-security male inmates. In addition to the USP and FPC, several ancillary facilities necessary for the operation of the USP and FPC would be constructed. The ancillary facilities would include a central utility plant, outdoor firing range, outside warehouse, staff

training building, and garage/landscape building. A non-lethal/lethal fence would also be installed around the perimeter of the USP. The non-lethal/lethal fence would be placed between two parallel, chain link and razor wire fences. Operation of the USP and FPC would require approximately 300 full-time staff.

ALTERNATIVES CONSIDERED

Three alternatives were analyzed in the Revised Final EIS, the No Action Alternative and two build alternatives: Alternative 1 – Payne Gap and Alternative 2 – Roxana. **Figure ES-1** depicts the locations of Alternatives 1 and 2.

No Action Alternative

The No Action Alternative does not meet the project purpose and need; however, it represents the existing conditions and is analyzed in the Revised Final EIS as a baseline for comparing the proposed action. The purpose for this comparison is to allow the federal agency to assess the effects of taking no action versus implementing the proposed action. In some cases the No Action Alternative would result in impacts to certain resources if the proposed action is not implemented. Therefore, the assessment of the No Action Alternative is an important component of all NEPA documents.

Alternative 1 – Payne Gap

Under Alternative 1, the Bureau would acquire approximately 753 acres (305 hectares) of land known as the Payne Gap site. The site is located in eastern Letcher County, approximately 7 miles northeast of Whitesburg, along the Kentucky and Virginia border.

Alternative 1 would require extensive earthwork to prepare the site for development. Approximately 8,342,922 cubic meters (10,912,130 cubic yards) of excavation and 10,568,450 cubic meters (13,823,012 cubic yards) of fill would be required prior to the beginning of construction activities.

Alternative 2 – Roxana

Under Alternative 2, the Bureau would acquire approximately 700 acres (283 hectares) of land known as the Roxana site. The site is located 7.5 miles west of Whitesburg, Kentucky.

Alternative 2 would also require extensive earthwork to prepare the site for development. Approximately 7,766,032 cubic meters (10,157,586 cubic yards) of material would need to be excavated from the site and approximately 7,188,790 cubic meters (9,402,582 cubic yards) of fill would be required to prepare the site for construction activities.

PREFERRED ALTERNATIVE

Alternative 2 – Roxana is the preferred alternative because it best meets the project needs and would have fewer impacts to the human environment.

PUBLIC INVOLVEMENT

The Bureau published a Notice of Intent to prepare an EIS on July 26, 2013. The Bureau held a 30-day scoping period between July 26 and August 26, 2013. A public scoping meeting was held during the scoping period. The meeting was held on August 13, 2013, to inform the public about the proposed project and to explain NEPA and the associated environmental impact analysis. A total of 453 community

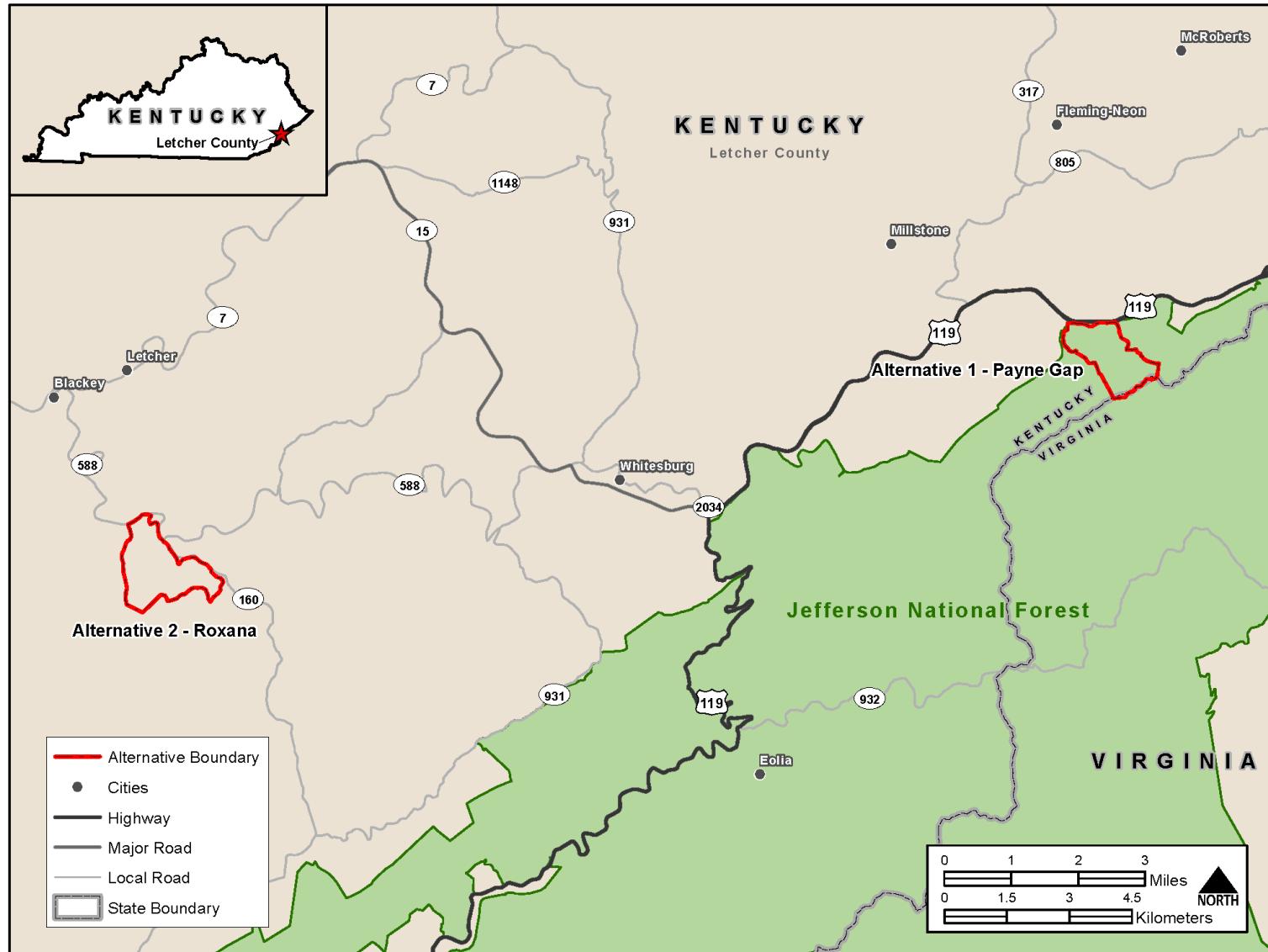


Figure ES-1. Payne Gap and Roxana Site Locations

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members attended the public meeting and a total of 320 comments were received during the 30-day scoping period. Additionally, 169 letters of support were presented at the scoping meeting, as well as two petitions in support of the project with a combined total of 124 signatures. Of the 320 comments received, 317 comments were in support of the project and 3 were not in support of the project. Issues raised in the letters that did not support the project included: socioeconomic, previous mining activities, infrastructure, and alternatives. These resources and areas of concern were analyzed in the Draft EIS.

The Notice of Availability of the Draft EIS was published in the *Federal Register* on February 13, 2015. A Notice of Public Meeting for the Draft EIS was published in the *Federal Register* on February 10, 2015. A notice of availability of the Draft EIS and public meeting was also published in the *Mountain Eagle* on February 11, 2015 and the *Lexington Herald-Leader* on February 8, 2015. The notice announced that the Draft EIS would be available for public review and comment between February 13 and March 30, 2015. The notice identified the local libraries where hard copies of the document could be reviewed, as well as a project website, www.fbopletchercountyeis.com, where an electronic version of the document could be reviewed.

The public meeting was held on March 12, 2015, between 5:30 p.m. and 8:00 p.m. Approximately 350 members of the public attended the public meeting. Comments received during the public comment period included 158 comments received at the public meeting; 31 comments received via mail or email; three petitions in support of the project with 1,001 signatures, one petition in support of the project at the Roxana site with 155 signatures, and 1,005 letters of support. Of the comments received, 1,157 of the comments (not including the petitions in support of the project) were in support of the project and 12 comments were in opposition of the project. Twenty-four of the comments in support of the project favored the Payne Gap site and 44 of the comments in support of the project favored the Roxana site. All comments on the Draft EIS, as well as the Bureau's responses to those comments, are provided in Appendix E-1 of this Revised Final EIS.

The Notice of Availability of the Final EIS was published in the *Federal Register* on July 31, 2015, beginning a 30-day public review period. The notice was also published in the *Mountain Eagle* on July 22, 2015, and the *Lexington Herald-Leader* on July 26, 2015. A total of 16 comments and one online petition signed by 625 individuals in opposition of the project were received during the 30-day review period, and two comments were received after the 30-day review period. In consideration of comments received following release of the Final EIS, the Bureau concluded that written notice of publication of the Final EIS had not been directly provided to at least 22 parties who had requested it; consequently, those parties received less than the intended, full 30-day review period in which to submit comments on the Final EIS. By publishing this Revised Final EIS and providing a 30-day review period, the public, including any parties who may not have received timely notice of the Final EIS publication, are being afforded a new 30-day review period within which to submit comments on the Revised Final EIS so that they can be considered by the Bureau prior to issuing a Record of Decision for the proposed action. All comments received on the withdrawn Final EIS will remain part of the Administrative Record for the proposed action, and have been included in this Revised Final EIS in Appendix E-2.

SUMMARY OF ENVIRONMENTAL EFFECTS

Table ES-1 provides a summary of the potential environmental effects from the No Action Alternative and the two build alternatives: Alternative 1 – Payne Gap and Alternative 2 – Roxana. Potential mitigation and site preparation costs have also been provided in this table. These mitigation measures and

costs are likely to change over the course of the project as a result of coordination with various agencies and formal development of mitigation measures with the agencies; however, this was the best available information at the time this EIS was published and serves to assist in the comparison of the alternatives.

Table ES-1. Summary of Environmental Consequences

Resource Area	Alternative 1 (Payne Gap)	Alternative 2 (Roxana)	No Action Alternative
Land Use and Zoning	<ul style="list-style-type: none"> Compatibility issues with adjacent properties 	<ul style="list-style-type: none"> Compatibility issues with adjacent properties 	<ul style="list-style-type: none"> No compatibility issues
Topography, Geology, and Soils	<ul style="list-style-type: none"> Significant impacts to topography, geology, and soils 	<ul style="list-style-type: none"> Significant impacts to topography, geology, and soils 	<ul style="list-style-type: none"> No impacts to topography, geology, and soils
Socioeconomics and Environmental Justice	<ul style="list-style-type: none"> No significant adverse effects Potential beneficial economic effects 	<ul style="list-style-type: none"> No significant adverse effects Potential beneficial economic effects 	<ul style="list-style-type: none"> Opportunity for beneficial economic effects would not exist
Community Facilities and Services	<ul style="list-style-type: none"> No adverse impacts 	<ul style="list-style-type: none"> No adverse impacts 	<ul style="list-style-type: none"> No impact
Transportation and Traffic	<ul style="list-style-type: none"> No adverse impacts to traffic and roadways Minor roadway improvements would be required 	<ul style="list-style-type: none"> No adverse impacts to traffic; however, there would be potential adverse impacts to roadways Roadway improvements would be required 	<ul style="list-style-type: none"> No impacts to traffic
Air Quality	<ul style="list-style-type: none"> No significant impacts on the local or regional air quality 	<ul style="list-style-type: none"> No significant impacts on the local or regional air quality 	<ul style="list-style-type: none"> No increases in air emissions; therefore, no impacts to air quality
Noise	<ul style="list-style-type: none"> Short-term, temporary construction related impacts 	<ul style="list-style-type: none"> Short-term, temporary construction related impacts 	<ul style="list-style-type: none"> No construction or operation of a new facility; therefore, no impacts from increases in noise
Infrastructure and Utilities	<ul style="list-style-type: none"> Significant impacts to wastewater and natural gas infrastructure 	<ul style="list-style-type: none"> No significant direct impacts Cumulative impacts to wastewater infrastructure 	<ul style="list-style-type: none"> No construction or operation of a new facility; therefore, no increase in demand on infrastructure and utilities
Cultural Resources	<ul style="list-style-type: none"> No adverse impacts 	<ul style="list-style-type: none"> No adverse impacts 	<ul style="list-style-type: none"> No construction or operation of a new facility; therefore, no impacts to cultural resources
Water Resources	<ul style="list-style-type: none"> 2.40 acres (0.97 hectares) of wetland impacts 10,512 linear feet of stream impacts 	<ul style="list-style-type: none"> 2.45 acres (1.0 hectares) of wetland impacts 4,117 linear feet of stream impacts 	<ul style="list-style-type: none"> No construction or operation of a new facility; therefore, no impacts to water resources
Biological Resources	<ul style="list-style-type: none"> 218 acres (88 hectares) of deforestation Impacts to Indiana, northern long-eared, and gray bat habitat 	<ul style="list-style-type: none"> 93 acres (38 hectares) of deforestation Impacts to Indiana and northern long-eared bat habitat 	<ul style="list-style-type: none"> No construction or operation of a new facility; therefore, no impacts to biological resources.
Hazardous Materials and Waste	<ul style="list-style-type: none"> No adverse impacts 	<ul style="list-style-type: none"> No adverse impacts 	<ul style="list-style-type: none"> No impacts
Known Mitigation and Associated Costs			
Infrastructure and Utilities	\$8,895,000	\$15,825,000	No Cost
Threatened and Endangered Species*	\$1,030,000 - \$1,373,400	\$732,375-\$1,024,355	No Mitigation
Excavation and Grading Costs	\$217,327,748	\$141,116,447	No Cost

Notes: *Estimated costs are based on United States Fish and Wildlife Service (USFWS) cost per acre for impacts to Indiana bat and northern long-eared bat habitat for Payne Gap and Swarming P1/P2 habitat for Roxana. Cost was calculated based on total forest impacts for each site and time of year habitat is removed. Cost is based only on summer habitat impacts.

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ACRONYMS AND ABBREVIATIONS

AEP	American Electric Power	HAP(s)	hazardous air pollutant(s)
AMSL	above mean sea level	HUC	Hydrologic Unit Code
AMUs	Adjusted Mitigation Unit(s)	ITE	Institute of Transportation Engineers
APE	Area of Potential Effects	KAR	Kentucky Administrative Regulations
ARH	Appalachian Regional Healthcare	KDEP	Kentucky Department for Environmental Protection
AST(s)	aboveground storage tank(s)	KGS	Kentucky Geological Survey
ASTM	American Society for Testing and Materials	KHC	Kentucky Heritage Council
BMPs	Best Management Practices	KRADD	Kentucky River Area Development District
Bureau	Federal Bureau of Prisons	KY SHWS	Kentucky State Hazardous Waste Sites
CAA	Clean Air Act	KYLM	Kentucky Labor Market Information
CCR(s)	Consumer Confidence Report(s)	KYTC	Kentucky Transportation Cabinet
CEQ	Council on Environmental Quality	LOS	level of service
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System	LCWSD	Letcher County Water and Sewer District
CFR	Code of Federal Regulations	MBTA	Migratory Bird Treaty Act
CH ₄	methane	MOU	Memorandum of Understanding
CMOA	Conservation Memorandum of Agreement	MSAT(s)	Mobile Source Air Toxic(s)
CO	carbon monoxide	MSL	mean sea level
CO ₂	carbon dioxide	NAAQS	National Ambient Air Quality Standards
CO _{2e}	carbon dioxide equivalent	NEPA	National Environmental Policy Act
CWA	Clean Water Act	NHPA	National Historic Preservation Act
dB	decibels	N ₂ O	nitrogen oxide
dBA	A-weighted decibels	NO ₂	nitrogen dioxide
EA	Environmental Assessment	NO _x	nitrogen oxides
EIS	Environmental Impact Statement	NRCS	Natural Resources Conservation Service
EIU	Ecological Integrity Unit	NRHP	National Register of Historic Places
EMTs	emergency medical technicians	NWI	National Wetland Inventory
EO	Executive Order	O ₃	ozone
ESA	Endangered Species Act	OSHA	Occupational Safety and Health Administration
FAA	Federal Aviation Administration	PCBs	polychlorinated biphenyls
FEMA	Federal Emergency Management Agency	pCi/L	picocuries per liter
FPC	Federal Prison Camp	PM _{2.5}	particulate matter with a diameter of 2.5 microns or less
FPPA	Farmland Protection Policy Act	PM ₁₀	particulate matter with a diameter less than 10 microns
GHGs	greenhouse gases		

ppb	parts per billion
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
RECs	Recognized Environmental Conditions
RSLs	Regional Screening Levels
SHPO	State Historic Preservation Officer
SO ₂	sulphur dioxide
TCPs	Traditional Cultural Properties
TMDL	Total Maximum Daily Load
TPY	tons per year
TRI	Toxics Release Inventory
TSCA	Toxic Substances Control Act
UCL	Upper Confidence Limit
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USP	U.S. Penitentiary
UST(s)	underground storage tank(s)
VOC	volatile organic compound
WWTP	wastewater treatment plant
yd ³	cubic yards
µg/kg	micrograms per kilogram
µg/m ³	micrograms per cubic meter
µS	microseconds

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

The United States (U.S.) Department of Justice, Federal Bureau of Prisons (Bureau) has prepared this Revised Final Environmental Impact Statement (EIS) for the proposed construction and operation of a federal correctional facility in Letcher County, Kentucky. The Bureau published the *Final Environmental Impact Statement for Proposed United States Penitentiary and Federal Prison Camp, Letcher County, Kentucky* on July 31, 2015. In consideration of comments received following publication of the Final EIS and to correct inconsistencies in the Final EIS, the Bureau concluded the Final EIS would be withdrawn and a Revised Final EIS would be issued. A Revised Final EIS would enable the Bureau to provide more complete discussion of some topics addressed in the Final EIS, and provide more complete responses to comments received on the Draft EIS than were provided in the FEIS. Also as a result of comments received following release of the Final EIS, the Bureau concluded that written notice of availability of the Final EIS had not been directly provided to at least 22 parties who had requested it; therefore, those parties received less than the intended, full 30-day review period in which to submit comments on the Final EIS. By publishing this Revised Final EIS and by providing a 30-day review period on the Revised Final EIS, the public, including any parties who may not have received timely notice of the Final EIS publication, are being afforded a new 30-day review period within which to submit comments on the Revised Final EIS so that they can be considered by the Bureau prior to and in connection with a Record of Decision for the proposed action.

This Revised Final EIS makes no change to the proposed action. As did the withdrawn Final EIS, the Revised Final EIS evaluates potential environmental effects that may result from the proposed construction and operation of a United States Penitentiary and Federal Prison Camp at two alternative sites in Letcher County, Kentucky, as well as the No Action Alternative.

This EIS has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500–1508), and the U.S. Department of Justice procedures for implementing NEPA (28 CFR 61).

1.1 BACKGROUND

The Bureau was established in 1930 to provide more progressive and humane care for federal inmates, to professionalize the prison service, and to ensure consistent and centralized administration of federal prisons. The mission of the Bureau is to protect society by confining offenders in the controlled environments of prisons and community-based facilities that are safe, humane, cost efficient, and appropriately secure, and that provide work and other self-improvement opportunities to assist offenders in becoming law-abiding citizens.

1.2 SECURITY LEVELS

The Bureau accomplishes its mission through the appropriate use of the following types of community-correction, detention, and correctional facilities:

- Federally owned and operated
- Federally owned and non-federally operated
- Non-federally owned and operated

Regardless of facility ownership, the Bureau operates correction and detention facilities at various security levels. Each security level is characterized by the type of housing within the institution, internal security features, and staff-to-inmate ratio. Different security levels require particular features such as external patrols, guard towers, security barriers, or detection devices. The five categories of security levels are described as follows:

- ***Minimum-Security*** – Also known as Federal Prison Camps (FPCs) or satellite work camps. They are characterized by dormitory housing, a relatively low staff-to-inmate ratio, and are without fences. They are typically associated with a larger institution or military base where inmates can help serve labor needs of the institution or base.
- ***Low-Security*** – Federal Correctional Institutions with double fenced perimeters, primarily dormitory housing, and strong work and program components.
- ***Medium-Security*** – Federal Correctional Institutions with strengthened perimeters (e.g., double fences with electronic detection systems), cell-type housing, a wide variety of work and treatment programs, and an increased inmate-to-staff ratio to provide greater control.
- ***High-Security*** – Also known as United States Penitentiary (USP). These facilities have highly secure perimeters (e.g., walls or double fences with taut wire fencing, non-lethal/lethal fences), multiple single occupant cell housing, guard towers, close staff supervision, and movement controls.
- ***Administrative*** – Institutions that house offenders who require an uncommon level of security due to their serious records of institutional misconduct, involvement in violent or escape-related behavior, and/or who have unusual security needs based on the nature of their offense. These facilities have highly secured perimeters consisting of walled or double fenced enclosures with guard towers.

The security level classifications of all of the Bureau's inmates are reviewed at regularly scheduled intervals during their incarceration. If at the time of the inmate's classification review the inmate's security level is no longer appropriate for placement in the current institution, the inmate would be submitted for transfer to a lower or higher security level facility. The classification of inmates is necessary to place each inmate in the most appropriate security level institution that meets their program needs and also ensures and protects society.

1.3 EXISTING FEDERAL PRISON POPULATION

In 1981, the federal inmate population consisted of approximately 23,800 inmates. By 1986 the federal inmate population had increased to about 38,700, a 63 percent increase. Growth continued at a steady rate through the 1990s and in 1998 the federal inmate population had grown 280 percent, reaching 108,000 inmates. At the end of Fiscal Year 2015 (September 30, 2015), the Bureau inmate population totaled 205,723; this includes 165,134 inmates being housed in 122 Bureau institutions, 24,262 being housed in privately-managed secure facilities, and 16,327 being housed in other contract care. Of the 165,134 inmates housed in Bureau institutions, 21,465 were high-security male inmates. The Bureau housed these 21,465 high-security male inmates in 17 USPs located throughout six regions within the U.S.: the Mid-Atlantic Region; North Central Region; Northeast Region; South Central Region; Southeast Region; and

Western Region.¹ Each region provides facilities for housing inmates at all security levels. At the end of Fiscal Year 2015, the 17 USPs were rated for a total capacity of 14,621 high-security inmates. Therefore, the Bureau's high-security institutions were 47 percent overcrowded and continue to operate at above rated capacity.

The overall prisoner population is declining. However, of the 8,426 net decrease in the total inmate population in Fiscal Year 2015, only a small fraction of the net decrease was realized in the Bureau's high-security level inmate population (250). The current prison population in high-security male facilities (USPs) remains at overcrowding levels. As of December 3, 2015, the system-wide overcrowding level for all USPs in the Bureau of Prisons is 46 percent. The overcrowding level in the USPs in the Mid-Atlantic Region is currently 48 percent.

To meet the current and projected bedspace needs, the Bureau evaluates the bedspace needs of the regions using a geographically balanced program. When making decisions on the placement of an individual, the Bureau considers the origin of the inmate and attempts to place the inmate in an institution that is within the region of the inmate's origin. Placing inmates within their region of origin provides greater opportunity for visitation with family, which aids in the rehabilitation process. However, an inmate's region of origin is not the sole factor in determining the inmate's placement. Other factors that are considered when making placement decisions include, but are not limited to, the level of security and supervision the inmate requires, the level of security and staff supervision the institution is able to provide, the inmate's program needs, the level of overcrowding at an institution, any security, location or program recommendation by the sentencing court, any additional security measures to ensure the protection of victims/witnesses and the public in general, and any other factor(s) that may involve the inmate's confinement, the protection of society, and/or the safe and orderly management of a Bureau facility.

1.4 FEDERAL BUREAU OF PRISONS MID-ATLANTIC REGION

One of the regions identified by the Bureau as having an increasing need for additional high-security bedspace in order to reduce overcrowding is the Mid-Atlantic Region. As of December 3, 2015, approximately 5,665 high-security inmates are housed within the Mid-Atlantic Region. The current rated capacity for these institutions is 3,821. Therefore, the Bureau has determined that due to the overcrowding in the Mid-Atlantic Region, specifically within the USPs, construction of a new high-security facility and a FPC for mission support would be warranted in the region.

There are currently 18 correctional facilities housing male inmates in the Bureau's Mid-Atlantic Region. Of these, only four are USPs or high-security facilities: USP Hazelton located in Hazelton, West Virginia, USP Lee located in Jonesville, Virginia, USP Big Sandy located in Inez, Kentucky, and USP McCreary located in McCreary, Kentucky. **Table 1-1** depicts the current populations associated with each of the USPs in the Mid-Atlantic Region.

¹ Inmates houses at the Administrative Maximum Facility in Florence, Colorado and the Administrative USP in Thomson, Illinois were not included in these figures.

Table 1-1. Mid-Atlantic Region USP Inmate Population as of December 3, 2015		
USP	Current Inmate Population	Rated Capacity
Hazelton	1,445	957
Lee	1,329	960
Big Sandy	1,458	949
McCreary	1,433	955
Total	5,665	3,821

1.5 PURPOSE AND NEED

The purpose of the proposed federal correctional facility in Letcher County, Kentucky, is to provide an additional high-security penitentiary and an associated prison camp to increase capacity for current inmate populations in the Mid-Atlantic Region. The need for the proposed facility is that the current inmate populations of the USPs in the Mid-Atlantic Region are exceeding their rated capacity and their associated FPCs are at or near capacity. The overcrowding level in the USPs in the Mid-Atlantic Region is currently 48 percent. Current inmates from the four existing USPs in the Mid-Atlantic Region could be moved from these overcrowded facilities to the proposed Letcher County USP. The Bureau has determined that there is a need for additional high-security facilities within this region to reduce the demonstrated overcrowding that compromises the mission of the Bureau. The Bureau's mission is to protect society by confining offenders in the controlled environments of prisons and community-based facilities that are safe, humane, cost-efficient, and appropriately secured, and that provide work and other self-improvement opportunities to assist offenders in becoming law-abiding citizens.

1.6 PROPOSED ACTION

The proposed action evaluated in this Revised Final EIS is the acquisition of property and the construction and operation of a federal correctional facility in Letcher County, Kentucky. The Bureau proposes to acquire approximately 800 acres (324 hectares) to construct a USP (approximately 61,654 square meters [663,638 square feet]) and FPC (approximately 6,063 square meters [65,262 square feet]) in Letcher County. Inmates housed in the USP would be high-security male inmates and those housed in the FPC would be minimum-security male inmates. The proposed USP and FPC would house approximately 1,216 total inmates (approximately 960 within the USP and approximately 256 within the FPC). Operation of the USP and FPC would require approximately 300 full-time staff.

In addition to the USP and FPC, several ancillary facilities necessary for the operation of the USP and FPC would be constructed. The ancillary facilities would include the following:

- Central Utility Plant (1,217 square meters [13,100 square feet])
- Outdoor Firing Range (96 square meters [1,033 square feet])
- Outside Warehouse (3,279 square meters [35,295 square feet])
- Staff Training Building (910 square meters [9,795 square feet])
- Garage/Landscape Building (653 square meters [7,028 square feet])
- Access Roads and Parking

The outdoor firing range would be used by Bureau staff primarily for annual firearms recertification. The range would be used approximately once a month for small arms training and maintenance.

A non-lethal/lethal fence and lighting would also be installed. The non-lethal/lethal fence would be placed around the perimeter of the USP between two parallel, chain link and razor wire fences. The fence would

be approximately 12 feet high. The site lighting would consist of 100 foot (30 meter) high-mast lighting poles placed along the security perimeter road around the correctional facility, in the parking lot, and around the buildings. The lighting would include hooded fixtures with a mix of high pressure sodium and metal halide lights to provide a minimum of 1.5 footcandles of illumination. The number and mix of light sources used to illuminate the secure compound are selected for the ability to relight the facility quickly in the event of a power outage.

The initial step for project development would be property acquisition. Property acquisition would involve acquisition of both surface and mineral rights from multiple owners, and would be estimated to take several months to a year or longer. Project construction would begin after property acquisition is completed, and would take three to four years.

1.6.1 General Design Features of the United States Penitentiary and Federal Prison Camp

The Bureau has standard design layouts for their correctional facilities, which include similar design characteristics. General design features of a USP include:

- Single road for controlled access to each correctional facility
- Parking lot located near the public entrance to each correctional facility for use by both employees and visitors
- One- to four-story structures
- Multipurpose activity spaces
- Buffer areas around the facility providing visual and physical setbacks from the site boundaries

1.7 ENVIRONMENTAL REVIEW PROCESS

1.7.1 National Environmental Policy Act

In 1969, Congress enacted the National Environmental Policy Act (NEPA), which requires consideration of environmental issues in federal agency planning and decision-making. Regulations for federal agency implementation of the act were established by the President's CEQ. NEPA requires federal agencies to prepare an environmental assessment (EA) or environmental impact statement (EIS) for any federal action, except those actions that are determined to be "categorically excluded" from further analysis. An EIS is prepared for those federal actions that may significantly affect the quality of the human and natural environments or where the impacts are largely unknown or controversial. The EIS must disclose significant environmental impacts and inform decision makers and the public of the reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment. The intent of this Revised Final EIS is to document the potential environmental impacts associated with the proposed action, acquisition of property and construction and operation of a USP and FPC. The Bureau is the decision-maker with regard to this proposed action. This document, together with its appendices and other documents incorporated by reference, constitutes the Revised Final EIS pursuant to NEPA, the CEQ regulations, and the U.S. Department of Justice procedures for implementing NEPA.

The Revised Final EIS identifies and evaluates potential environmental impacts of the proposed action alternatives and the No Action Alternative to: land use and zoning; topography, geology, and soils; socioeconomics and environmental justice; community facilities and services (fire, police, and emergency services, health care facilities, and schools); transportation and traffic; air quality; noise; infrastructure and utilities; cultural resources; water resources (surface water, wetlands, groundwater, and floodplains); biological resources (vegetation, wildlife, and threatened and endangered species); and hazardous

materials and waste. Also discussed, as appropriate, is mitigation for the identified environmental impacts. In addition, this Revised Final EIS identifies which of the proposed action alternatives would result in the least amount of impacts to the environment.

1.7.2 Related Environmental Documents

In 2008, the Bureau conducted a site reconnaissance study in Letcher County, Kentucky. The site reconnaissance report identified several resources associated with potential sites that would require additional studies to determine if the sites were viable for the development of a federal correctional institution. Based on this 2008 study, a second study was conducted in 2010 to rank these sites and verify that the issues originally identified in 2008 had not changed. Based on the data collected from both the 2008 and 2010 studies, it was determined that a feasibility study to analyze the resources of concern would be conducted to further assess the viability of construction at each of the sites.

In 2012, the Bureau completed a feasibility study that evaluated four potential sites for the development of a USP and FPC in Letcher County, Kentucky (TEC, Inc. 2012). The purpose of the feasibility study was to conduct additional studies, including wetland identification and delineation, cultural resource surveys, geotechnical studies, boundary surveys, and a utility assessment, of the proposed sites to determine if there would be constraints associated with these resources and the development of the sites. The feasibility study evaluated the benefits, challenges, and potential risks associated with development of each site. Based on the results of the feasibility study and changes with the offers of sites, it was determined that two sites, Payne Gap and Roxana, would be carried forward for analysis in the EIS.

1.7.3 Agency Coordination

In addition to NEPA, other laws, regulations, permits and licenses may be applicable to the proposed action. Specifically, the proposed action may require:

- Informal consultation with the U.S. Fish and Wildlife (USFWS) Service regarding the occurrence of threatened and endangered species within the sites;
- Concurrence from the State Historic Preservation Officer on cultural resource findings;
- Clean Water Act (CWA) Section 404 permit if wetland impacts occur;
- National Pollutant Discharge Elimination permit for non-point source discharge; and
- Erosion and sediment control plan for new construction.

1.7.4 Public Involvement

NEPA requires the public be informed and involved throughout the development of an EIS, beginning with public scoping. The public scoping meeting is an opportunity for the federal agency, in this case the Bureau, to introduce the project to the public and receive input on the scope of the issues to be addressed in the EIS. The local public has knowledge of the area where the proposed action may take place, and can provide insight into local resources, as well as to the concerns of the community. Public involvement in the NEPA process is required and is an extremely valuable tool in the successful completion of NEPA documents.

The official scoping period for this project began on July, 26, 2013, when the Bureau published a Notice of Intent to prepare an EIS in the *Federal Register*, and ended on August 26, 2013. The notice was also published in the *Lexington Herald-Leader* on July 26, 2013, and the *Mountain Eagle* on July 31, 2013. A scoping meeting was held on August 13, 2013, to inform the public about the proposed project and to

explain NEPA and the associated environmental impact analysis. A total of 453 people attended the public meeting and a total of 320 comments were received during the 30-day scoping period. Additionally, 169 letters of support were presented at the scoping meeting, as well as two petitions in support of the project with a combined total of 124 signatures. Of the 320 comments received, 317 comments were in support of the project and 3 were not in support of the project. Issues raised in the letters that did not support the project included: socioeconomic, previous mining activities, infrastructure, and alternatives. These resources and areas of concern raised during scoping were analyzed in the Draft EIS.

The Notice of Availability of the Draft EIS was published in the *Federal Register* on February 13, 2015. A Notice of Public Meeting for the Draft EIS was published in the *Federal Register* on February 10, 2015. The notice provided the date, time, and location of the public meeting to be held on March 12, 2015. A notice of availability of the Draft EIS and public meeting was also published in the *Mountain Eagle* on February 11, 2015 and the *Lexington Herald-Leader* on February 8, 2015. The notice announced that the Draft EIS would be available for public review and comment between February 13 and March 30, 2015. The notice identified the local libraries where hard copies of the document could be reviewed, as well as a project website, www.fbopletchercountyeis.com, where an electronic version of the document could be reviewed. The Bureau also sent out 60 hard copies and 161 CDs containing the Draft EIS to federal, state, and local elected officials and regulatory agencies (USFWS, U.S. Army Corps of Engineers, Kentucky State Clearinghouse, etc.), other interested parties (planning commission, fire departments, police departments, etc.), and individuals who had requested a copy during scoping or at any other time prior to the release of the Draft EIS.

The public meeting was held on March 12, 2015, between 5:30 p.m. and 8:00 p.m. at the Letcher County Central High School. The meeting was conducted in an open house format and Bureau representatives were in attendance to answer questions and discuss the project with the attendees. Approximately 350 members of the public attended the public meeting. Attendees were able to provide written comments or give oral comments to a stenographer during the meeting. Attendees were also provided information for mailing their comments to the Bureau. Comments received during the public comment period included 158 comments received at the public meeting; 31 comments received via mail or email; three petitions in support of the project with 1,001 signatures; one petition in support of the project at the Roxana site with 155 signatures; and 1,005 letters of support. Of the comments received, 1,157 of the comments (not including the petitions in support of the project) were in support of the project and 12 comments were in opposition of the project. Twenty-four of the comments in support of the project favored the Payne Gap site and 44 of the comments in support of the project favored the Roxana site. All comments on the Draft EIS, and the Bureau's responses to those comments, are included in Appendix E-1 of this Revised Final EIS.

The Notice of Availability of the Final EIS was published in the *Federal Register* on July 31, 2015, beginning a 30-day public review period. The notice was also published in the *Mountain Eagle* on July 22, 2015, and the *Lexington Herald-Leader* on July 26, 2015. A total of 16 comments and one online petition signed by 625 individuals in opposition of the project were received during the 30-day review period, and two comments were received after the 30-day review period. In consideration of comments received following release of the Final EIS, the Bureau concluded that written notice of publication of the Final EIS had not been directly provided to at least 22 parties who had requested it; consequently, those parties received less than the intended, full 30-day review period in which to submit comments on the

Final EIS. By publishing this Revised Final EIS and by providing a 30-day review period on the Revised Final EIS, the public, including any parties who may not have received timely notice of the Final EIS publication, are being afforded a new 30-day review period within which to submit comments on the Revised Final EIS so that they can be considered by the Bureau prior to and in connection with a Record of Decision for the proposed action. All comments received on the Final EIS that was withdrawn will remain part of the Administrative Record for the proposed action, and have been included in this Revised Final EIS in Appendix E-2.

2.0 ALTERNATIVES

CEQ's guidelines for implementing the procedural Provisions of the NEPA establish a number of policies for federal agencies, including "...using the NEPA process to identify and assess reasonable alternatives to the proposed action that will avoid or minimize adverse effects of these actions on the quality of the human environment" (40 CFR 1500.2[e]). The guidelines also require an analysis of alternatives based "on the information and analysis presented in the sections on the Affected Environment (§1502.15) and the Environmental Consequences (§1502.16)." The guidelines further state that the analysis "should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice." According to CEQ guidelines the alternatives analysis is also required to:

- "Include the alternative of no action"
- "...explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated"
- "Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits"
- "Include reasonable alternatives not within the jurisdiction of the lead agency"
- "Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference"
- "Include appropriate mitigation measures not already included in the proposed action or alternatives"

The analysis of alternatives considered in this Revised Final EIS was conducted under these guidelines to address the following:

- **No Action Alternative.** A decision not to proceed with the proposed action to develop a new USP and FPC.
- **Alternative Locations-Nationwide.** Locations other than the Letcher County, Kentucky area for implementation of the proposed action.
- **Alternative Locations.** Within the Geographic Area of Interest Warranting Consideration. Potential site(s) which meet minimum requirements for accommodating the proposed facility are located with the geographic area of interest (Kentucky), and have been offered and are available for Bureau consideration.

A discussion of these alternatives follows. No reasonable alternatives outside the jurisdiction of the Bureau (the lead agency) have been identified or warrant inclusion in the Revised Final EIS.

2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the Bureau would not acquire property or construct and operate a new USP or FPC. Existing USPs would remain overcrowded and prevent the Bureau from meeting its mission. The No Action Alternative would avoid potential impacts associated with the development of a USP and FPC. The No Action Alternative does not meet the project purpose and need and is therefore, not considered a viable alternative. The No Action Alternative is discussed in this Revised Final EIS because it serves as a baseline against which to compare the action alternatives.

2.2 ALTERNATIVE LOCATIONS-NATIONWIDE

The locations of new federal correctional facilities are determined by the need for incarceration in various regions of the country and the resources available to meet that need. To meet these needs the Bureau routinely identifies and evaluates potential sites that may be appropriate for development of new federal correctional facilities. Under an ongoing Congressional mandate, consideration is given to surplus properties while other publicly or privately owned properties offered to the Bureau are also examined for possible use.

The initial steps in the planning process include the identification and evaluation of potential sites. Identification of a site that has the potential to house more than one federal correctional facility is a key factor in the evaluation of sites. Acquisition of property that has the potential for facility expansion provides the Bureau with the opportunity to expand as the inmate population grows. The Bureau also responds to initiatives from communities requesting consideration to host new federal correctional facilities. When approached by a community to host a facility, the Bureau's first steps are to visit the sites offered and:

- Identify the interest and support of the community, including the support/opposition of elected and appointed officials, community leaders, stakeholders, and the general public in having a federal correctional facility within their community
- Identify suitable locations for development of the federal correctional facility based on infrastructure conditions, environmental resources, land use and zoning, and other related criteria.
- Determine the on-site conditions including constructability of the site
- Identify potential environmental issues that require consideration under NEPA (National Historic Preservation Act [NHPA], CWA, Endangered Species Act, etc.)
- Determine what further investigations and detailed studies may be warranted to obtain additional information about the potential sites

After the initial screening process, those sites with favorable conditions are moved forward and evaluated under another set of criteria, including optimal infrastructure and environmental requirements. The criteria used to evaluate the sites are established by the Bureau; however, these general criteria can be supplemented if needed to assess issues or potential issues and make sure they are addressed adequately in the evaluation of the sites. The general criteria the Bureau uses to screen potential sites for development include:

- The site should have sufficient land area (300 to 350 acres minimum [121 to 142 hectares]) to accommodate the institution and ancillary facilities, provide a buffer zone between the facility and neighboring properties, and allow for future expansion
- Proposed site should be relatively flat (less than 10 percent grade) to provide for minimal site preparation and proper drainage (this can be affected by geographic regions with mountainous terrain)
- Sites should avoid significant environmental resources (i.e., floodplains, wetlands, threatened and endangered species, cultural and historic resources, etc.)
- Sites should avoid potential incompatible land use conflicts
- Emergency services, including police and fire protection, and utilities should be able to provide services to the prospective sites

- Site should be served by well-maintained state and county roadways to ensure safe commutes for employees, service vehicles, and visitors
- Support of key elected officials, community leaders, the public and owners of the sites

Sites that the Bureau determines meet these general criteria, and are viable for the development of a federal correctional facility, are then evaluated in more detail in either an EA or EIS, in compliance with NEPA.

2.3 ALTERNATIVES DEVELOPMENT

The Bureau has a priority need for additional facilities within the Bureau's Mid-Atlantic Region. No reasonable alternatives (land or existing facilities) outside of the jurisdiction of the Bureau were identified within the Mid-Atlantic Region. In addition, no other lands/facilities in the Mid-Atlantic Region within the jurisdiction of the Bureau have sufficient space to accommodate the development of the proposed facilities.

The Bureau was contacted by the Letcher County Planning Commission with an offer of potential sites for a new USP and FPC in Letcher County, Kentucky. Understanding the needs of the Bureau, the Letcher County Planning Commission identified potential locations for development and brought these sites to the attention of the Bureau to determine if the Bureau had an interest in developing a new facility at one of the locations. The opportunity to provide additional bedspace in Letcher County would meet the need for additional capacity within the Mid-Atlantic Region, afford the Bureau continued management of inmates originating from the region, and allow those inmates to remain close to family and friends.

The process to identify potential sites for constructing a USP and FPC in Letcher County began in 2008 with site reconnaissance studies of four sites that had been offered to the Bureau by members of the community. The purpose of the site reconnaissance studies was to collect preliminary data on the sites and determine their suitability for development based on site conditions, infrastructure and utilities, and environmental resources. Based on this initial analysis, it was determined that the four sites evaluated should be studied in more detail in a feasibility study: Meadow Branch, Payne Gap, Roxana, and Van/Fields. The feasibility study provided an opportunity for more detailed analysis of each site and identified constraints that may eliminate a site from further consideration. In 2011, the Bureau completed a feasibility study that assessed cultural resources, wetlands, geologic conditions, and infrastructure. The feasibility study also included the production of aerial and topographic mapping, and a boundary survey. During the initial phases of the feasibility study, the Meadow Branch site was removed from further consideration due to changes with the offeror, and the site no longer available for consideration by the Bureau; therefore, no detailed analysis of the site was included in the feasibility study. During the feasibility study for the remaining three sites, wetlands were delineated, archaeological and historic structures surveys were completed, and geotechnical studies were conducted. The feasibility study highlighted potential concerns with development of the sites, as well as estimated costs of infrastructure improvement and site preparation (excavation and/or fill at each site, and grading activities) on each site. The feasibility study determined that there were no constraints that would prevent development of the three sites (TEC, Inc. 2012). During the finalization of the feasibility study there were changes with the offeror of the Van/Fields site, and this site was removed from further consideration. The remaining two sites, Payne Gap and Roxana, were identified as alternatives to be carried forward for study in an EIS (**Figure 2-1**).

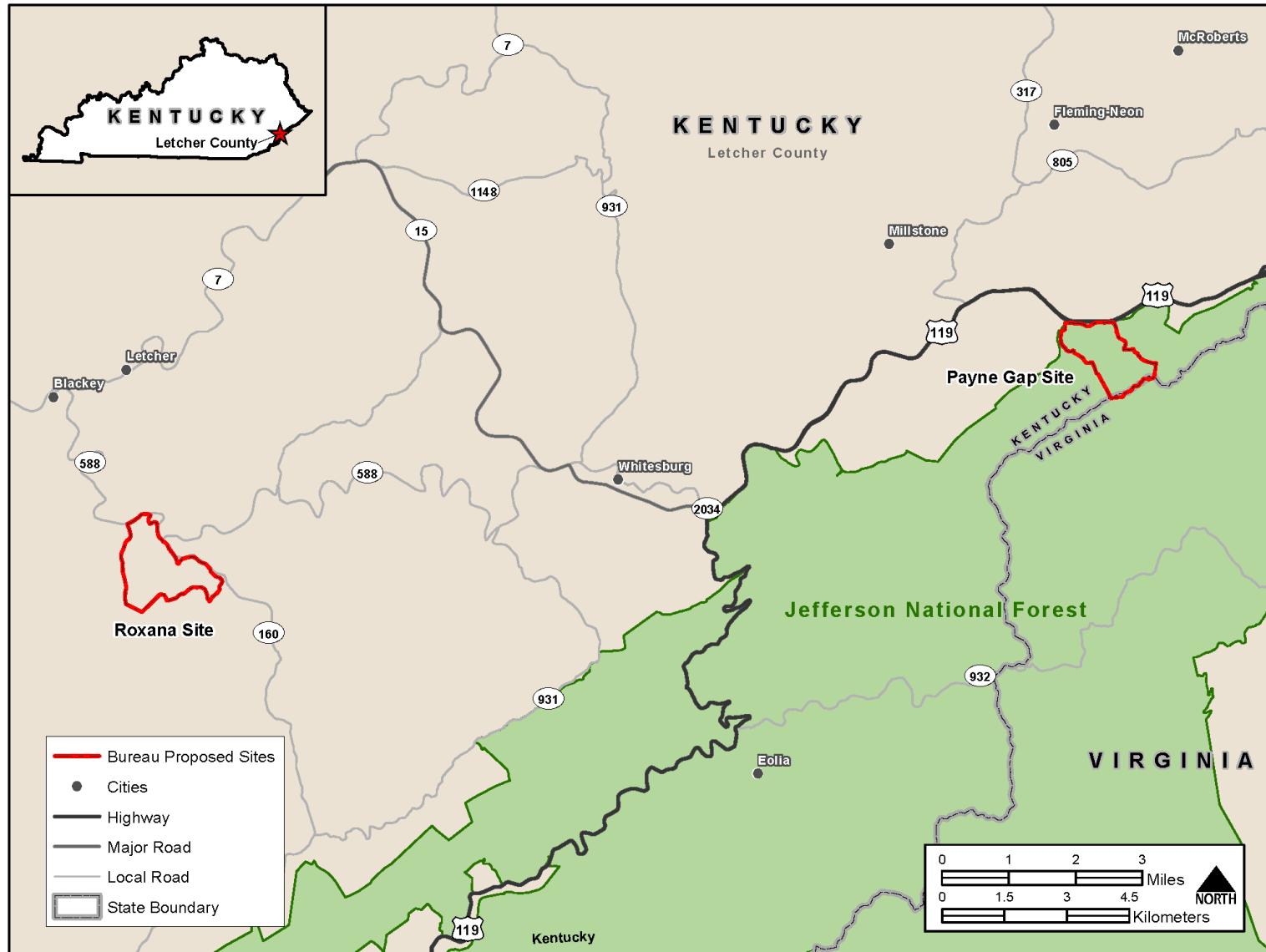


Figure 2-1. Payne Gap and Roxana Site Locations

2.4 ALTERNATIVE 1 – PAYNE GAP

Under Alternative 1, the Bureau would acquire approximately 753 acres (305 hectares) of land known as the Payne Gap site. The site is located in eastern Letcher County, approximately 7 miles northeast of Whitesburg, along the Kentucky and Virginia border (**Figures 2-1 and 2-2**). The Bureau would then construct and operate a USP and FPC on this site. The site is situated on a gently sloped to steeply sloped upland land form above the Kentucky River at its confluence with the Laurel Fork. U.S. Route 119 is located along the north end of the proposed site and would provide site access. **Figure 2-3** depicts the proposed conceptual layout of the facility at the Payne Gap site.

The site is forested with secondary growth forests, and the original topography of portions of the site have been altered by past surface and deep mining and by associated mining activities such as spoil piles, roads, and fill piles. Mining permit applications indicate surface and underground mining operations have occurred within the proposed project site since the 1950s. No active mining is occurring on site.

The Bureau would require a minimum of 300 acres (121 hectares) for construction of the USP and FPC at this site. To accommodate the USP, FPC, ancillary buildings, and roads as described in Section 1.6, *Proposed Action*, the site would require forest clearing and clear mined area, and extensive excavation and fill material to level and prepare the site for construction. All excavated materials, which would include the removal of mine spoil, would be used on-site for structural fill or placed as spoil fill. The excavated soil and rock would be compacted to create a structural fill for the building pads or filled into the valleys adjacent to the northwest, west, and southeast of the proposed USP location. **Table 2-1** depicts the site preparation quantities.

Table 2-1. Estimated Site Preparation Quantities for Alternative 1 - Payne Gap

Activity	Quantity
Spoil Excavation	2,794,660 yd ³
Rock Excavation	8,117,470 yd ³
Structural Fill	1,716,095 yd ³
Spoil Fill	12,106,917 yd ³
Clear Mined Area	7 acres (3 hectares)
Clear Forest Area	211 acres (85 hectares)

Note: yd³ = cubic yards.

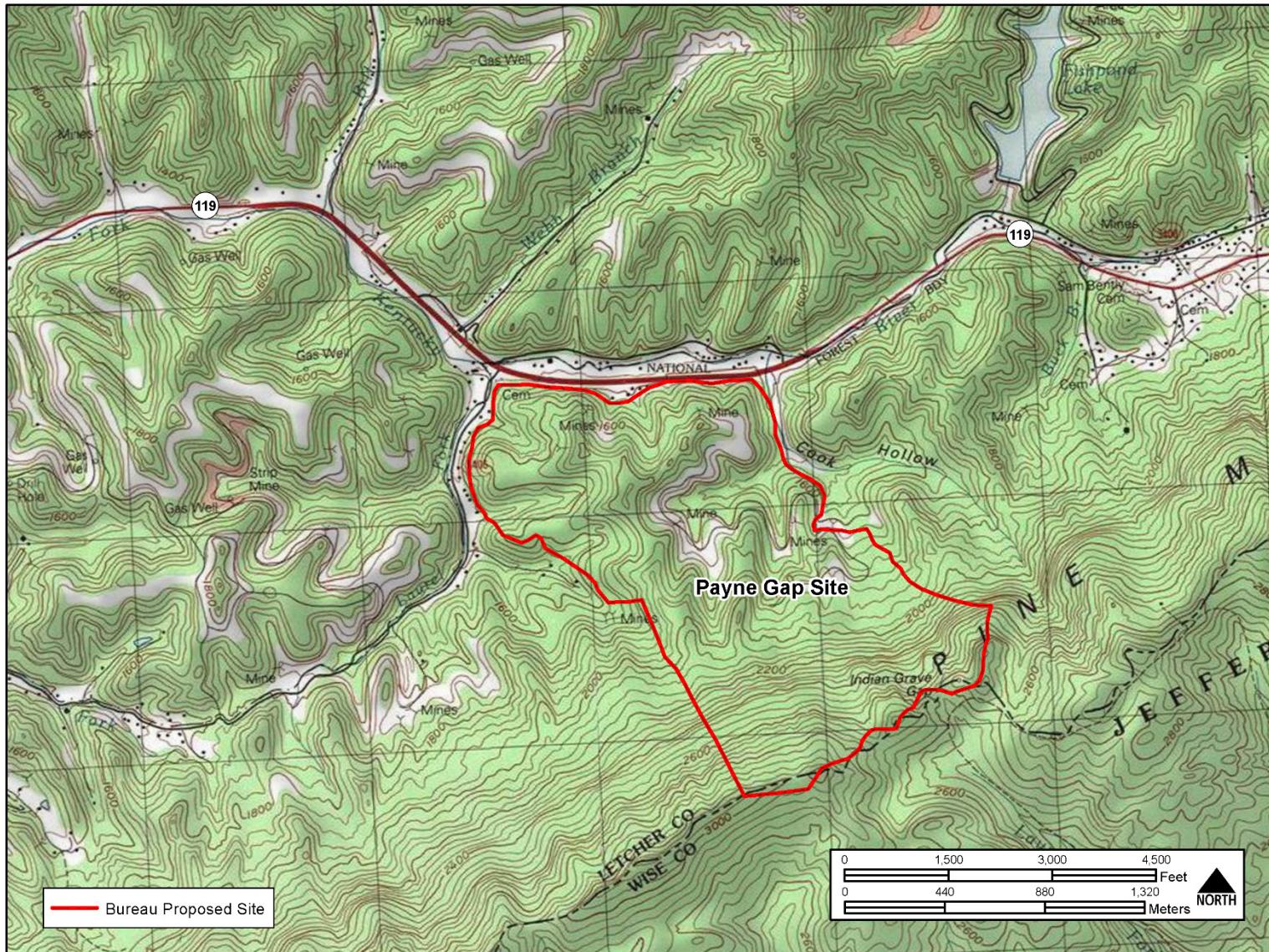


Figure 2-2. Payne Gap Project Location

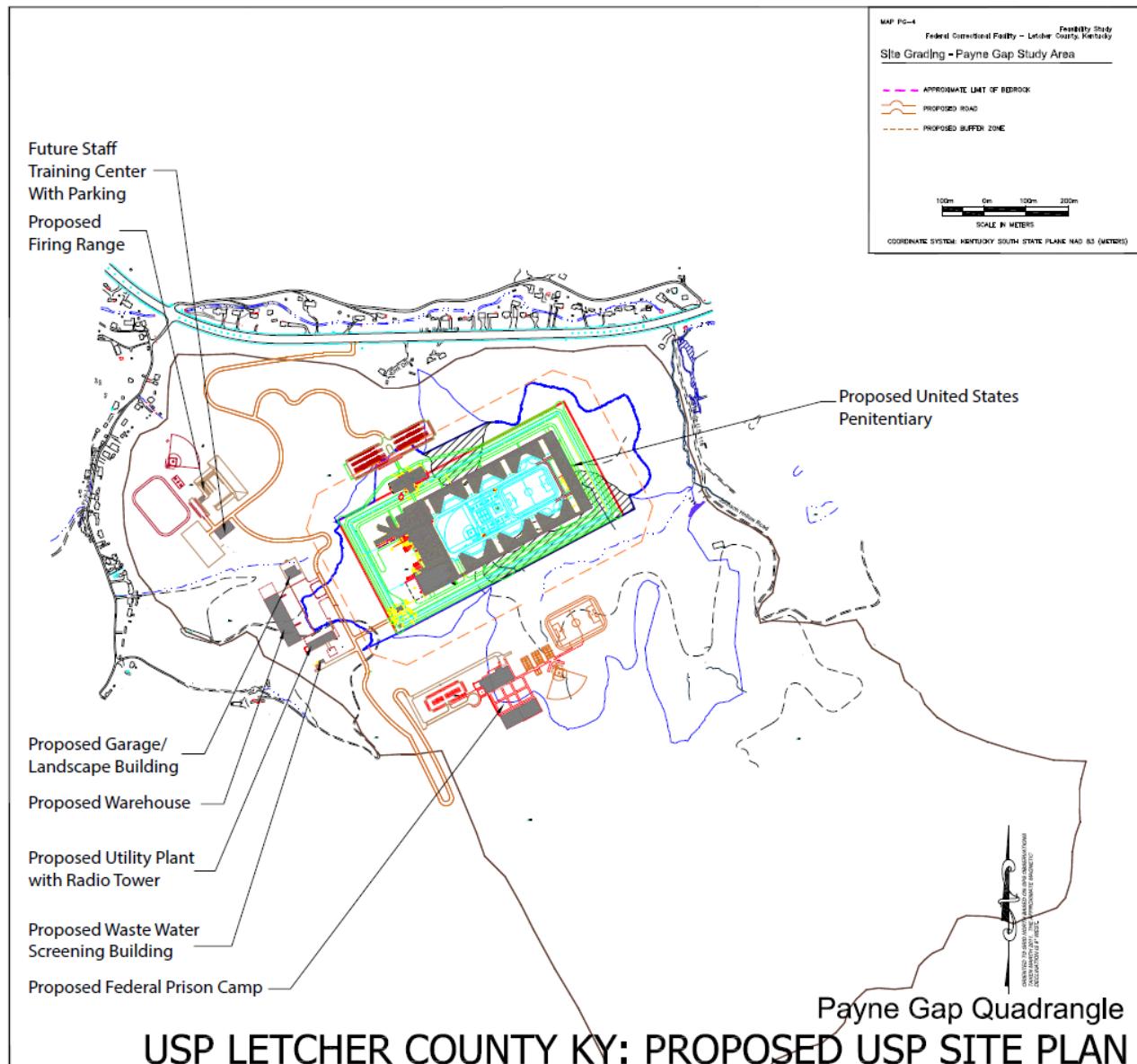


Figure 2-3. Payne Gap USP and FPC Conceptual Layout

2.5 ALTERNATIVE 2 – ROXANA

Under Alternative 2, the Bureau would acquire approximately 700 acres (283 hectares) of land known as the Roxana site. The site is located 7.5 miles west of Whitesburg, Kentucky (**Figures 2-1 and 2-4**). The Bureau would then construct and operate a USP and FPC on this site. **Figure 2-5** depicts the proposed conceptual layout of the facility at the Roxana site.

The site is forested except for a large open area near the center of the site created from past surface mining activities. Mining permit applications indicate the site was surface mined in the late 1980s to early 1990s. No active mining is occurring on site.

The Bureau would require a minimum of 300 acres (121 hectares) for construction of the USP and FPC at this site. To accommodate the USP, FPC, ancillary buildings, and roads as described in Section 1.6, *Proposed Action*, the site would require extensive excavation of spoil material and lesser amounts of structural fill and spoil fill. Preparation of the site for construction activities would also require clear mined area and forest clearing. Excavation of the site would include the removal of mine spoil. All excavated materials would be used on-site for structural fill. The excavated soil and rock would be compacted to create a structural fill for the building pads or filled into the valleys adjacent to the northwest and southwest of the proposed USP location. **Table 2-2** depicts site preparation quantities.

Table 2-2. Estimated Site Preparation Quantities for Alternative 2 - Roxana

Activity	Quantity
Spoil Excavation	9,204,340 yd ³
Rock Excavation	953,246 yd ³
Structural Fill	9,402,582 yd ³
Spoil Fill	0
Clear Mined Area	81 acres (33 hectares)
Clear Forest Area	110 acres (44 hectares)

Note: yd³ = cubic yards.

2.6 PREFERRED ALTERNATIVE

Alternative 2 – Roxana is the preferred alternative because it best meets the project needs and, on balance, would have fewer impacts to the human environment. Threatened and endangered species was a factor in the identification of the preferred alternative. Studies identified both summer roosting habitat and winter hibernaculum of federally listed bat species at the Payne Gap site. Identification of the winter bat hibernaculum would require additional studies to determine the extent of winter hibernaculum and impacts to the hibernaculum. Additionally, the site would impact a significant amount of summer roosting habitat versus the amount that would be impacted at the Roxana site. The Payne Gap site would also have significant impacts to potable water capacity, wastewater treatment, and natural gas infrastructure, while the Roxana site would have less than significant impacts to infrastructure and utilities. Based upon comparison of these and other potential environmental impacts applicable to each site, including wetlands and stream impacts and significantly greater site preparation required for the Payne Gap site, the Roxana site would have fewer natural resource and other environmental impacts. Therefore, the Roxana site has been determined to be the preferred alternative.

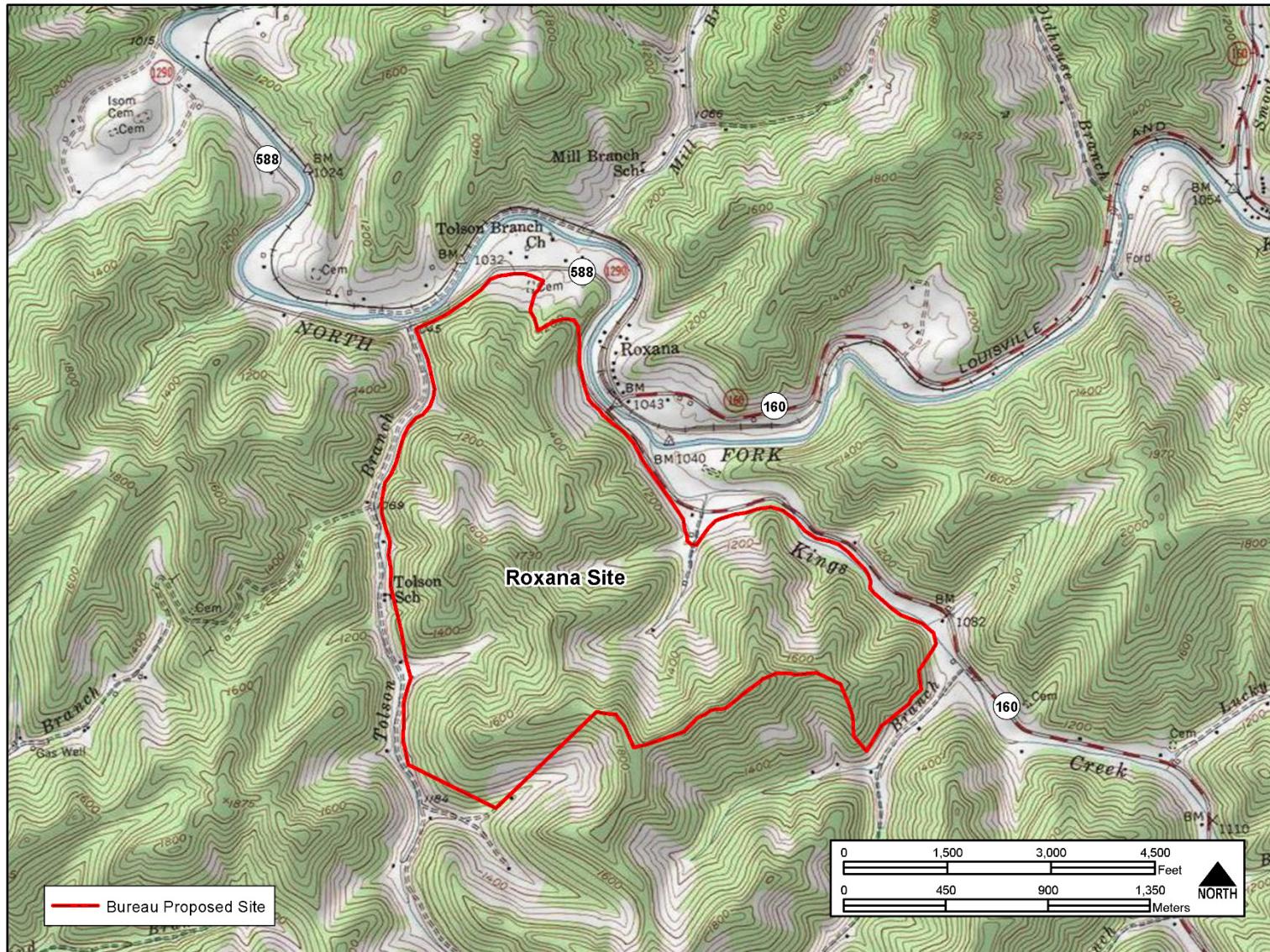


Figure 2-4. Roxana Project Location

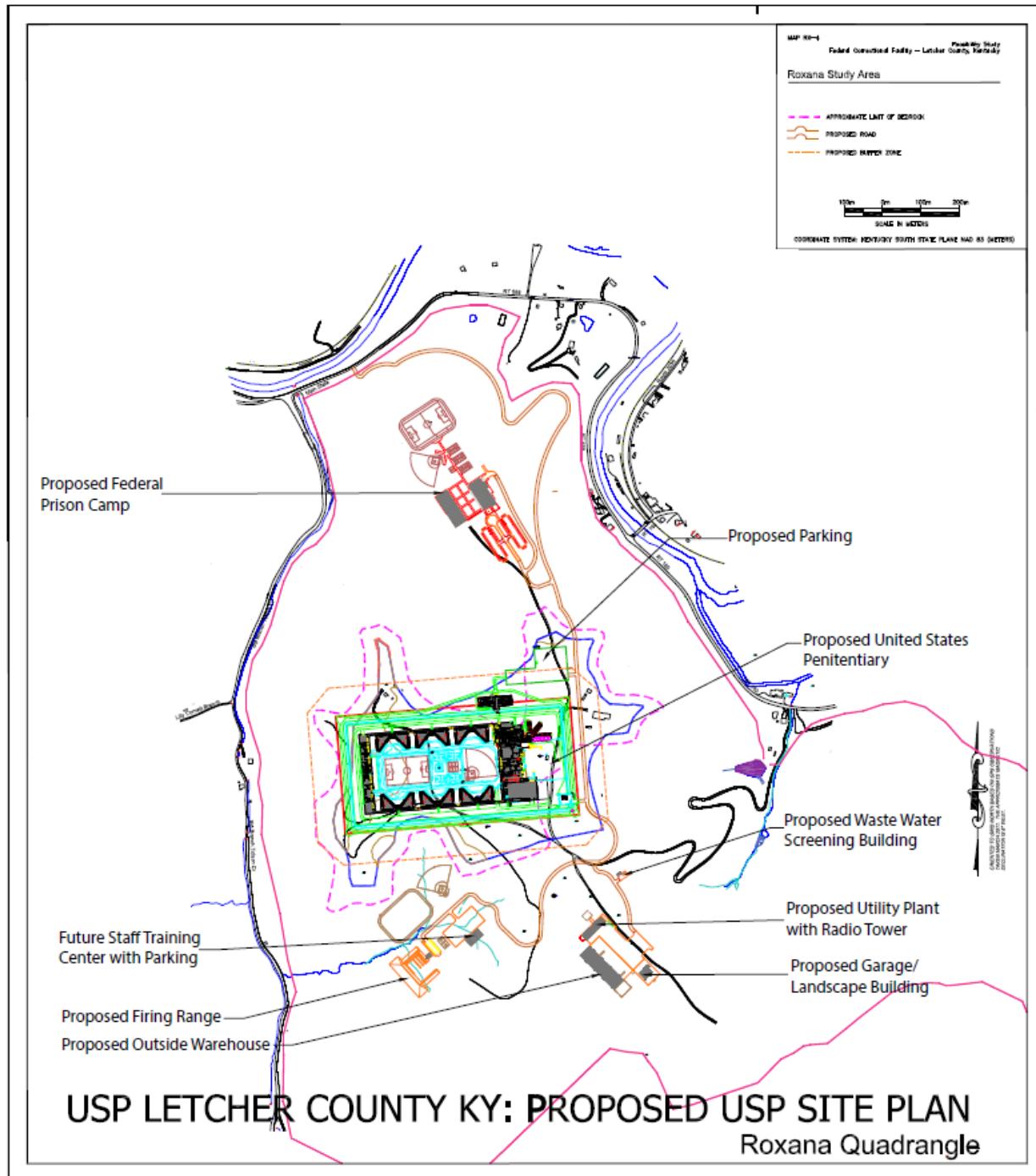


Figure 2-5. Roxana USP and FPC Conceptual Layout

3.0 DEFINITION OF RESOURCE

3.1 LAND USE AND ZONING

Land use often refers to human modification of land for residential or economic purposes. Land use categories typically include agriculture (includes livestock production), forestry, residential, commercial, industrial, transportation, utilities, mining, recreation, and communication. Land uses are frequently regulated by management plans, land use plans, comprehensive plans, and local zoning and ordinances. These plans and regulations assist in identifying where future development can occur so it is compatible with surrounding land uses and, in protecting specially designated or environmentally sensitive uses.

Land use is interrelated with other resource areas including noise, socioeconomic, biological resources, and cultural resources. The impact analysis in this Revised Final EIS for land use focuses on those areas affected by proposed construction and operation of the USP and FPC.

3.2 TOPOGRAPHY, GEOLOGY, AND SOILS

Topography describes the physical surface of the land and includes elevation, slope, and other general surface features. Geologic factors influence soil stability, bedrock depth, and seismic properties. Soil is the unconsolidated material above bedrock. Soil is formed from the weathering of bedrock and other parent materials.

The Farmland Protection Policy Act (FPPA) (7 U.S. Code [USC] 4201 et seq.) was introduced to conserve farmland soil and discourage the conversion of prime farmland soil to a non-agricultural use. The FPPA considers prime farmland soils as those that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and are also available for these uses. It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed. Soils of statewide importance are those soils that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. The FPPA is based on the protection of prime farmland soils and not on whether the area is in agricultural use.

Topography, geology, and soil resources are analyzed in this Revised Final EIS in terms of drainage, excavation and fill activities, erosion, and prime farmland. The analysis focuses on the area of soils that would be disturbed, the potential for erosion of soils from construction areas, and the potential for eroded soils to become pollutants in downstream surface water during storm events. Best Management Practices (BMPs) are identified to minimize soil impacts and prevent or control pollutant releases into stormwater.

3.3 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Socioeconomics describes the basic attributes and resources associated with the human environment, particularly population, employment, income, and housing. The affected area for socioeconomics is defined as the area where principal effects arising from the construction and operation of the proposed USP and FPC are likely to occur. The proposed action alternatives have the potential to cause socioeconomic impacts to the communities around the proposed sites through changes or relocation of Bureau personnel and construction expenditures.

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations* (Environmental Justice), was issued in 1994. It stipulates that each federal agency is to make achieving environmental justice a part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. A minority population is defined as either: 1) the minority population of the affected area exceeds 50 percent, or 2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the appropriate community of comparison. Low-income populations are identified where a meaningfully greater portion of the population is living below the poverty level threshold as compared to the appropriate community of comparison (CEQ 1997). The environmental justice analysis in this Revised Final EIS addresses the characteristics of race, ethnicity, and poverty status for populations residing in the immediate area of the proposed USP and FPC.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (Protection of Children) was issued in 1997 requiring federal agencies to identify and assess environmental health risks and safety risks that may disproportionately affect children. It also requires that each federal agency is to ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. In this Revised Final EIS, the protection of children analysis addresses the population under 18 residing in areas potentially affected by the construction and operation of the proposed USP and FPC.

This socioeconomic analysis focuses on impacts due to population changes and construction expenditures. Economic impacts are defined to include direct effects, such as changes to employment, payrolls, and expenditures that affect the flow of dollars into the local economy and secondary effects, which result from the “ripple effect” of spending and re-spending in response to the direct effects.

Socioeconomic impacts, particularly impacts such as those being evaluated in this Revised Final EIS, are often mixed: beneficial in terms of gains in jobs, expenditures, tax revenues, etc., and adverse in terms of growth management issues such as demands for housing and community services.

This analysis in this Revised Final EIS identifies potential environmental justice issues. Impacts to environmental justice populations are identified where high and adverse human health or environmental effects may disproportionately affect minority or low-income populations. Impacts to children would occur if there was an increased disproportionate environmental, health, or safety risk to children.

3.4 COMMUNITY FACILITIES AND SERVICES

Community services include police protection, fire protection, health care services and schools. The potentially affected area includes the cities, towns, and county where the proposed sites are located and where Bureau employees associated with the proposed action would live and work.

The analysis in this Revised Final EIS focuses on the existing conditions of community services within the adjacent communities in terms of capacity and availability. The anticipated demand for community services is described in relation to proposed population increases in inmates, Bureau personnel, and their families. Lastly, the analysis describes ability of community services to accommodate anticipated changes in the demand for those services resulting from the proposed action.

3.5 TRANSPORTATION AND TRAFFIC

Transportation and traffic refers to vehicle movement throughout a road and highway network. The study area for transportation and traffic includes the road and highway networks that surround and support the Payne Gap and Roxana sites. The American Association of Highway and Transportation Officials classify roadways as principal arterials, minor arterial streets, collector streets, and local streets. Principal arterials (i.e., arterial highways and interstates) serve to move traffic regionally and between population and activity centers with a minimal level of access to adjacent properties. Collector roadways (i.e., minor arterial and collector streets) serve to move traffic from population and activity centers and funnel them onto principal arterials with a moderate level of access to adjacent properties. Local roadways provide access to adjacent properties and move traffic onto collector and arterial roadways.

Average daily traffic and design capacity of the roadway represent two parameters to measure traffic (Transportation Research Board 2010). Using these two measures of traffic, each roadway segment receives a corresponding level of service (LOS). The LOS designation is a professional industry standard used to describe the operating conditions of a roadway segment or intersection. The LOS is defined on a scale of A to F that describes the range of operating conditions on a particular type of roadway facility. LOS A through LOS B indicates free flow travel. LOS C indicates stable traffic flow. LOS D indicates the beginning of traffic congestion. LOS E indicates the nearing of traffic breakdown conditions. LOS F indicates stop-and-go traffic conditions and represents unacceptable congestion and delay.

Impacts to transportation and traffic are analyzed in this Revised Final EIS by considering the possible changes to existing traffic conditions and the capacity of area roadways from proposed increases in commuter and construction traffic. Traffic impact studies were performed and the results, together with proposed mitigation measures appropriate for each site are included in Appendix F.

3.6 AIR QUALITY

Air quality is defined by ambient air concentrations of specific pollutants determined by the United States Environmental Protection Agency (USEPA) to be of concern related to the health and welfare of the general public and the environment and are widespread across the U.S. The primary pollutants of concern, called “criteria pollutants,” include carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), suspended particulate matter less than or equal to 10 microns in diameter (PM₁₀), fine particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}), and lead. Under the Clean Air Act (CAA), the USEPA has established National Ambient Air Quality Standards (NAAQS) for these pollutants (40 CFR 50). The NAAQS represent the maximum levels of background pollution that are considered acceptable, with an adequate margin of safety, to protect public health and welfare. Short-term standards (1-, 3-, 8-and 24-hour periods) are established for pollutants contributing to acute health effects, while long-term standards (quarterly and annual averages) are established for pollutants contributing to chronic health effects. The Kentucky Department for Environmental Protection (KDEP) has adopted the NAAQS, which are presented in **Table 3-1**.

Table 3-1. Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard	Secondary Standard
CO	8-hr 1-hr	9 ppm 35 ppm	None
Lead	Rolling 3-Month Average	0.15 $\mu\text{g}/\text{m}^3$	Same as Primary
NO ₂	Annual (arithmetic average) 1-hr	53 ppb 100 ppb	Same as Primary None
PM ₁₀	24-hr	150 $\mu\text{g}/\text{m}^3$	Same as Primary
PM _{2.5}	Annual (arithmetic average) 24-hr	12.0 $\mu\text{g}/\text{m}^3$ 35 $\mu\text{g}/\text{m}^3$	15.0 $\mu\text{g}/\text{m}^3$ Same as Primary
O ₃	8-hr	0.075 ppm	Same as Primary
SO ₂	1-hour 3-hour	75 ppb -	- 0.5 ppm

Notes: ppb = parts per billion; ppm = parts per million; $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter.

Source: USEPA 2011.

In addition to the ambient air quality standards for criteria pollutants, national standards exist for hazardous air pollutants (HAPs) which are regulated under Section 112(b) of the 1990 CAA Amendments. The National Emission Standards for Hazardous Air Pollutants regulate HAP emissions from stationary sources. HAPs emitted from mobile sources are called Mobile Source Air Toxics (MSATs); these are compounds emitted from highway vehicles and non-road equipment that are known or suspected to cause cancer or other serious health and environmental effects. In 2001, USEPA issued its first MSAT Rule, which identified 21 compounds as being HAPs that required regulation. A subset of six of these MSAT compounds were identified as having the greatest influence on health and include benzene; 1,3-butadiene; formaldehyde; acrolein; acetaldehyde; and diesel particulate matter. In February 2007, USEPA issued a second MSAT Rule, which generally supported the findings in the first rule and provided additional recommendations of compounds having the greatest impact on health. The rule also identified several engine emission certification standards that must be implemented.

Unlike the criteria pollutants, there are no NAAQS for HAPs. The primary control methodologies instituted by federal regulation for MSATs involve technological improvements for reducing their content in fuel and altering engine operating characteristics to reduce the volume of pollutants generated during combustion. MSATs would be the primary HAPs emitted by mobile sources during construction and operation of the proposed action alternatives. The equipment used during construction would likely vary in age and have a range of pollution reduction effectiveness. Construction equipment, however, would be operated intermittently over a large area and would produce negligible ambient HAPs in a localized area. Therefore, MSAT emissions are not considered further in this analysis.

A region's air quality is influenced by many factors including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as CO, SO₂, lead, and some particulates, are emitted directly into the atmosphere from emission sources. Secondary pollutants, such as O₃, NO₂, and some particulates are formed through

atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes.

3.7 NOISE

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and are sensed by the human ear. The perception and evaluation of sound involves three basic physical characteristics:

- **Intensity** – the acoustic energy, which is expressed in terms of sound pressure, in decibels (dB).
- **Frequency** – the number of cycles per second the air vibrates, in Hertz.
- **Duration** – the length of time the sound can be detected.

Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although continuous and extended exposure to high noise levels (e.g., through occupational exposure) can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to similar noise events is diverse and is influenced by the type of noise, perceived importance of the noise, its appropriateness in the setting, time of day, type of activity during which the noise occurs, and sensitivity of the individual.

Levels of noise are measured in units called dB. However, a number of factors affect how the human ear perceives sound: the actual level of noise, frequency, period of exposure, and fluctuations in noise levels during exposure. The human ear cannot equally perceive all pitches or frequencies and noise measurements are therefore adjusted or weighted to compensate for the human lack of sensitivity to low- and high-pitched sounds. This adjusted unit is known as the A-weighted decibel, or dBA. The A-weighted metric, de-emphasizes very low and very high pitched sound and is most often applied to noise generated by motor vehicle traffic, small boats, and aircraft. Background, or ambient, noise levels are all sounds present in an environment and are dependent upon land use. Very rural areas with little human activity would be expected to have the lowest levels of background noise, typically on the order of 15 to 20 dBA (USEPA 1971). Noise increases with increased population, as demonstrated in **Table 3-2**.

Table 3-2. Sound Levels Estimated by Population Density

Description	Population Density (people per square mile)	Sound Level (dB)
Rural (undeveloped)	20	35
Quiet suburban	60	45
Normal suburban	600	50
Urban	2,000	55
Noisy urban	6,000	60
Very noisy urban	20,000	65

Source: USEPA 1982.

3.8 INFRASTRUCTURE AND UTILITIES

Infrastructure refers to the system of public works, such as utilities, that provides the underlying framework for a community. Infrastructure components and utilities discussed in this Revised Final EIS include the water supply system, wastewater system, stormwater drainage system, electrical supply facilities, natural gas system, and solid waste management facilities. Transportation infrastructure, including roadway and street systems, the movement of vehicles, and mass transit, are discussed in Section 3.5, *Transportation and Traffic*.

Because infrastructure and utilities systems are directly related to activities within the communities from which they draw their services, the potentially affected area includes the county where they occur. The assessment of impacts is based on comparing existing use and conditions to anticipated changes in capacity associated with the utilities. The analysis compares current use with anticipated future demands to determine potential impacts.

3.9 CULTURAL RESOURCES

Cultural resources are defined as prehistoric or historic sites, buildings, structures, objects, archaeological sites, districts, or other physical evidence of human activity that are considered important to a culture or community for scientific, traditional, or religious reasons. Cultural resources include prehistoric and historic archaeological resources, architectural resources, and traditional cultural properties (TCPs).

- ***Archaeological resources*** – places where people changed the ground surface or left artifacts or other physical remains (e.g., arrowheads or bottles).
- ***Architectural resources*** – standing buildings, dams, canals, bridges, and other structures.
- ***Traditional cultural properties*** – resources associated with the cultural practices and beliefs of a living community that link that community to its past and help maintain its cultural identity.
TCPs may include archaeological resources, locations of historic events, sacred areas, sources of raw materials for making tools, sacred objects, or traditional hunting and gathering areas.

Section 106 of the NHPA of 1966, as amended, and as implemented by 36 CFR 800, requires federal agencies to consider the effects of their actions on historic properties before undertaking a project that uses federal funds or is located on federal lands. A historic property is defined as any cultural resource that is included in, or eligible for inclusion in, the National Register of Historic Places (NRHP). The NRHP, administered by the National Park Service, is the official inventory of cultural resources that are significant in American history, prehistory, architecture, archaeology, engineering, and culture. The NRHP also includes National Historic Landmarks. In consideration of 36 CFR 800, federal agencies are required to consult with the State Historic Preservation Officer (SHPO), Indian Tribes, representatives of local governments, and the public in a manner appropriate to the agency planning process for the planned action (undertaking) and to the nature of the undertaking and its potential to cause effects on historic properties. The methodology for identifying, evaluating, and mitigating impacts to cultural resources has been established through federal laws and regulations including the NHPA, the Archaeological Resource Protection Act, the Native American Graves Protection and Repatriation Act, and the American Indian Religious Freedom Act.

The affected environment for cultural and traditional resources is also referred to as the area of potential effects (APE). The APE must be defined in order to assess the effects of a proposed action on a historic property. An APE is defined as the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist (36 CFR 800.16[d]).

The analysis in this Revised Final EIS applies the criteria of adverse effect (36 CFR 800.5) to evaluate the effects of the proposed action on any historic properties located in the APE of each action alternative. A project affects a historic property when it alters the property's characteristics (including relevant features of its environment or use) that qualify it as significant according to National Register criteria. Adverse effects may include the following: physical destruction, damage, or alteration of all or part of the resource; alteration of the character of the surrounding environment that contributes to the resource's

qualifications for the NRHP; introduction of visual, audible, or atmospheric elements that are out of character with the resource or alter its setting; and neglect of the resource resulting in its deterioration or destruction. Impacts to traditional Native American tribal properties can be determined only through consultation with the affected Tribes. However, ground disturbance to prehistoric archaeological sites and graves has often been cited as an adverse impact.

Analysis of potential impacts to historic properties considers both direct and indirect impacts. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a historic property, or neglecting the property to the extent that it deteriorates or is destroyed. Indirect impacts are those that may occur as a result of the completed project by altering characteristics of the surrounding environment through the introduction of visual or audible elements that are out of character for the period the property represents. An example of an indirect effect is increased vehicular or pedestrian traffic in the vicinity of the property.

3.10 WATER RESOURCES

Water resources include both surface and subsurface water. For the purposes of this Revised Final EIS, water resources include the following topics: surface water, wetlands, groundwater, and floodplains.

3.10.1 Surface Water

Wetlands, lakes, ponds, impoundments, rivers, and streams compose surface water resources that are important for economic, ecological, recreational, and human health reasons.

According to the U.S. Army Corps of Engineers (USACE), streams are drainage features that may contain perennial streams (permanent flows), intermittent streams (flows during much of the year but drying seasonally), or ephemeral streams (flows only after storm events). Ponds are open water bodies (USACE 1987).

Waters of the U.S. are defined as (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow perennially or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries under Section 404 of the CWA, as amended, and are regulated by the USEPA and the USACE.

Section 10 of the Rivers and Harbors Act of 1899, as amended (33 USC § 403) regulates structures or work that would affect navigable waters of the U.S. Structures include any pier, wharf, bulkhead, etc. Work includes dredging, filling, excavation, or other modifications to navigable waters of the U.S. The USACE issues permits for work or structures in navigable waters of the U.S.

Anyone proposing to conduct a project that requires a federal permit or involves dredge or fill activities that may result in a discharge to surface waters and/or waters of the U.S. is required to obtain a CWA Section 401 Water Quality Certification, verifying that the project activities will comply with water quality standards.

Water quality refers to the suitability of water for a particular use based on selected physical, chemical, and biological characteristics. Potential uses considered include potable water, irrigation, and water able to support life. For the purposes of this Revised Final EIS, water quality is considered with the statutory requirements regarding water quality conditions.

The CWA of 1972, as amended (33 USC §§ 1251 et seq.), is the primary federal law that protects the nation's waters, including lakes, rivers, and coastal areas. The primary objective of the CWA is to restore and maintain the integrity of the nation's waters. The CWA prohibits all unpermitted discharge of any pollutant into any jurisdictional waters of the U.S. The USEPA is responsible for administering the water quality requirements of the CWA. To this end, the USEPA developed pollutant-specific water quality standards (referred to as total maximum daily load [TMDL]) to identify waters for which quality is sufficiently poor and for which effluent limits would be insufficient to meet water quality standards (KDEP 2013).

Water quality is regulated under the Federal Water Pollution Control Act, as amended by the CWA. The CWA prohibits spills, leaks, or other discharges of oil or hazardous substances into the waters of the U.S. in quantities that may be harmful. Direct discharges of effluents are regulated under the CWA through National Pollutant Discharge Elimination System permit program administered by the USEPA or under state National Pollutant Discharge Elimination System programs approved by the USEPA. The CWA also requires each state to establish water quality standards for its surface waters derived from the amount of pollutants that can be assimilated by a body of water without deterioration of a designated use. Waters not meeting the water quality standards may require the establishment of a TMDL for the waterbody. Impaired waters requiring a TMDL are called 303(d) listed waters (KDEP 2013).

3.10.2 Wetlands

According to USACE regulations, wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Wetlands are currently regulated by the USACE under Section 404 of the CWA as a subset of all "waters of the U.S." The term "waters of the U.S." has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats, including wetlands. Jurisdictional waters of the U.S. regulated under the CWA include coastal and inland waters, lakes, rivers, ponds, streams, intermittent streams, and "other" waters that, if degraded or destroyed, could affect interstate commerce. The full regulatory definition of waters of the U.S. is provided in the CWA.

EO 11990, *Protection of Wetlands*, directs federal agencies to take action to minimize the destruction, loss, or degradation of wetlands on their property and mandates review of proposed actions on wetlands through procedures established by NEPA. It requires that federal agencies establish and implement procedures to minimize development in wetlands. Wetlands provide many functions and values such as flood flow alteration, groundwater recharge/discharge, and fish and wildlife habitat.

The CWA Section 404 requires an USACE-issued permit for the dredging and/or filling of wetlands or other waters of the U.S.

3.10.3 Groundwater

Groundwater is water that flows or seeps downward and saturates soil or rock, supplying springs and wells. Groundwater is used for water consumption, agricultural irrigation, and industrial applications.

The principal federal regulation concerning the protection of groundwater is the Safe Drinking Water Act of 1974 (42 USC §§ 300 et seq.; amended in 1986 and 1996). This act was set forth to protect the nation's

public water supplies, including groundwater in areas where it is the main potable water source. The USEPA and the KDEP Division of Water enforce Safe Drinking Water Act standards and related legislation to protect public health.

3.10.4 Floodplains

EO 11988, *Floodplain Management*, defines floodplains as the lowland and relatively flat areas adjoining inland waters, including at a minimum, that area subject to a 1 percent or greater chance of flooding in any given year. The area subject to a 1 percent chance of flooding is referred to as the 100-year floodplain. Floodplain delineation maps are produced by the Federal Emergency Management Agency and provide a basis for comparing the locale of the proposed action to the floodplains.

EO 11988 directs federal agencies to avoid construction in Revised Final floodplains and establishes a process for analysis and public notice if development is unavoidable. In this Revised Final EIS, the analysis of floodplains considers if any new construction is proposed within a floodplain or may impede the functions of floodplains in conveying floodwaters.

3.11 BIOLOGICAL RESOURCES

Biological resources include living, native, or naturalized plant and animal species and the habitats where they occur. Plant associations are referred to as vegetation and animal species are referred to as wildlife. Habitat can be defined as the resources and conditions present in an area that supports the existence of a plant or animal (Hall et al. 1997). Although the existence and preservation of biological resources are intrinsically valuable, these resources also provide aesthetic, recreational, and socioeconomic values to society.

This analysis focuses on species or vegetation types that are important to the function of the ecosystem, of special societal importance, or are protected under federal or state law or statute. For purposes of this Revised Final EIS, these resources are divided into three major categories: vegetation, wildlife, and threatened and endangered species.

Vegetation includes terrestrial plant communities. The analysis focuses on vegetation types that are important to the function of the ecosystem or are protected under federal or state law.

Wildlife includes all vertebrate animals (i.e., mammals, reptiles, amphibians, birds, and fish) and sometimes invertebrate species or species groups such as mollusks or insects. Virtually all birds are protected under the Migratory Bird Treaty Act (MBTA). The MBTA was designed to protect migratory birds (including their eggs, nests, and feathers) and their habitats. An activity has a significant adverse effect if, over a reasonable period of time, it diminishes the capacity of a population of a migratory bird species to maintain genetic diversity, to reproduce, and to function effectively in its native ecosystem.

Threatened and endangered species include plant and animal species that are listed or proposed for listing by the USFWS under the Endangered Species Act (ESA). The federal ESA provides for the conservation of threatened and endangered species of plants and animals and the habitats where they are found. ESA candidate species are plant or animal species for which the USFWS has sufficient information on file regarding biological vulnerability and threats to support a proposal that would list them as endangered or threatened under the ESA, based on the most recent candidate review. In addition, designated and proposed critical habitat for ESA-listed species are also included in this Revised Final EIS, as appropriate. Critical habitat is a specific geographic area that contains features essential for the conservation of a

threatened or endangered species and that may require special management and protection. This Revised Final EIS also addresses species that are listed by the Commonwealth of Kentucky as threatened or endangered.

3.12 HAZARDOUS MATERIALS AND WASTE

The analysis of hazardous materials, hazardous waste, toxic substances, and contaminated sites focuses on the potential for these substances to be introduced into the environment from maintenance or during construction activities. Potentially affected areas consist of construction and operational maintenance areas. Factors considered in the analysis include the potential for increased human health risk or environmental exposure, as well as changes in the quantity and types of hazardous substances transported, stored, used, and disposed. The methodology for contaminated sites compares the proximity of proposed facility development to contaminated sites and considers the operational uses of the facilities to determine potential impacts to or from the sites.

3.12.1 Hazardous Materials

Hazardous materials are chemical substances that pose a substantial hazard to human health or the environment when improperly treated, handled, used, packaged, stored, transported, or disposed. Hazardous materials are identified and regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (42 USC 9601 et seq.); the Occupational Safety and Health Act (29 USC 651 et seq.); and the Emergency Planning and Community Right-to-Know Act (42 USC 11001 et seq.). Hazardous materials commonly used at Bureau facilities include petroleum and oil.

3.12.2 Hazardous Waste

The Resource Conservation and Recovery Act (40 CFR 240–280) and the Hazardous and Solid Waste Amendments of 1984 (40 CFR 260) define hazardous waste as a solid waste, or combination of wastes that due to its quantity, concentration, or physical, chemical or infectious characteristics, may cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness, or may pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, disposed of, or otherwise managed. A solid waste is a hazardous waste if it is not excluded from regulation as a hazardous waste under 40 CFR 261.4(b) and if it exhibits identified characteristics of hazardous waste or meets other specified criteria [see 40 CFR 261.3(a)].

3.12.3 Toxic Substances

The Toxic Substance Control Act addresses those chemical substances and mixtures that may present unreasonable risk of personal injury or health of the environment from their manufacturing, processing, distribution, use, or disposal. The Toxic Substance Control Act Chemical Substances Inventory lists information on more than 62,000 chemicals and substances, such as asbestos, lead-based paint, and polychlorinated biphenyls (PCBs).

3.13 CUMULATIVE IMPACT ANALYSIS

This section defines cumulative impacts and describes the approach taken in the analysis of cumulative impacts. Chapter 8, Cumulative Impacts, contains descriptions of other actions relevant to cumulative impacts, an analysis of the incremental interaction the proposed action may have with other actions, and an evaluation of the cumulative impacts potentially resulting from these interactions.

The approach taken in the analysis of cumulative impacts follows the objectives of NEPA, CEQ regulations, and CEQ guidance. Cumulative impacts are defined in 40 CFR 1508.7 as:

“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. A cumulative impact results from the additive effect of all projects in the same geographical area. Generally, an impact can be considered cumulative if: a) effects of several actions occur in the same locale, b) effects on a particular resource are the same in nature, and c) effects are long-term in nature. The common factor key to cumulative assessment is identifying any potential temporally and/or spatially overlapping or successive effects that may significantly affect resources in the analysis areas.

3.14 ASSESSING SIGNIFICANCE

Chapters 4 and 5 present the affected environment and analysis of the potential direct and indirect effects of each alternative for each resource area described in this chapter. Chapter 8 presents the analysis of the potential cumulative effects of each alternative for each resource area. The level of significance is assessed according to NEPA implementing regulations at 40 CFR 1508.27, which requires considerations of both context and intensity.

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4.0 ALTERNATIVE 1 – PAYNE GAP

4.1 LAND USE AND ZONING

Potential impacts to land use are assessed by comparing the existing land uses with the changes that would occur from implementation of the proposed action, including induced effects. Impacts to land use are evaluated for significance by determining the degree to which proposed development and uses conflict with existing land use and local plans and policies. Under the proposed action, potential short-term and long-term impacts to land use would occur from construction and operation of the USP and FPC.

Growth induced impacts to land use could result from spending wages and salaries by direct and indirect employees on items such as food, housing, transportation, and medical services. This spending creates induced employment in nearly all sectors of the economy; especially service sectors (see Section 4.3, *Socioeconomics and Environmental Justice*).

4.1.1 Affected Environment

Land use associated with the proposed location of Alternative 1 primarily consists of forested areas. Portions of the Payne Gap site were previously deep mined; however, mining activities no longer occur at the site. Land use surrounding the site is also primarily forested, with small single-family residences adjacent to the site. Coal mining once occurred in the area, but currently there are only three active coal mining operations located between 1 and 5 miles from the Payne Gap site (Kentucky Mine Mapping Information System 2008). There are no zoning ordinances or land use classifications identified for this area (DePriest 2013). **Figure 4-1** depicts existing land use associated with Alternative 1.

4.1.2 Environmental Consequences

4.1.2.1 Construction

Construction of a USP and FPC would result in changes to land use on the 753-acre (305-hectare) Payne Gap site. Approximately 218 acres (88 hectares) of the Payne Gap site would be converted from forested and former mining land uses to a government/institutional land use. However, a buffer area would remain around the USP and FPC to separate the federal correctional facility from the adjacent properties, and would be compatible with the adjacent land uses. Due to the lack of zoning ordinances and land use classifications, construction of the proposed USP and FPC would not result in incompatible land uses from a regulatory perspective.

4.1.2.2 Operations

There would be no impacts to adjacent land uses from operation of the USP and FPC, as the federal correctional facility would be separated from adjacent properties by a buffer area. The buffer area would be compatible with adjacent land uses.

4.1.3 No Action Alternative

Under the No Action Alternative, the USP and FPC would not be constructed at the Payne Gap site and no potential land use compatibility issues with adjacent land uses would occur.

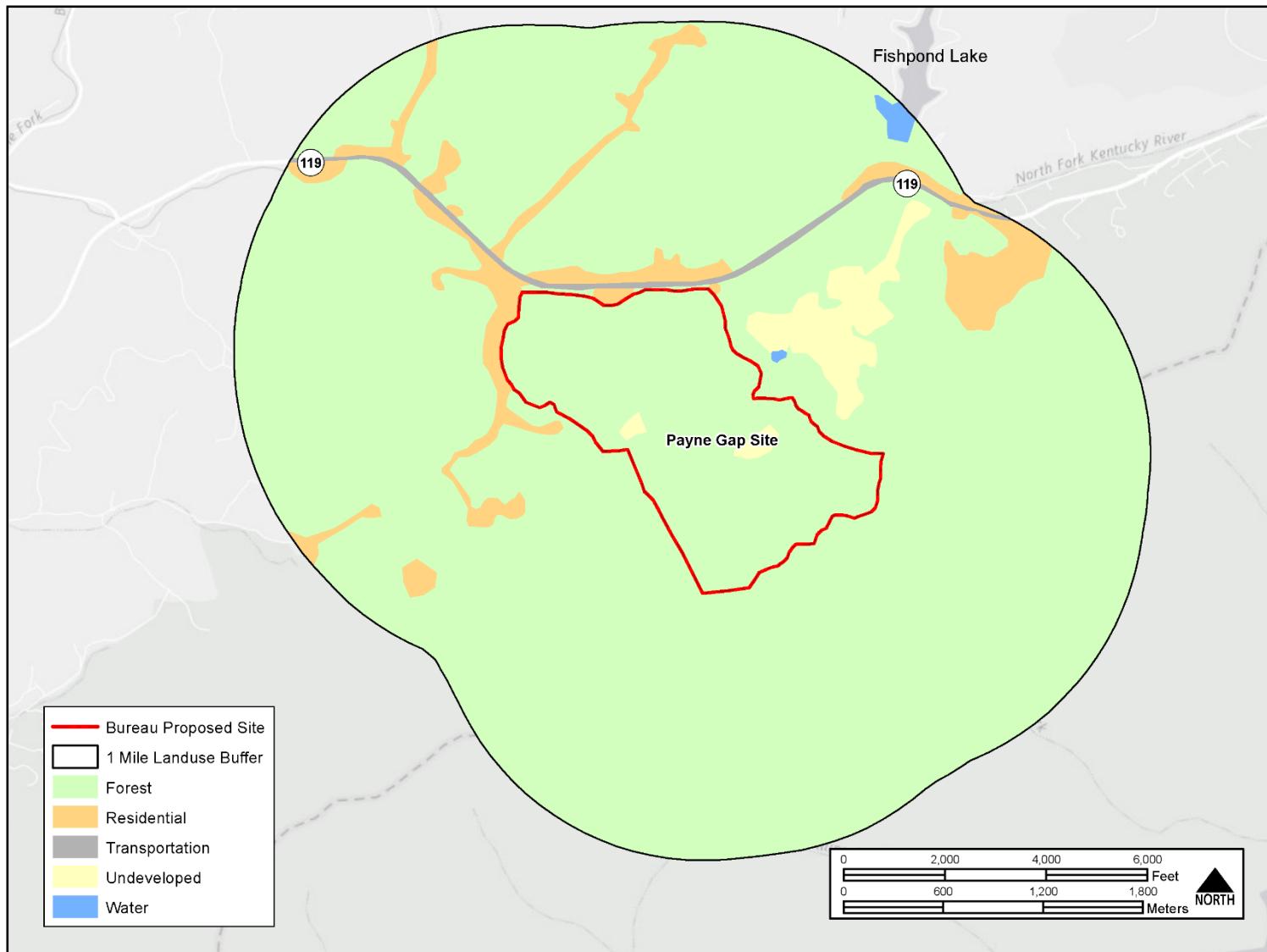


Figure 4-1. Payne Gap Land Use

4.1.4 Mitigation

Federal agencies are not subject to local/regional zoning or land use development regulations. However, the Bureau would take the following measures to help minimize potential adverse impacts to surrounding land uses:

- provide an open space and vegetative buffer between the USP and FPC to maintain visual compatibility with surrounding properties
- design and locate the facilities to reduce the visual presence of the facility from neighboring properties

4.2 TOPOGRAPHY, GEOLOGY, AND SOILS

4.2.1 Affected Environment

The topography on the Payne Gap site is typified by the mountains valleys complex associated with western Appalachian Mountains. The topography at Payne Gap has been significantly affected by strip mining activities, which historically occurred on site. According to the U.S. Geological Survey (USGS) 7.5-minute Jenkins West topographic quadrangle map, elevations on site range from a low of 1,385 feet above mean sea level (AMSL) in the northwest corner of the site adjacent to the North Fork of the Kentucky River to a high of 2,965 feet AMSL on Pine Mountain in the southern portion of the site (University of Kentucky 2013). The majority of slopes on site are very steep, well over 15 percent.

The Payne Gap site is underlain by the Breathitt Group, which is composed of the Pikeville Formation and the Hyden Formation. The geology underlying the Payne Gap site is primarily Pikeville Formation (Kentucky Geological Survey [KGS] 2013).

The soils on the Payne Gap site are varied as a result of topography and mining disturbance, but none of the soils are listed as hydric by the Natural Resources Conservation Service (NRCS). The three most common soils at the Payne Gap site are composed of the Cloverlick-Kimper-Highsplint complex (30 to 65 percent slopes), the Dekalb-Gilpin-Ray complex (25 to 65 percent slopes), and the Kaymine, Fairpoint, and Fiveblock soil series (2 to 70 percent slopes). To a lesser degree, the following soils are on the site: Caneyville-Renox-Bledsoe complex (50 to 80 percent slopes), Shelocta-Highsplint complex (30 to 65 percent slopes), and Urban land Udorthents complex (0 to 15 percent slopes) (NRCS 2013). These soils have not been designated by NRCS as prime farmland soils.

4.2.2 Environmental Consequences

Implementation of the proposed action under Alternative 1 would result in significant impacts to topography, geology, and soils.

4.2.2.1 Construction

Development of the site would require significant excavation and fill activities to create a level pad for construction of the facilities and access roads. A 2:1 fill slope and a 1:1 cut slope were used in the estimate of fill and excavation quantities adjacent to the building pads and roads to transition to the original topography at the Payne Gap site. More detail on the earthwork calculations can be found in Appendix B, *Excavation and Grading Calculations*. As identified in **Table 2-1, Estimated Site Preparation Quantities for Alternative 1 - Payne Gap**, excavation activities (cut) would include 2,794,660 cubic yards (2,136,671 cubic meters) of soil material and 8,117,470 cubic yards (6,206,251 cubic meters)

of rock. The excavated soil and rock would be filled into the valleys as spoil or compacted to create a structural fill for the building pads. The amount of structural fill was estimated to be 1,716,095 cubic yards (1,312,048 cubic meters) and the amount of spoil fill would be 12,106,917 cubic yards (9,256,402 cubic meters). All excavated materials would be used on-site for structural fill or placed as spoil fill. The maximum cut (excavation) at Payne Gap would be approximately 60 meters and the maximum fill would be approximately 80 meters. Removal of bedrock would require blasting activities. Impacts resulting from the cut and fill activities would include loss of productive soil, erosion, and destabilization of slopes. As a result of the excavation and fill activities, the topography of the site would change at the maximum cut from 555 meters to 495 meters (mean sea level [MSL]) in the main building area and at the maximum fill from 470 meters to 550 meters MSL in the prison camp area.

The project area does not contain soils classified as prime farmland soils, which are protected under the FPPA; therefore, prime farmland soils would not be impacted and no coordination with NRCS would be required.

4.2.2.2 Operations

No further impacts to topography, geology or soils are anticipated from the operation of the USP and FPC.

4.2.3 No Action Alternative

Under the No Action Alternative, the USP and FPC would not be constructed. Therefore, significant excavation, fill, and grading activities would not occur. As a result, there would be no impacts to topography, geology, or soils.

4.2.4 Mitigation

The Bureau would prepare a soil erosion and sediment control plan and submit it to the Kentucky Division of Water for approval prior to construction. The erosion and sediment control plan would outline the measures and BMPs to be used for controlling on-site erosion and sedimentation during construction. BMPs could include placement of silt fencing adjacent to surface waters and wetlands to prevent the introduction of sediment; the use of hay bales to minimize the spread of sediment off the construction site; stabilization of steep slopes; use of tree clearing plans; and stormwater control plans to manage stormwater runoff and keep it on-site during construction. Additionally, construction of the USP, FPC, and ancillary facilities could be phased to occur at different times, resulting in the minimization of disturbed soil by clearing only the area necessary for the current phase of construction. Re-vegetation of disturbed areas following the completion of construction would also occur to minimize the erosion of exposed soil.

4.3 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This socioeconomic analysis focuses on impacts due to construction and operation of the proposed action. The assessment examines how the alternatives would affect population, employment, income, and housing characteristics in the study area. Economic impacts are defined to include direct effects, such as changes to employment and expenditures that affect the flow of dollars into the local economy, and indirect effects, which result from the “ripple effect” of spending and re-spending in response to the direct effects.

Socioeconomic impacts, particularly impacts such as those being evaluated in this Revised Final EIS, are often mixed: beneficial in terms of gains in jobs, expenditures, tax revenues, etc., and potentially adverse in terms of growth management issues such as demands for housing and community services.

This analysis also identifies potential environmental justice issues. Impacts to environmental justice populations are identified where high and adverse human health or environmental effects may disproportionately affect minority or low-income populations. Impacts to children would occur if there was an increased disproportionate environmental health or safety risk to children.

4.3.1 Affected Environment

4.3.1.1 Population

The 2013 population of Letcher County was 24,025. Letcher County's population decreased by approximately 3 percent between 2000 and 2010 (**Table 4-1**). The City of Whitesburg grew by approximately 34 percent from 2000 to 2010 and the City of Jenkins population decreased by 3 percent during the same time period. The decrease in population is likely the result of people who leave the area for better education and employment opportunities (Kentucky River Area Development District [KRADD] 2013). This trend is anticipated to continue within the county with the population decreasing by an additional 7 percent by the year 2020.

Table 4-1. Study Area Population Trends, 2000–2010

Geographic Area	2000	2010	Percent Change 2000–2010	2020 Projected Population*	Projected Percent Change 2010–2020
Whitesburg, Kentucky	1,598	2,139	33.85	---	---
Jenkins, Kentucky	2,273	2,203	-3.08	---	---
Letcher County, Kentucky	25,275	24,519	-2.99	22,655	-6.88
Kentucky	4,041,769	4,339,357	7.36	4,699,880	8.3

Note: *2020 Projections only available for county and state.

Sources: U.S. Census Bureau 2000, U.S. Census Bureau 2010, Proximity One 2014.

4.3.1.2 Employment and Income

Letcher County's 2013 employed civilian labor force was 7,103, out of a total civilian labor force of 8,201. Employment by industry in Letcher County is depicted in **Table 4-2**. The industries that employ the greatest number of people in Letcher County include educational services, and health care and social assistance (33.4 percent); agriculture, forestry, fishing and hunting, and mining (13.0 percent); and retail trade (12.7 percent). In Kentucky, the largest industry employers are educational services, and health care and social assistance (24.5 percent); manufacturing (13.7 percent); and retail trade (11.8 percent) (U.S. Census Bureau 2014a).

Letcher County is part of the largest coal producing area in eastern Kentucky. While study area jobs in the coal mining industry have been declining, positions in the health care, retail, and the secondary wood industries have increased. However, these jobs typically pay less than coal mining jobs. The study area is part of a region characterized by high unemployment and poverty rates (KRADD 2013).

Table 4-2. Study Area Employment, 2013

Industry	Letcher County, Kentucky		Kentucky	
	Number Employed	Percent Employed	Number Employed	Percent Employed
Agriculture, forestry, fishing and hunting, and mining	922	13.0	52,348	2.8
Construction	442	6.2	111,646	6.0
Manufacturing	213	3.0	255,938	13.7
Wholesale Trade	209	2.9	49,171	2.6
Retail Trade	904	12.7	219,721	11.8
Transportation and warehousing, and utilities	360	5.1	112,005	6.0
Information	98	1.4	29,217	1.6
Finance and insurance, and real estate and rental/leasing	199	2.8	102,380	5.5
Professional, scientific, management, and administrative and waste management services	413	5.8	144,589	7.8
Educational services, health care and social assistance	2,369	33.4	456,293	24.5
Arts, entertainment, recreation, accommodation, and food services	468	6.6	159,679	8.6
Other services, except public administration	252	3.5	87,228	4.7
Public administration	254	3.6	85,390	4.6
Total	7,103		1,865,605	

Source: U.S. Census Bureau 2014a.

While unemployment rates in Kentucky have decreased from a peak of 10.3 percent in 2009 to 6.5 percent in 2014, the unemployment rate in Letcher County increased dramatically from 10.6 percent in 2009 to 17.3 percent in 2013 (**Table 4-3**). The preliminary 2014 unemployment rate for Letcher County has decreased to 11.5 percent. The comparable rate for the U.S. was 6.3 percent (Kentucky Labor Market Information [KYLM] 2014).

Unemployment rates in the study area are higher than the comparable rates for the state and the nation. Along with the “displaced worker,” the study area has a higher percentage of “discouraged” workers who no longer actively seek employment and are, therefore, not included in the official unemployment statistics. Therefore, the official unemployment rate in the study area is deceptively lower than actual unemployment (KRADD 2013).

Table 4-3. Study Area Percent Unemployment Rates

Jurisdiction	2007	2008	2009	2010	2011	2012	2013	2014 ^a
Letcher County, Kentucky	7.7	7.1	10.6	11.4	10.3	13.8	17.3	11.5
Kentucky	5.6	6.6	10.3	10.2	9.5	8.3	8.3	6.5

Notes: Unemployment rates are not seasonally adjusted. ^aAugust 2014, preliminary.

Source: KYLM 2014.

Total personal income includes net earnings by place of residence; dividends, interest, and rent received; and benefits paid by federal, state, and local governments and businesses. A larger portion of personal income in Letcher County comes from government and business benefits than for Kentucky and the U.S (U.S. Department of Commerce 2014).

Total personal income in Letcher County decreased by almost 2 percent from 2010 to 2012, while over the same period, personal income increased by approximately 10 percent in Kentucky (**Table 4-4**). Between 2010 and 2012, per capita income increased in Letcher County by less than 1 percent while per capita income in Kentucky increased by 8 percent. The national per capita income was \$43,735 (U.S. Department of Commerce 2014).

Table 4-4. Study Area Personal and Per Capita Income						
Jurisdiction	2010 Personal Income (000)^a	2012 Personal Income (000)^a	Percent Change 2010–2012	2010 Per Capita Income	2012 Per Capita Income	Percent Change 2010–2012
Letcher County, Kentucky	\$686,680	\$674,369	-1.8	\$27,948	\$28,155	0.7
Kentucky	\$143,210,961	\$157,043,042	9.7	\$32,947	\$35,643	8.2

Notes: Not adjusted for inflation.

Source: U.S. Department of Commerce 2014.

4.3.1.3 Housing

There were 11,519 housing units in Letcher County in 2013, with a total vacancy rate of approximately 19 percent (**Table 4-5**). The vacancy rate for owner-occupied units was 0.3 percent and the vacancy rate for rental units was 1.9 percent. The comparable vacancy rates in Kentucky were higher, at 12.4 percent, 2.1 percent, and 6.7 percent respectively (U.S. Census Bureau 2014b).

Table 4-5. Study Area Housing Units, 2013					
Geographic Area	Housing Units	Vacant Housing Units	Percent Vacant	Homeowner Vacancy Rate	Rental Vacancy Rate
Letcher County, Kentucky	11,519	2,155	18.7	0.3	1.9
Kentucky	1,933,019	239,620	12.4	2.1	6.7

Source: U.S. Census Bureau 2014b.

4.3.1.4 Environmental Justice

For the purpose of this evaluation, minority refers to people who identified themselves in the census as Black or African American, Asian, Hawaiian or Pacific Islander, American Indian or Alaskan Native, other non-White races, or as being of Hispanic or Latino origin. Persons of Hispanic and Latino origin may be of any race (CEQ 1997). The CEQ identifies these groups as minority populations when either (1) the minority population of the affected area exceeds 50 percent or (2) the minority population percentage in the affected area is meaningfully greater than the minority population percentage in the general population or the geographic region of comparison (most often the state in which the affected area is part). The geographical unit for comparison in this analysis is Kentucky.

U.S. Census Bureau data on the racial and ethnic composition of the study area in 2013 are summarized in **Table 4-6**. Overall, the majority of the study area is white. Letcher County has a smaller percentage of minority and Hispanic populations than Kentucky.

Table 4-6. Study Area Percent Race and Ethnicity, 2013

Jurisdiction	White	Black/African American	American Indian/Alaska Native	Asian	Native Hawaiian/Other Pacific Islander	Hispanic or Latino Origin^a
Whitesburg, Kentucky	97.1	1.5	0.0	0.6	0.0	1.3
Jenkins, Kentucky	98.4	0.5	0.2	0.0	0.0	0.9
Letcher County, Kentucky	98.3	0.2	0.0	0.6	0.0	0.7
Kentucky	87.8	7.9	0.2	1.2	0.0	3.2

Notes: Data presented reflects most reported race and ethnicity categories; percentages may not add to 100 percent due to rounding. *Hispanic origin may be of any race.

Source: U.S. Census Bureau 2014c.

Table 4-7 presents data on low-income families and individuals in the study area. The percentages of low-income families and individuals in Letcher County with incomes below poverty level (based on family size and composition) are greater than for Kentucky. In the study area, the City of Jenkins has the highest percentages of families and individuals with incomes below the poverty level.

Table 4-7. Study Area Percent Below Poverty Level, 2013

Jurisdiction	Families Below Poverty Level	Individuals Below Poverty Level
Whitesburg, Kentucky	5.5	14.2
Jenkins, Kentucky	27.6	32.1
Letcher County, Kentucky	20.0	24.2
Kentucky	14.6	19.1

Source: U.S. Census Bureau 2014a.

4.3.1.5 Protection of Children

The percentage of children under the age of 18 is lower in Whitesburg, Jenkins, and Letcher County than for Kentucky (**Table 4-8**).

Table 4-8. Study Area Percent Under the Age of 18, 2013

Jurisdiction	<18
Whitesburg, Kentucky	16.4
Jenkins, Kentucky	20.8
Letcher County, Kentucky	22.3
Kentucky	23.3

Source: U.S. Census Bureau 2014c.

4.3.2 Environmental Consequences

4.3.2.1 Population

Approximately 300 new employees would be needed to operate the proposed USP and FPC. It is anticipated that some of these employees would be existing Bureau employees who would relocate to the area and the rest would be hired locally. Under a maximum case scenario, all 300 new personnel are assumed to move to the study area.

The Bureau personnel would likely be accompanied by their families or other household members. The U.S. Census Bureau has determined that the average household size for the U.S., which is assumed to be similar to the average household size of transfer employees, is 2.58 (U.S. Census Bureau 2010). Under this assumption, approximately 774 people would be added to the study area population. This would represent 3.2 percent of the Letcher County 2013 population. This gain would help to offset some of the

recent and projected population losses in Letcher County. Alternative 1 would result in a minor beneficial impact to the study area's short- and long-term population trends.

4.3.2.2 Employment and Income

The increase of 300 full-time positions would represent approximately 4 percent of the Letcher County 2013 civilian labor force. Study area personal income would also increase as a result of job growth. Some of the increased wage earnings would be paid to taxes, and some would be saved and invested, but most would be spent on consumer goods and services in the study area.

This spending would, in turn, "ripple" through the economy, generating additional indirect jobs and income and benefitting the study area economy. Given the rate of unemployment in the study area (11.5 percent), it would be expected that many of these indirect positions would be filled by unemployed local residents. In addition, inmates' family members would be expected to visit, boosting visitor spending in hotels/motels and restaurants in the study area. No population in-migration to the study area would be expected as a result of indirect job growth.

The increase in construction spending would also generate direct construction jobs and indirect jobs, typically in food services and retail trade. Additional construction workers may move into the study area in response to the direct construction jobs, but these workers would most likely leave the area for other opportunities when the construction project nears completion. Further, given the study area unemployment rate, it would be expected that most of the indirect positions would be filled by unemployed study area workers. While there may be some population in-migration to the study area as a result of construction spending, it would not be expected to significantly affect population trends. Alternative 1 would result in beneficial employment and income impacts in the study area.

While the purchase of land by the Bureau for Alternative 1 would reduce property tax revenues, additional taxes would accrue to federal, state, and local governments as a result of the increase in payrolls, and operational and construction spending. It is anticipated that, on balance, the fiscal/economic impacts would be beneficial and there would be no significant adverse fiscal/economic impacts.

4.3.2.3 Housing

Alternative 1 would result in an increase of 300 full-time positions in the study area. Under a conservative scenario, all these personnel would seek housing in Letcher County at the same time. This would represent about 2.6 percent of Letcher County's total housing units and approximately 14 percent of the vacant units. Some additional housing may be developed by the private market to support USP and FPC employees who choose to live in Letcher County. However, not all new personnel would live in Letcher County and the increase in personnel would occur over the construction period before the USP and FPC become operational, reducing any potential negative impacts to the study area's housing market.

4.3.2.4 Environmental Justice

As set forth in the preceding assessment and discussion, the proposed facility at Payne Gap would be expected to result in minor beneficial economic impacts to the local population as well as beneficial employment and income impacts to the surrounding community. There are no adverse environmental impacts that would have disproportionately high or adverse environmental effects on minority or low-income populations. Therefore, Alternative 1 would not result in significant adverse impacts to environmental justice communities.

4.3.2.5 Protection of Children

There are no adverse environmental impacts that would result in disproportionate health or safety risks to children. Therefore, Alternative 1 would not result in significant adverse impacts to the health or safety of children.

4.3.3 No Action Alternative

Under the No Action Alternative, the USP and FPC would not be constructed. As a result, there would be no potential for beneficial socioeconomic impacts such as new jobs and potential growth of business within the region. This could result in the sustained poor economic climate in the region. The No Action Alternative would not result in adverse impacts to environmental justice communities or children.

4.3.4 Mitigation

No adverse impacts to socioeconomics, environmental justice populations, or children would be expected; therefore, no mitigation would be warranted.

4.4 COMMUNITY FACILITIES AND SERVICES

4.4.1 Affected Environment

4.4.1.1 Police

Law enforcement servicing the area around and including the Payne Gap site includes the Fleming Neon Police Department, Jenkins Police Department, Letcher County Sheriff, and Kentucky State Police. The Fleming Neon Police Department has three full-time employees consisting of one police chief and two police officers, as well as one volunteer, who operate out of a single station in Fleming Neon. The station has three squad cars and provides service 24-hours a day, seven days a week (Fleming Neon Police Department 2013).

The Jenkins Police Department has six full-time personnel consisting of one police chief, four police officers, and the Public Safety Director. The department is currently short staffed by one person. The police department operates out of one station in Jenkins. The station has eight squad cars and provides 24-hour coverage (Jenkins Police Department 2013).

The Letcher County Sheriff's office is comprised of 13 full-time employees including 10 deputies and 3 dispatchers. The office operates 10 squad cars and is headquartered in Whitesburg. The office provides 24-hour coverage, seven days a week (Letcher County Sheriff 2013).

The Kentucky State Police Post 13 operates out of Hazard, and covers five counties, including Letcher County. The Hazard Post currently has 39 state troopers, 18 dispatchers, 3 clerks, 1 custodian, 1 criminal analyst, and 1 arson specialist. They operate 39 squad cars, and have 8 to 10 spare squad cars available in the event one is needed (Kentucky State Police 2013).

4.4.1.2 Fire

Fire departments that provide emergency services for the Payne Gap area include the Fleming Neon Fire Department, Jenkins Volunteer Fire Station, and Whitesburg Fire and Rescue. The Fleming Neon Fire Department has approximately 36 firefighters and emergency medical technicians (EMTs) at the Fleming Neon Volunteer Fire Station. Sixteen are paid, full-time employees and 20 are volunteers. The station has seven paramedics and eight EMTs. The department has a single station in Fleming Neon and a substation

in Whitesburg. The Fleming Neon Station has two fire engines, 10 ambulances, 1 tanker truck, 1 rescue truck, 1 dive trailer (for underwater rescue) and 1 all-terrain vehicle for search and rescue operations. Four ambulances run during the day and 1 run at night. Firefighters run 3 crews during the day and 1 crew at night. The station has mutual aid agreements with all the towns in Letcher County (Fleming Neon Fire Department 2013).

The Jenkins Volunteer Fire Station consists of between 25 and 28 firefighters and three administrative personnel with two stations in Jenkins. All firefighters are volunteers and 5 of the firefighters are also EMTs. Equipment associated with the stations includes 2 fire engines, an 85-foot tower truck, a 65-foot ladder truck, a 2,500-gallon tanker truck, 1 heavy rescue truck, and 1 vehicle for personnel transport. The Jenkins Volunteer Fire Station has mutual aid agreements with all other stations in Letcher County (Jenkins Volunteer Fire Station 2013).

Whitesburg Fire and Rescue consists of 30 firefighters: 25 volunteer and 5 paid. Five of the firefighters are EMTs. The station has five fire engines and a boom truck with a snorkel. Whitesburg Fire and Rescue has mutual aid agreements with the rest of Letcher County and is able to assist with emergencies throughout the county if dispatched (Whitesburg Fire and Rescue 2013).

4.4.1.3 Health Care

Appalachian Regional Healthcare (ARH) serves over 350,000 residents in eastern Kentucky and southern West Virginia. Their operations in Letcher County, Kentucky include the Whitesburg ARH Hospital, ARH Whitesburg Clinic, Jenkins ARH Family Care Center, Neon ARH Family Care Center, Whitesburg ARH Surgical Clinic, ARH Cardiology Associates-Whitesburg, and Whitesburg ARH Home Health Agency. Whitesburg ARH completed an \$11 million renovation project in 2011 that included a 15,000 square foot addition to the facility that houses surgical, obstetric, and newborn patients. Renovations to the existing space included a complete remodel of the third floor to include six Intensive Care Unit beds and 20 private patient rooms. Whitesburg ARH Hospital provides 24-hour emergency service for both adult and pediatric patients and has an on-site heliport for receiving and transferring patients. Whitesburg ARH is an acute care hospital that covers internal medicine, family practice, pediatrics, general surgery, advanced laparoscopic surgery, obstetrics and gynecology, cardiology, pulmonology, radiology and emergency services (ARH 2014).

Mountain Comprehensive Health Corporation is one of the largest rural health centers in Kentucky. Its Whitesburg facility is the largest clinic, and offers dental, family and internal medicine, pediatrics, cardiology, pulmonology, and obstetrics and gynecological services, as well as a rehabilitation program. Mountain Comprehensive Health Corporation also has a full service laboratory (Mountain Comprehensive Health Corporation 2015).

4.4.1.4 Schools

The schools in Letcher County are administered by the Letcher County School District. There are five elementary schools, three middle schools, and one high school. **Table 4-9** identifies the names of the schools, the grades they serve, the number of students enrolled for the 2014–2015 school year, and the actual capacity of each school.

Table 4-9. Letcher County Schools Enrollment and Capacity for 2014–2015

School	Grades	Number of Students	Capacity
Arlie Boggs Elementary	K-8	127	248
Cowan Elementary	K-8	423	440
Fleming Neon Middle School	6-8	202	352
Letcher County Elementary	K-5	372	418
Letcher County Middle School	6-8	158	225
Letcher County Central High School	9-12	929	1,033
West Whitesburg Elementary School	K-5	392	440
Whitesburg Middle School	6-8	170	225
Martha Jane Potter Elementary	K-5	438	425

Source: Wagoner 2014.

4.4.2 Environmental Consequences

4.4.2.1 Police

The vast majority of inmate incidents that would be likely to occur at the proposed USP would be addressed internally through Bureau disciplinary proceedings. However, to the extent that limited and infrequent response by state or local law enforcement is needed, law enforcement groups with jurisdiction over the Payne Gap site would be able to provide assistance in the event of an emergency that required assistance beyond the capabilities of the USP and other federal resources. The pertinent state and local law enforcement agencies have stated that they would be willing to discuss the development of a Memorandum of Understanding (MOU) with the Bureau to provide these services. Further, they have indicated that no significant impacts to their services are expected as a result of the proposed facility. Therefore, Alternative 1 would have no adverse impacts to law enforcement resources.

4.4.2.2 Fire

The proposed USP and FPC would have trained staff and fire-fighting equipment and resources capable of responding to and handling most fires or fire-related emergencies that would be likely to occur. However, to the extent that limited and infrequent response by outside fire or emergency resources would be needed, the local emergency service providers have indicated that they would be able to provide assistance in the event of an emergency that was beyond the capabilities of Bureau staff. These local providers have also indicated that providing such services, if requested, would not be expected to result in impacts to their services or require the hiring of additional staff (refer to communication logs in Appendix A, *Agency Coordination*). Therefore, Alternative 1 would not result in significant impacts to local fire and rescue services.

4.4.2.3 Health Care

Bureau medical staff would be able to address most health care needs or emergencies that would arise at the proposed USP and FPC. However, health care facilities are located near the Payne Gap site and would be able to accommodate inmates at the proposed USP and FPC if needed. Discussions with ARH indicate they have staff familiar with accommodating inmates and the necessary security requirements that would need to be implemented to bring an inmate into an ARH facility. ARH indicated this would not be a problem and they would be able to accommodate the facility if an inmate would require care outside of the USP or FPC. ARH also indicated they would be willing to work with the Bureau to develop an MOU (Sparkman 2014). Therefore, there would be no adverse impact to health care services under Alternative 1.

4.4.2.4 Schools

Approximately 300 new employees would be needed to operate the proposed USP and FPC. It is anticipated that some of these employees would be existing Bureau employees that would relocate to the area. Under a maximum case scenario, it is assumed Bureau employees relocating to operate the facility would reside within the immediate area (Whitesburg, Jenkins, or Letcher County). With the exception of Martha Jane Potter Elementary school, all the schools within Letcher County School District have sufficient capacity to accept new students.

4.4.3 No Action Alternative

Under the No Action Alternative, the USP and FPC would not be constructed. Community facilities and services would continue to operate under existing conditions. Law enforcement, emergency services, and health care providers within the area would not be asked to support the facility in emergency situations; therefore, no impacts to these services would occur.

4.4.4 Mitigation

Alternative 1 would have no significant impacts to community facilities and services; therefore, no mitigation would be required.

4.5 TRANSPORTATION AND TRAFFIC

The analysis of transportation and traffic describes both personal and public vehicle movement throughout a road and highway network. The study area for transportation and traffic includes the road and highway networks that surround and provide access to the proposed site parcels.

Rural collector roads are divided into major and minor collector roads. Major collector roads are used for inter-county travel or for carrying vehicles to routes of higher classification (principal arterials and minor arterials) (Division of Planning 2011). Minor collector roads collect traffic from local roads and carry it to major collector roads, minor arterial roads, and/or principal arterials. Rural principal arterials are those roadways that have continuous routes that lend themselves to statewide or interstate travel and typically have limited access (Division of Planning 2011).

4.5.1 Affected Environment

The Payne Gap site is located approximately 7 miles northeast of Whitesburg. This project alternative would be constructed to the south of U.S. Route 119, to the east of Bottom Fork Road (KY 3406), and to the west of Talman Drive. In the project vicinity, U.S. Route 119 is designated as a rural principal arterial on the Kentucky Transportation Cabinet's (KYTC's) statewide map of roadway functional classifications (KYTC 2014a). KYTC traffic count station 272 is located on U.S. Route 119 approximately 0.5 miles west of the site. The year 2010 Annual Average Daily Traffic volume at this location was 6,778 vehicles per day (KYTC 2014b). The Payne Gap site has several access options. These include driveways onto Bottom Fork Road, U.S. Route 119, Talman Drive, and a connection to Fork Drive, which is an existing roadway that extends southward from U.S. Route 119.

As defined by KYTC, rural principal arterials “comprise a system of continuous, connected, rural routes having trip length and density suitable for statewide or interstate travel. They provide for movement between all urban areas with a population of 50,000 or more and most urban areas with a population of at least 25,000” (KYTC 2014a).

A traffic impact study for the Payne Gap site was prepared and concurrence on the results of the study was received from the KYTC Central Office on April 30, 2015 and from the KYTC District 12 Office on May 4, 2015 (*Appendix A, Agency Coordination*). The study identified that U.S. Route 119 is currently operating at LOS A during both a.m. and p.m. peak periods (7:00 a.m. to 9:00 a.m. and 3:00 p.m. to 5:00 p.m., respectively) (Parsons 2015).

4.5.2 Environmental Consequences

4.5.2.1 Construction

Implementation of Alternative 1 would involve temporary traffic impacts resulting from construction activities. The following types of additional trips are expected to be added to the highway network:

- Construction worker commuting trips
- Trips involving the delivery and removal of construction equipment and materials
- Trips involving the removal of demolition debris and/or excess fill material

These trips would be temporary, and would not continue after the completion of project construction. Whereas construction worker commuter trips are expected to be concentrated during the traditional peak commuting periods, other trips would likely be dispersed throughout the typical working day. Trucks would be used to deliver/remove construction equipment and materials and to remove demolition debris and/or excess fill material during construction. Because of their size and weight, trucks have a relatively greater impact on street capacity and pavement conditions, as compared to passenger cars. Given the temporary nature of construction truck traffic, and given that trucks are not expected to be concentrated in peak commuting periods, the potential impact to roadway capacity would be less than significant. The potential impact to roadway wear and tear would be avoided or reduced to a less than significant level with the implementation of the mitigation described below in Section 4.5.4, *Mitigation*. With implementation of this measure, the addition of construction-related trips is not expected to result in a significant traffic-related impact.

4.5.2.2 Operations

Following construction, the proposed federal correctional facility would add traffic to the surrounding street network on a recurring basis. This traffic increase would include employee commuting trips plus additional trips (such as the transfer of inmates, inmate visitors, delivery of supplies and equipment, etc.) that would not necessarily coincide with peak commuting periods. As discussed in Section 1.6, *Proposed Action*, the proposed facility would have a staff of 300 full-time employees. The proposed action's traffic generation was estimated using trip generation rates published in the Institute of Transportation Engineers' (ITE) Trip Generation Manual (ITE 2012). **Table 4-10** presents peak hour traffic generation. As shown in this table, the proposed facility would add approximately 156 trips during the morning peak hour and 204 trips during the afternoon peak hour.

Table 4-10. Estimated Peak Hour Trip Generation					
A.M. Peak Hour Trips			P.M. Peak Hour Trips		
In	Out	Total	In	Out	Total
97	59	156	55	149	204

Note:^(a) Land use and trip rates from ITE Trip Generation Manual, 9th Edition (ITE 2012) for Land Use 571 (Prison).

Source: Parsons 2015.

It is anticipated that a higher number of trips are expected to be generated in the p.m. peak period based on the previous studies performed and documented in the *ITE Trip Generation Manual* of traffic patterns associated with a federal correctional facility (Parsons 2015). Additional trips to/from the site are expected to occur during off-peak hour commuting periods. These off-peak trips may include the transfer of inmates, inmate visitors, and delivery of supplies and equipment. Based on the relatively low traffic volumes on U.S. Route 119, there is no anticipated impact associated with these off-peak trips.

The traffic impact analysis determined that with the additional peak hour trips, U.S. Route 119 would continue to operate at a LOS A during both a.m. and p.m. peak periods. The study also found that the intersection of U.S. Route 119 and the entrance to the facility would operate at LOS A for westbound traffic during both a.m. and p.m. peak periods and LOS B for northbound traffic during the same peak periods (Parsons 2015). Appendix F contains the traffic impact study and Appendix A contains the email communications with KYTC regarding the traffic impact study. These potential impacts would be avoided or reduced to a less than significant level with the implementation of the mitigation described below in Section 4.5.4, *Mitigation*.

4.5.3 No Action Alternative

Under the No Action Alternative, the USP and FPC would not be constructed and increases in traffic to area roadways would not occur. It is anticipated that traffic would remain close to existing conditions; therefore, no impacts to transportation or traffic would occur.

4.5.4 Mitigation

Although there are no significant impacts to traffic outlined in the traffic impact study, KYTC has recommended that consideration be given to constructing a left turn lane on U.S. Route 119 for vehicles traveling westbound. The left turn lane would minimize the potential for rear-end vehicle collisions.

4.6 AIR QUALITY

The air quality analysis evaluates projected future emissions, including construction and operations. Air quality impacts would be significant if emissions associated with the proposed action would: 1) increase ambient air pollution concentrations above the NAAQS, 2) impair visibility within federally mandated Prevention of Significant Deterioration Class I areas, 3) result in the potential for any stationary source to be considered a major source of emissions if total emissions of any pollutant subject to regulation under the CAA is greater than 250 tons per year (TPY) for attainment areas, or 4) for mobile source emissions, result in an increase in emissions to exceed 250 TPY for any pollutant. The air quality assumptions and calculations are provided in Appendix C, *Air Emissions Calculations*.

Pollutants considered in this analysis include the criteria pollutants. Airborne lead is classified as a criteria pollutant. The only possible source of lead associated with the proposed action is from weapon firing at the outdoor firing range. The potential emission of airborne lead particles from weapon firing is a general environmental issue and the impacted media are water and soil. Issues regarding lead contamination are covered under the hazardous waste regulations established under the CWA, the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation, and Liability Act; therefore, potential impacts of lead contamination are discussed in Sections 4.12.2.2 and 5.12.2.2, *Hazardous Wastes*. There is also the potential for human exposure due to the proximity of the weapon firing to the breathing zone of the weapon user and instructor, which would be regulated under the Occupational Safety and Health Act. As such, airborne emissions of lead are not relevant to ambient air

quality and the NAAQS established as part of the CAA. Therefore, lead emissions are not carried forward in the criteria pollutant analysis.

For criteria pollutant emissions, 250 TPY per pollutant was used as a comparative analysis threshold. This value is used by the USEPA in their New Source Review standards as an indicator for impact analysis for listed new major stationary sources in attainment areas. No similar regulatory threshold is available for mobile source emissions, which are the primary sources for the construction phases, and also a component of operational emissions for the proposed action. Lacking any mobile source emissions thresholds, the 250 TPY major stationary source threshold was used to equitably assess and compare mobile source emissions.

Pollutants would be generated by numerous sources, including diesel exhaust from construction equipment, gasoline exhaust from employee commuting trips, and operations such as generators and boilers. In general, volatile organic compound (VOC), carbon monoxide (CO), nitrous oxide (NO_x), and sulfur dioxide (SO_2) emissions would be primarily generated by diesel-fueled heavy equipment operating in construction areas. Particulate matter (PM) emissions, in the form of PM_{10} and $\text{PM}_{2.5}$, would be primarily due to fugitive dust created by land disturbance activities, which would include land clearing; soil excavation, cutting, and filling; and grading. The fugitive dust emission factor for PM_{10} , which is used as part of the $\text{PM}_{2.5}$ calculation (Midwest Research Institute 2005), is assumed to include the effects of typical control measures such as routine site watering and other measures for dust control. A dust control effectiveness of 50 percent is assumed, based on the estimated control effectiveness of watering (Western Governors' Association 2006). Other sources of emissions include diesel emissions from heavy construction equipment. Refer to Appendix C, *Air Emissions Calculations*, for further discussion of the technical approach and assumptions.

Air emissions were analyzed, where applicable, based on proposed construction activities and on operational emissions that would occur during full operation.

Under the CAA, motor vehicles and construction equipment are exempt from air permitting requirements. Since the emissions from these sources associated with the proposed action would occur in areas that are in attainment of the NAAQS for all criteria pollutants, the General Conformity Rule is not applicable. Nonetheless, NEPA and its implementing regulations require analysis of the significance of air quality impacts from these sources as well as non-major stationary sources. However, neither NEPA nor its implementing regulations have established criteria for determining the significance of air quality impacts from such sources in CAA attainment areas.

As noted above, the General Conformity Rule is not applicable to these mobile sources and minor (i.e., non-major) stationary sources in attainment areas. Therefore, the analysis of construction and operational incremental emissions from these sources in attainment areas and the significance criteria selected (250 TPY) are solely for the purpose of informing the public and decision makers about the relative air quality impacts from the proposed action under NEPA requirements.

4.6.1 Affected Environment

The study area for the air quality analysis includes the Appalachian Intrastate Air Quality Control Region, which is defined in 40 CFR 81.191, and comprises several counties in Kentucky, including Letcher County. Air quality in the study area is considered good, with the study area designated as unclassifiable, attainment, or better than national standards for all criteria pollutants. Because the study area is in

attainment for all criteria pollutants, the CAA General Conformity Rule does not apply and is not addressed in this analysis. Although a conformity analysis is not required, impacts to air quality from emissions associated with construction and operations are addressed in Sections 4.6.2 and 5.6.2, *Environmental Consequences*.

4.6.2 Environmental Consequences

The results of the air emissions analysis show that construction and operational emissions under Alternative 1 would remain well below the significance thresholds and would not have a significant impact on the local or regional air quality. A summary of the analysis is presented below and the complete analysis is provided in Appendix C, *Air Emissions Calculations*.

4.6.2.1 Construction

Direct impacts from emissions from construction would include combustion emissions from fossil fuel-powered equipment and fugitive dust emissions (PM_{10} and $PM_{2.5}$) during clearing, demolition activities, earth moving activities, and operation of equipment on bare soil. **Table 4-11** presents estimates for the primary construction activities that would utilize heavy duty diesel equipment for the Payne Gap site.

Table 4-11. Construction Emission Estimates for Payne Gap Site

Site	Year	VOC Tons	CO Tons	NO _x Tons	SO ₂ Tons	PM ₁₀ Tons	PM _{2.5} Tons
Payne Gap	1	7.80	32.35	108.53	1.90	217.59	27.05
Payne Gap	2	7.80	32.35	108.53	1.90	147.09	20.00

Fugitive dust from land disturbance activities would be the primary source of emissions during construction, with most of the emissions occurring during Year 1. PM_{10} emissions are estimated using wetting and other typical reduction practices to reduce dust release by 50 percent. PM_{10} emissions are predicted to be greatest in Year 1 at the Payne Gap site, at 217.59 TPY. These emissions, however, would remain well below the significance threshold of 250 TPY. Construction emissions would not have direct or indirect significant impacts on the region's air quality.

Direct impacts to air quality may also include emissions from the burning of construction debris, if such an activity were undertaken during construction. Vegetative debris and/or demolition and construction materials would be disposed in accordance with all laws and regulations. Should open burning be necessary, it would be conducted in accordance with Title 401 of the Kentucky Administrative Regulations (KAR), Chapter 63, Section 5 (401 KAR 63:005), Open Burning.

4.6.2.2 Operations

Table 4-12 presents the annual emissions based on the site being fully operational. Operational emissions would be the same regardless of the location selected. Stationary sources operating on-site include two 2000-kilowatt diesel-powered emergency generators and three boilers to provide heat and hot water for the site. The boilers have been estimated at 15 MMBtu/hr. One of the boilers would serve as a backup, so air emission calculations evaluated use of two boilers. All of these stationary sources would require an air permit and be regulated by the KDEP, Division for Air Quality. Analysis of permit requirements based on the final stationary source(s) type and design would be performed as design requirements are more fully delineated. This would ensure regulatory permit compliance and that all requisite source registrations would be submitted.

In addition to stationary sources, the emissions from staff commuting to and from work have been estimated at 300 employees and working 365 days per year. The round trip was estimated at 40 miles because of the rural location of the Payne Gap site.

Table 4-12. Estimated Annual Operational Emissions

Source	VOC Tons/Year	CO Tons/year	NO_x Tons/ Year	SO₂ Tons/Year	PM₁₀ Tons/Year	PM_{2.5} Tons/Year
Generators	0.25	2.15	5.09	0.00	0.27	0.27
Boilers	0.26	3.80	15.2	0.16	0.76	0.19
Staff Vehicles	0.19	23.38	1.07	0.02	0.12	0.11
Total	0.70	29.33	21.36	0.18	1.16	0.58

All of the criteria pollutant emissions remain well below the significance threshold of 250 TPY. Based on the emission estimates, operation of the federal correctional facility at the Payne Gap site would not have direct or indirect significant impacts on the local or regional air quality.

4.6.3 No Action Alternative

Under the No Action Alternative, the USP and FPC would not be constructed in Letcher County. The No Action Alternative would not result in emissions of any air pollutants. Therefore, there would be no impact to regional air quality.

4.6.4 Mitigation

Best management practices would be implemented to reduce air emissions. They may include, but are not limited to:

- Periodic wetting during clearing, excavation, filling, and grading activities to minimize impacts to air quality (PM₁₀ emissions) from fugitive dust
- Utilization of alternatively fueled equipment
- Utilization of other emission controls that are applicable to the equipment being used on-site
- Reduction of idling time of equipment and construction vehicles

4.7 NOISE

4.7.1 Affected Environment

The Occupational Safety and Health Administration (OSHA) regulates noise impacts to workers and sets forth thresholds for a safe work environment. OSHA has set permissible noise exposure limits (codified in 29 CFR 1910.95[b]). Based on these limits, an employee should not be subjected to continuous noise exceeding 90 dBA for durations lasting more than 8 hours per day (**Table 4-13**). As the level increases, the allowed duration of noise decreases. The maximum limit is 115 dBA for duration of 15 minutes or less. OSHA standards are the best documented requirements in regards to long-term human noise exposure. In addition, OSHA standards state that exposure to impulsive or impact noise (loud, short duration sounds) is not to exceed 140 dB peak sound pressure level (OSHA 2013).

Table 4-13. OSHA Permissible Noise Exposures	
Duration per Day (hours)	Sound Level (dBA)
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25 or less	115

Source: 29 CFR 1910.95(b).

The Payne Gap site is located in a rural area with minimal noise. Areas of the site located immediately adjacent to U.S. Route 119 would experience some noise from traffic traveling through the area. There is nothing located on the site that currently generates noise.

4.7.2 Environmental Consequences

4.7.2.1 Construction

Construction activities under Alternative 1 would result in temporary, short-term increases in noise levels. Noise associated with construction equipment and vehicles, as well as blasting activities to remove bedrock, would occur during site preparation and construction.

As stated in Section 4.7.1, *Affected Environment*, OSHA standards (29 CFR 1910.95) state that employees should not be subjected to continuous noise exceeding 90 dBA for durations lasting more than 8 hours per day. For the purposes of this analysis, noise at a sensitive receptor above the level for a residential district, 55 dBA, is noted for impacts, and noise emissions exceeding 90 dBA for more than 8 hours per day at a sensitive receptor location would be considered to have significant adverse impacts.

A noise sensitive receptor is defined as a location or facility where people involved in indoor or outdoor activities may be subject to stress or considerable interference from noise. Such locations or facilities often include residential dwellings, hospitals, nursing homes, educational facilities, and libraries. Sensitive noise receptors may also include supporting habitat for certain wildlife species or noise sensitive cultural practices.

Alternative 1 would generate noise during the construction phases of the USP and FPC. Phases of construction that would generate noise include: land clearing and excavations, pile driving, foundation and capping, erection of structural materials, and construction of exterior walls. Noise from construction equipment operating at the site, construction/delivery vehicles traveling to and from the site, and pile driving activities required for placement of deep pile foundations would impact noise levels. Noise levels at a given receptor location would depend on the type and number of pieces of construction equipment being operated and the receptor's distance from the construction site. Construction related noise emissions are listed in **Table 4-14** and can range from 74 to 101 dBA when measured 50 feet from the respective piece of equipment.

Table 4-14. Airborne Construction Related Noise Emissions

Equipment Description	Actual Measured L_{max} at 50 feet (dBA)
Flat Bed Truck	74
Welder/Torch	74
Man Lift	75
Dump Truck	76
Backhoe	78
Compressor (air)	78
Concrete Mixer Truck	79
Drill Rig Truck	79
Front End Loader	79
Rivet Buster/Chipping Gun	79
Ventilation Fan	79
Drum Mixer	80
Vibratory Concrete Mixer	80
Concrete Pump Truck	81
Crane	81
Generator	81
Pumps	81
Dozer	82
Boring Jack Power Unit	83
Warning Horn	83
Auger Drill Rig	84
Scraper	84
Pneumatic Tools	85
Vacuum Excavator	85
Vibrating Hopper	87
Jackhammer	89
Concrete Saw	90
Mounted Impact Hammer (hoe ram)	90
Sheers (on backhoe)	96
Impact Pile Driver	101
Vibratory Pile Driver	101

Source: Federal Highway Administration 2006.

Small increases in noise levels would be expected as a result of the operation of delivery trucks and other construction vehicles. However, larger increases in noise levels would result if pile driving activities are necessary. Increased noise levels would be greatest during the early stages of each construction phase, although these periods would be of relatively short duration. However, under the worst case scenario during pile driving, there would be periods during construction when noise would range from 101 dBA at 50 feet from the equipment to 89 dBA at 200 feet from the equipment. The 200-foot radius from the equipment would encompass primarily rural undeveloped areas, depending on the location of the pile driving equipment at any given time on the Payne Gap site. Residences adjacent to the Payne Gap site are well over 200 feet from the majority of construction areas. When compared to the existing noise conditions at the Payne Gap site (35 dBA) and the OSHA noise thresholds for workers, the pile driving activities would result in significant short-term impacts to noise receptors located within 200 feet of the pile driving equipment location at the construction site, which would vary as the foundation piles would be driven throughout the foundation footprint. Moderate noise impacts would extend up to 1.5 miles from the construction site, as this is the distance at which noise levels would attenuate down to 55–60 dBA.

In conclusion, temporary and short-term noise disturbance would occur during construction; however, implementation of noise attenuation measures described below would reduce potential disturbance from noise. Therefore, implementation of Alternative 1 would have no significant impacts to sensitive noise receptors from noise.

4.7.2.2 Operations

The operation of the proposed USP and FPC, once construction is completed, is not expected to significantly increase ambient noise levels.

4.7.3 No Action Alternative

Under the No Action Alternative, the USP and FPC would not be constructed and no increases in noise as a result of construction or operation would occur. It is anticipated that the site would remain undeveloped; therefore, no increases in noise that may present impacts to nearby noise receptors would occur.

4.7.4 Mitigation

To minimize the impact to noise receptors during the operation of the pile driving equipment, a variety of measures would be taken, including but not limited to:

- Using noise bellows systems to provide further noise attenuation
- Performing the work during daytime hours
- Scheduling the louder construction activities for less intrusive times (mid-morning to mid-afternoon)

4.8 INFRASTRUCTURE AND UTILITIES

4.8.1 Affected Environment

4.8.1.1 Potable Water

Under the Safe Drinking Water Act, public water systems are required to regularly test produced water for more than 90 contaminants, such as bacteria, nitrates, and other chemicals. The KDEP Division of Water is responsible for protecting the public's potable drinking water supply. Title 401 KAR Chapter 8 outlines the requirements for public water systems. This includes both treatment of water for distribution to the public, as well as quality assurance procedures. Under 401 KAR Chapter 8, public water suppliers must submit monthly reports to the Division of Water. A public water system must take corrective action and notify its customers when water samples exceed the limit for a contaminant.

The Letcher County Water and Sewer District (LCWSD) purchases water from the City of Jenkins to distribute in the Payne Gap area. The Bureau reviewed the Consumer Confidence Reports (CCRs or Water Quality Reports) for the LCWSD and the City of Jenkins for the past three reporting years of 2012, 2013, and 2014. In 2014, the LCWSD had an issue for failing to submit reports to the drinking water database on time. A review of the CCRs for 2012, 2013 and 2014 for the Jenkins Water Treatment plant indicates some issues regarding the timely submission of regular monitoring reports, but no violations. The Jenkins Water Treatment plant is now in compliance. The Jenkins Water Treatment Plant has a current capacity of 83,520 gallons per day (Lewis 2015).

The LCWSD has been extending its service area, including an area along U.S. Route 119, adjacent to the Payne Gap site. The water main at this location is 8 inches in diameter and has water pressure near the

connection point of approximately 110 pounds per square inch. Potable water would be provided by the LCWSD via a connection approximately 3.5 miles away from the Payne Gap site (Cardno 2014a).

Because municipally supplied water in the city of Jenkins is drawn from surface waters of Jenkins Lake in the North Fork Kentucky River watershed, indirect impacts to public health have the potential to occur if drinking water quality were to be compromised by coal mining or other activities in the watershed (LCWSD 2014). The water supply would need be treated to meet drinking water standards prior to distribution to consumers. If drinking water standards cannot be met a public health advisory would be issued and consumers would be advised as to how to further treat the water at home (i.e., boiling) or a consumption ban would be implemented and consumers would be provided with bottled water (KDEP 2015).

4.8.1.2 Wastewater

Sanitary sewer service would be provided by the City of Jenkins and treated at the Jenkins Wastewater Treatment Plant (WWTP). The nearest connection point is located at the Gateway Industrial Park in Jenkins, approximately 1.5 miles east of the Payne Gap site (**Figure 4-2**). The facility was designed to treat approximately 600,000 gallons per day and currently treats approximately 400,000 gallons per day (KRADD 2013).

4.8.1.3 Natural Gas

There is one gas well located in the northeast corner of the Payne Gap site. In addition, there is also an aboveground 16-inch high pressure transmission line running directly through the property. The gas well and transmission line are both owned by EQT (Cardno 2014a).

4.8.1.4 Electricity

American Electric Power (AEP) lines extend along U.S. Route 119 in the vicinity of the Payne Gap site and would be able to provide electricity to the Payne Gap site (Cardno 2014a).

4.8.1.5 Telecommunications

Windstream provides telecommunications service in the area of Payne Gap with fiber and copper cables in the vicinity of U.S. Route 119. Windstream has sufficient capacity in this area to provide adequate service to the proposed Bureau facility (Cardno 2014a).

4.8.1.6 Solid Waste

Solid waste generated within Letcher County is disposed of at the Laurel Ridge Landfill in London, Kentucky, approximately 90 miles west of Whitesburg (Laurel Ridge Landfill 2014). The Laurel Ridge Landfill has a maximum annual limit of 350,000 tons. The landfill currently receives approximately 320,000 tons annually. Based on their current capacity, the landfill has a 30-year life expectancy.

4.8.2 Environmental Consequences

4.8.2.1 Potable Water

The Bureau would purchase potable water from the LCWSD for the Payne Gap site under Alternative 1. CCRs for the LCWSD and the City of Jenkins for the past three reporting years did not indicate any violations for drinking water quality standards. Therefore, implementation of Alternative 1 would have no significant impacts to water quality.

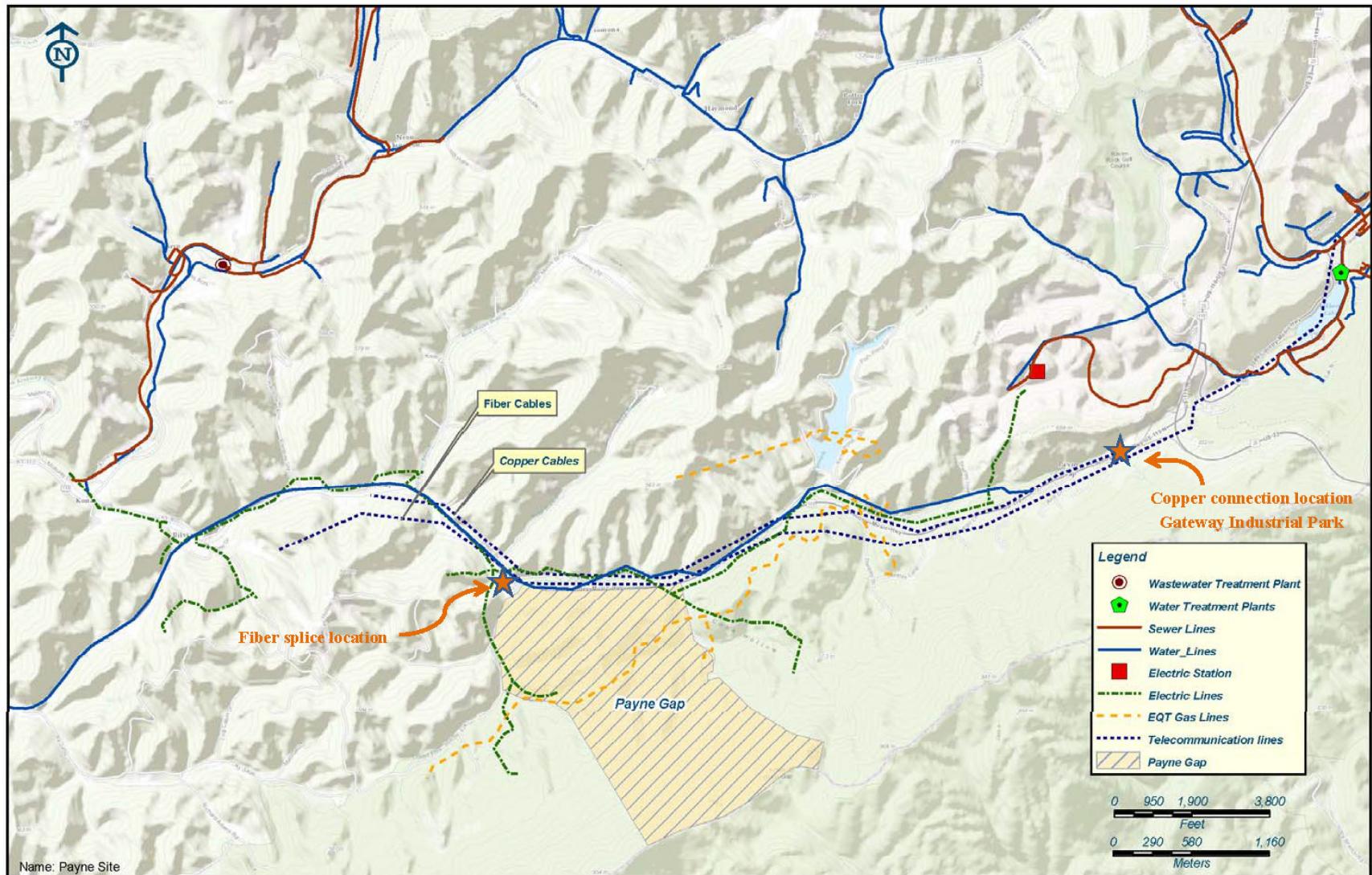


Figure 4-2. Payne Gap Existing Utilities

The USP and FPC are anticipated to require 214 gallons per day per inmate. Based on an anticipated inmate population of 1,200, a total of 258,000 gallons per day would be required under the proposed action. Additionally, the utility plant, warehouses, and training building would require approximately 6,160 gallons per day. Therefore, operation of the proposed federal correctional facility would require approximately 264,000 gallons of potable water per day. The current capacity of the Jenkins Water Treatment Plant is 83,520 gallons per day. If the Bureau selects Alternative 1, modifications to the Jenkins Water Treatment Plant would be needed to meet the increased demand. Consequently, Alternative 1 would result in significant impacts to LCWSD's potable water capacity.

4.8.2.2 Wastewater

Average wastewater generated by the USP, FPC, and ancillary facilities is anticipated to be 224,000 gallons per day. This would result in the City of Jenkins WWTP exceeding their design capacity of 600,000 gallons per day by approximately 24,000 gallons per day. As a result, Alternative 1 would result in significant impacts to the City of Jenkins wastewater treatment capacity.

4.8.2.3 Natural Gas

Implementation of the proposed action at the Payne Gap site would result in the closure and abandonment of a gas well and relocation of an aboveground natural gas pipeline. Closure of the gas well would result in lost natural gas production and profit to the owner of the well, EQT. Additionally, the relocation of the natural gas pipeline would result in a loss of transmission and resulting profit to EQT during the relocation process. EQT would also have to expend resources to relocate the gas line, as well as acquire right-of-way and permits to complete the relocation. Due to the location of the Jefferson National Forest to the south, the relocation of the line is limited to moving it to the north of its current location. As a result of the implementation of Alternative 1, significant impacts to natural gas infrastructure would occur.

4.8.2.4 Electricity

In coordination with the electric service provider, AEP has indicated it has ample capacity to provide service to the federal correctional facility. AEP would extend overhead lines to a predetermined handoff point to the secure facility and the Bureau would extend the service on-site to the needed facilities (Cardno 2014a). There would be no charge to extend the overhead lines to the handoff point and no issues with capacity; therefore, no adverse impacts to electrical capacity would occur under Alternative 1.

4.8.2.5 Telecommunications

Windstream has indicated that they have sufficient capacity to meet the needs of the proposed USP, FPC, and ancillary facilities at the Payne Gap site. The Bureau would be responsible for connecting the fiber cables at a splice location adjacent to the Payne Gap site, as well as connecting copper cables at the Gateway Industrial Park in Jenkins. Connection costs would be approximately \$35,000. Under Alternative 1, there would be no significant impacts to telecommunications service.

4.8.2.6 Solid Waste

The Bureau estimates that an inmate would generate 4 pounds of solid waste per day or 1,460 pounds per year. With an estimated 1,200 inmates, the proposed action would generate 4,800 pounds per day of solid waste, or 1,752,000 pounds per year (876 TPY). The solid waste generated at the federal correctional facility would increase the amount of solid waste taken to the Laurel Ridge Landfill from 320,000 TPY to

320,876 TPY. This increase would not result in the landfill going over its current yearly maximum intake of solid waste; therefore, there would be no adverse impacts to the Laurel Ridge Landfill from implementation of Alternative 1.

4.8.3 No Action Alternative

Under the No Action Alternative, the USP and FPC would not be constructed and the Payne Gap site is anticipated to remain undeveloped. If the Payne Gap site is not developed, then there would be no requirement for additional utilities. Therefore, it is anticipated that utility usage would remain similar to existing usage.

4.8.4 Mitigation

Mitigation for impacts to wastewater treatment as a result of the implementation of the proposed action at the Payne Gap site would require either the upgrade of the existing City of Jenkins WWTP or the construction of a new WWTP closer to the Payne Gap site. Coordination with the City of Jenkins indicates there are two options to provide wastewater treatment to the Payne Gap site (Cardno 2014a). The Bureau would have to pay for these mitigation measures, which would total approximately \$3,800,000.

Mitigation for impacts to natural gas infrastructure at the Payne Gap site would require the Bureau to pay for the closure of the gas well and relocation of the natural gas pipeline. The cost of closing the gas well would be \$850,000. Additionally, the aboveground gas line would require relocation off-site. It is anticipated that 9,000 linear feet of gas line would need to be relocated at a cost of \$455 per linear foot (Cardno 2014a; see Appendix D, *Enhanced Utility Report*). This would result in a total cost for relocation of approximately \$4,095,000. The Bureau would also have to pay a connection fee of \$110,000. In addition to the relocation costs, it would take a minimum of two years to design, permit, and install the pressure main. The Bureau would also be required to assess the impacts of both the removal of the gas line and the relocation of the gas line, which could result in additional studies and mitigation (i.e., wetland delineation, cultural resource studies, threatened and endangered species). The gas well on the Payne Gap site would be permanently closed and abandoned and the gas line relocated according to standards required by federal and state regulations. Groundwater at the Payne Gap site would not be used for any purpose at the USP or FPC.

4.9 CULTURAL RESOURCES

An APE was defined to take into consideration both potential direct and indirect effects to cultural resources from implementation of the proposed action at the Payne Gap site. The APE for Alternative 1 includes the 753-acre (305-hectare) Payne Gap site and adjacent areas to the north (**Figure 4-3**). The APE extends beyond the north boundary of the Payne Gap site because of the potential for visual effects to any historic properties that may be present within the viewshed of the proposed federal correctional facility's one- to four-story buildings. Effects to archaeological resources, however, would be limited to the 300-acre (121-hectare) area within the APE where construction (direct ground disturbance) would occur.

4.9.1 Affected Environment

4.9.1.1 Archaeological Resources

The Payne Gap site has been subject to previous mining activities; however, the mining activities did not appear to extend to the entire site. Therefore, a Phase I Archaeological Survey was conducted in August

2011 and an additional Phase I archaeological investigation was conducted in August 2014. The surveys included pedestrian traversal of transects across areas that were not too steep, surface survey in areas of high ground surface visibility, search of rocky outcrops for rockshelters and other cultural features, and limited subsurface testing of flatter ridgeline, and slope terraces. In addition, background research indicated that no previously identified archaeological sites were present at the proposed Payne Gap site.

A total of 40 shovel test pits were excavated within the APE during both Phase I surveys. No artifacts and no prehistoric or historic archaeological sites eligible for listing on the NRHP were discovered. As a result of both surveys, no further work was recommended at the proposed Payne Gap site. Concurrence on the 2011 survey recommendation was received from the SHPO on January 24, 2012, and concurrence on the 2014 survey recommendation was received on December 22, 2014 (Appendix A, *Agency Coordination*).

4.9.1.2 Traditional Cultural Properties

Under Section 106 of the NHPA, a federal agency is required to give consideration to issues of traditional religious or cultural areas concerning Native American groups. No TCPs have been identified within the APE for Alternative 1 based on there being no federally recognized tribes within Kentucky.

4.9.1.3 Architectural Resources

Architectural surveys were conducted to identify historic properties in the Payne Gap site APE. The initial reconnaissance survey of the APE was conducted in May 2011. The survey recommended four architectural resources for further investigation to determine their eligibility for inclusion in the NRHP. Other architectural resources located in the APE were not associated with significant historical or architectural contexts of Letcher County and/or were in poor condition; therefore, they were not recommended for further work (TEC, Inc. 2011a). The Kentucky Heritage Council (KHC), the Kentucky SHPO, concurred with the reconnaissance survey recommendations (KHC 2011).

An intensive level survey of the four architectural resources recommended for further investigation as a result of the reconnaissance survey was conducted in August 2013. The resources consist of two cemeteries (LR149 and LR150); a late-nineteenth century vernacular T-plan house (LR151); and an early-twentieth century vernacular central passage, double pile house (LR188) (**Figure 4-3; Table 4-15**).

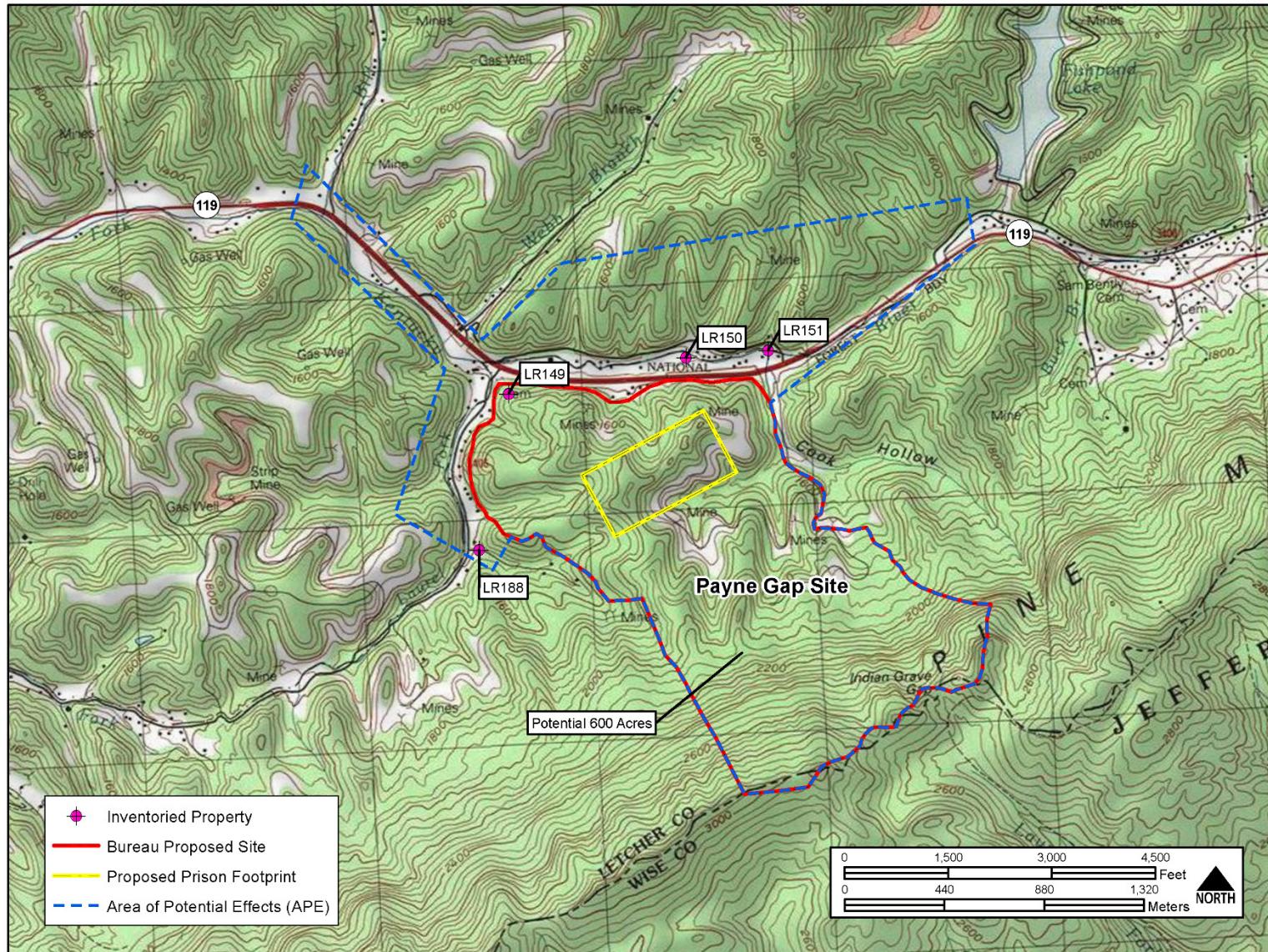


Figure 4-3. Architectural Resources Evaluated in the APE for Alternative 1

Table 4-15. Architectural Resources in the Payne Gap Site APE Evaluated for NRHP Eligibility

Site Number	Property Name	Year Built	Description	NRHP Eligibility
LR149	Laurel Fork Cemetery	1918–present	Cemetery	Not Eligible
LR150	Wright Cemetery	1863–1961	Private, family cemetery	Not Eligible
LR151	Samuel J. Wright House	Ca. 1885	Vernacular T-plan residence	Not Eligible
LR188	Holbrook-Craft House	Ca. 1903–1914	Vernacular central passage, double pile house	Not Eligible

Archival and historical research and detailed field survey were undertaken to evaluate the NRHP eligibility of each property. Based on the field and research data, the survey concluded that none of the resources are eligible because they do not meet the NRHP criteria for eligibility (Cardno 2014b). The KHC concurred that the resources are not eligible for the NRHP (KHC 2014) (Appendix A, *Agency Coordination*).

4.9.2 Environmental Consequences

The cultural resources surveys for the proposed action did not identify any archaeological sites or architectural resources eligible for inclusion in the NRHP in the APE for the Payne Gap site. Therefore, Alternative 1 would have no effect on NRHP-listed or eligible cultural resources.

4.9.3 No Action Alternative

Under the No Action Alternative, the USP and FPC would not be constructed and the site would remain undeveloped and no potential impacts to cultural resources would occur.

4.9.4 Mitigation

Alternative 1 would have no impact to NRHP-listed or eligible cultural resources; therefore, no mitigation is required.

4.10 WATER RESOURCES

4.10.1 Affected Environment

4.10.1.1 Surface Water

The U.S. is divided and sub-divided into successively smaller hydrologic units, which are classified into six levels: regions, sub-regions, basins, sub-basins, watersheds, and sub-watersheds. The Payne Gap site lies in the Ohio Region (Hydrologic Unit Code [HUC] 05); Kentucky-Licking Subregion (HUC 0510); the Kentucky River Basin (HUC 051002); and the North Fork Kentucky River Watershed (HUC 05100201) (USEPA 2013a). The Payne Gap site contains surface water features including headwater intermittent and perennial streams. Hydrology at the site has been highly disturbed by historic mining activities.

None of the streams on the Payne Gap site have been assessed for state water quality standards (USEPA 2013a). There are no identified impaired waters or TMDLs for the Payne Gap site. The closest assessed water body to the Payne Gap site is Fish Pond, located north of the site, on the opposite side of U.S. Route 119. Fish Pond was determined to be good for secondary contact recreation water, warm water aquatic habitat, and cold water aquatic habitat (USEPA 2013a).

Mining operations in the region have the potential to affect water quality of the North Fork Kentucky River Watershed. There are three active mining operations in the watershed. These mining operations have no direct impacts on water quality of the Payne Gap site due to their distance and hydrological separation from the site.

4.10.1.2 Wetlands

Site-specific wetland data was collected through on-site field work, aerial photographs, topographic maps, National Wetland Inventory wetland maps, and Natural Resources Conservation Service soil surveys.

Pursuant to EO 11990, *Protection of Wetlands*, Section 404 of the CWA, and Section 10 of the Rivers and Harbors Act of 1899, an investigation was conducted to identify potential jurisdictional waters of the U.S. Wetlands in areas proposed to be impacted by the proposed action were delineated in May 2011. Proposed impact areas included excavation needed for construction, access roads (approximately 50 feet on either side of the existing access roads), and areas previously disturbed by past mining or gas line activities. Additional wetland delineation was conducted in 2014 based on the proposed conceptual layout. The 2011 and 2014 wetland delineations included jurisdictional waters of the U.S. and isolated wetlands that may be exempt from USACE jurisdiction but may be protected by the KDEP. These studies supplant the usage of the National Wetland Inventory (NWI) Wetland Mapper because it is believed they are significantly more accurate; however, NWI data was used for areas not delineated during fieldwork.

The delineations identified approximately 2.84 acres (1.15 hectares) of wetlands within the proposed project area on the Payne Gap site. The majority of the wetlands are located immediately adjacent to an existing or historic road, which has impacted water movement in the area. The NWI does not depict any wetlands within or outside of the proposed project area. In addition, several intermittent, perennial, and ephemeral streams were delineated on site (TEC, Inc. 2011b; Cardno 2014c). Hydrology supporting the wetlands is a result of both groundwater and surface water, runoff, and direct precipitation. Dominant vegetation within the wetlands identified at the Payne Gap site consists of *Eleocharis obtusa*, common rush (*Juncus effuses*), broadleaf cattail (*Typha latifolia*), and sallow sedge (*Carex lurida*). **Figure 4-4** depicts the wetlands and streams delineated within the Payne Gap site and **Table 4-16** lists the acreages of wetlands by type and the linear feet of jurisdictional streams.

Table 4-16. Wetland and Streams Delineated at Payne Gap		
Feature Type	Payne Gap Site	
	<i>Acres/Hectares</i>	<i>Linear Feet</i>
Wetlands		
Palustrine Emergent	0.9/0.4	N/A
Palustrine Scrub-Shrub	1.2/0.5	N/A
Palustrine Forested	0.8/0.3	N/A
Streams		
Jurisdictional Stream	N/A	13,317
Non-Jurisdictional Stream	N/A	-
Total	2.9/1.2	13,317

Note: N/A = Not Applicable.

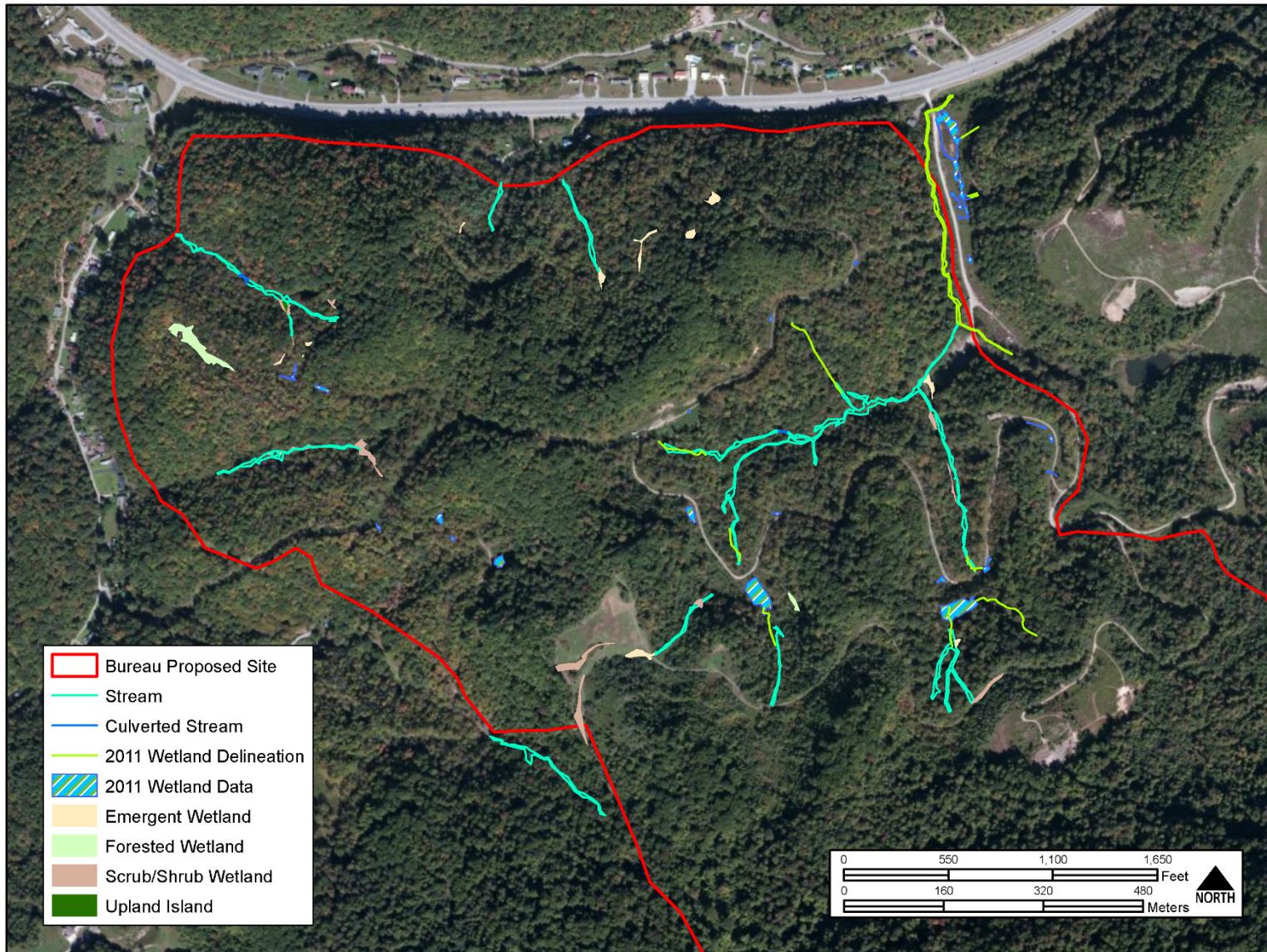


Figure 4-4. Payne Gap Wetlands and Streams

4.10.1.3 Groundwater

The Payne Gap site has two domestic single household drinking water wells located on the northern portion of the site. One well is at an elevation of 1,500 feet with water found at 60 feet below the surface. The second well is located at an elevation of 1,480 feet with water found at an elevation of 40 feet below the surface (KGS 2013). Groundwater flow tends to follow the sloped topography and is assumed to flow to the north, east, and west towards the North Fork Kentucky River, Cook Hollow, and Laurel Fork, respectively. Variations in groundwater conditions are expected based on location and elevation across the site, seasonal conditions, and weather patterns. The Payne Gap site is underlain by the Breathitt Group, which is composed of the Pikeville Formation and the Hyden Formation. The Breathitt Group yields more than 500 gallons per day in more than three-quarters of the wells drilled in valley bottoms, more than 500 gallons per day in about three-quarters of the wells on hillsides, and more than 100 gallons per day to nearly all wells on ridges within Letcher County (KGS 2013). There are no sole source aquifers underlying the site (USEPA 2013b).

The quality of the groundwater in Letcher County ranges from moderately hard in most of the county to moderately soft south of Pine Mountain. Naturally occurring contaminants present in the groundwater consist of sulfate, salt (sodium chloride), iron, and manganese (KGS 2013).

According to the Kentucky Division of Water, Groundwater Branch, Letcher County has areas of moderate and high sensitivity to groundwater pollution. The hydrogeologic sensitivity reflects the ease and speed with which a contaminant can move into and within a groundwater system. The hydrogeologic sensitivity of Letcher County has been assigned a value of three out of five, with five being the most susceptible to groundwater pollution and one being the least susceptible. The region is given a three due to subcutaneous drain and enlarged fractures influence groundwater recharge, fissure networks influence flow, and bidirectional dispersal patterns influence overall dispersion (KDEP 1994).

4.10.1.4 Floodplains

The Payne Gap site is depicted on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map Panel 21133C00140C. The map indicates the Payne Gap site is not located in a 100-year floodplain (FEMA 2008).

4.10.2 Environmental Consequences

4.10.2.1 Surface Water

It is not anticipated that water quality of nearby streams and wetlands would be adversely impacted by on site construction. BMPs would be implemented based on an approved erosion and sediment control plan, which would minimize sediment and pollutants from the construction site being carried into nearby water courses.

4.10.2.2 Wetlands

Implementation of Alternative 1 at the Payne Gap site would result in approximately 10,512 linear feet of stream impacts, 0.43 acres (0.17 hectares) of impacts to palustrine emergent wetlands, 0.76 acres (0.31 hectares) of impacts to palustrine forested wetlands, and 1.2 acres (0.49 hectares) of impacts to palustrine scrub-shrub wetlands. These impacts would be to the streams and wetlands delineated in 2011 and 2014 (refer to **Table 4-16**), and would result primarily from the excavation and grading activities that would be required to prepare the site for the development of the USP, FPC, ancillary buildings, and roads.

4.10.2.3 Groundwater

The Bureau would prepare and implement a groundwater protection plan in accordance with Kentucky regulations (401 KAR 5:037) to protect groundwater quality during construction and operation of the federal correctional facility under Alternative 1. The site-specific groundwater protection plan would describe the activities that have the potential to pollute groundwater and include the measures and practices that will be implemented during construction and operation of the facility. Groundwater at the Payne Gap site would not be used for any purpose at the USP or FPC; therefore, there would be no human health impacts associated with groundwater use, nor would there be direct or indirect impacts to groundwater quantity. Therefore, construction and operation of the USP and FPC under Alternative 1 would have no significant impacts related to groundwater.

4.10.2.4 Floodplains

The Payne Gap site is not located within a 100-year floodplain; therefore, no impacts to floodplains would occur under Alternative 1.

4.10.3 No Action Alternative

Under the No Action Alternative, the Payne Gap site would not be developed and no impacts to surface waters or wetlands would occur.

4.10.4 Mitigation

The Bureau met with the USACE on May 19, 2015 to discuss mitigation related to wetland and stream impacts. Since the Payne Gap site is not the preferred alternative no mitigation would be warranted for the site at this time.

4.11 BIOLOGICAL RESOURCES

4.11.1 Affected Environment

4.11.1.1 Vegetation

The Payne Gap site is dominated by mature hardwood second growth forest with herbaceous and scrub shrub vegetation in areas previously disturbed by historic strip mining activities and along the shoulders of the site access roads. Site observations indicate upland vegetation on the Payne Gap site includes American beech (*Fagus grandifolia*), tuliptree (*Liriodendron tulipifera*), northern red oak (*Quercus rubra*), sourwood (*Oxydendrum arboreum*), American elm (*Ulmus americana*), Allegheny blackberry (*Rubus allegheniensis*), autumn olive (*Elaeagnus umbellata*), white clover (*Trifolium repens*), sericea lespedeza (*Lespedeza cuneata*), multiflora rose (*Rosa multiflora*), Kentucky bluegrass (*Poa pratensis*), and summer grape (*Vitis aestivalis*). Wetland vegetation includes American sycamore (*Platanus occidentalis*), black willow (*Salix nigra*), green ash (*Fraxinus pennsylvanica*), jewelweed (*Impatiens capensis*), common rush, broadleaf cattail, fowl managrass (*Glyceria striata*), sallow sedge, and woolgrass (*Scirpus cyperinus*).

4.11.1.2 Wildlife

Non-avian species likely to be found on the Payne Gap site include coyote (*Canis latrans*), Virginia opossum (*Dipelphis virginiana*), American black bear (*Ursus americanus*), eastern gray squirrel (*Sciurus carolinensis*), southern flying squirrel (*Glaucomys volans*), eastern spotted skunk (*Spilogale putorius*), white tailed deer (*Odocoileus virginianus*), green frog (*Rana clamitans melanota*), American toad (*Bufo americanus*), black rat snake (*Elaphe obsoleta obsoleta*), copperhead (*Agkistrodon contortrix*), eastern

hognose snake (*Heterodon platirhinos*), and fence lizard (*Sceloporus undulates*) (Kentucky Department of Fish and Wildlife Resources 2013). A herd of eastern elk (*Cervus elaphus*) was observed on the Payne Gap site during a site visit.

The MBTA is the primary legislation established to conserve migratory birds. The act prohibits taking, killing, or possessing migratory birds unless permitted by regulation. Representative migratory bird species potentially occurring in Letcher County and within the project area include tufted titmouse (*Baeolophus bicolor*), red-tailed hawk (*Buteo jamaicensis*), bald eagle (*Haliaeetus leucocephalus*), black-billed cuckoo (*Coccyzus erythrophthalmus*), blue-winged warbler (*Vermivora pinus*), cerulean warbler (*Dendroica cerulea*), Kentucky warbler (*Oporornis formosus*), prairie warbler (*Dendroica discolor*), Swainson's warbler (*Limnothlypis swainsonii*), worm eating warbler (*Helmintheros vermivorum*), fox sparrow (*Passerella iliaca*), wood thrush (*Hylocichia mustelina*), Louisiana waterthrush (*Parkesia motacilla*), least bittern (*Ixobrychus exilis*), red-winged blackbird (*Agelaius phoeniceus*), rusty blackbird (*Euphagus carolinus*), willow flycatcher (*Empidonax traillii*), loggerhead shrike (*Lanius ludovicianus*), pied-billed grebe (*Podilymbus podiceps*), wild turkey (*Meleagris gallopavo*), and short-eared owl (*Asio flammeus*) (USFWS 2015a).

4.11.1.3 Threatened and Endangered Species

Due to the number of state-listed species listed by Kentucky as potentially occurring in Letcher County, the following section focuses on federally listed species. A full list of listed species and their status is included in **Table 4-17**.

Table 4-17. State and Federal Report of Endangered, Threatened, and Special Concern Plants, and Animals of Letcher County, Kentucky

Scientific Name	Common Name	Status (State/Federal)
Liverworts		
<i>Plagiochila caduciloba</i>	Gorge Leafy Liverwort	E/N
Mosses		
<i>Anomodon rugelii</i>	None	T/N
<i>Brachythecium populeum</i>	Matted Feather Moss	E/N
<i>Cirriphyllum piliferum</i>	None	T/N
<i>Dicranodontium asperulum</i>	None	E/N
<i>Entodon brevisetus</i>	None	E/N
<i>Neckera pennata</i>	None	T/N
<i>Oncophorus raui</i>	None	E/N
<i>Polytrichum pallidisetum</i>	A Hair Cap Moss	T/N
<i>Polytrichum strictum</i>	None	E/N
<i>Sphagnum quinquefarium</i>	Five-ranked Bogmoss	E/N
Vascular Plants		
<i>Adlumia fungosa</i>	Allegheny-vine	H/N
<i>Angelica triquinata</i>	Filmy Angelica	E/N
<i>Baptisia tinctoria</i>	Yellow Wild Indigo	T/N
<i>Botrychium matricariifolium</i>	Matricary Grape-fern	E/N
<i>Boykinia aconitifolia</i>	Brook Saxifrage	E/N
<i>Carex aestivalis</i>	Summer Sedge	E/N
<i>Carex appalachica</i>	Appalachian Sedge	T/N
<i>Castanea pumila</i>	Allegheny Chinkapin	T/N
<i>Circaeae alpine</i>	Small Enchanter's Nightshade	S/N
<i>Corydalis sempervirens</i>	Rock Harlequin	S/N

Table 4-17. State and Federal Report of Endangered, Threatened, and Special Concern Plants, and Animals of Letcher County, Kentucky

Scientific Name	Common Name	Status (State/Federal)
<i>Cymophyllum fraserianus</i>	Fraser's Sedge	E/N
<i>Cypripedium parviflorum</i>	Small Yellow Lady's-slipper	T/N
<i>Eupatorium steelei</i>	Steele's Joe-pye-weed	T/N
<i>Gentiana decora</i>	Showy Gentian	S/N
<i>Hexastylis contracta</i>	Southern Heartleaf	E/SOMC
<i>Houstonia serpyllifolia</i>	Michaux's Bluets	E/N
<i>Hydrophyllum virginianum</i>	Eastern Waterleaf	T/N
<i>Juglans cinerea</i>	White Walnut	T/SOMC
<i>Leucothoe recurve</i>	Red-twig Doghobble	E/N
<i>Lilium superbum</i>	Turk's Cap Lily	T/N
<i>Listera smallii</i>	Kidney-leaf Twayblade	T/N
<i>Monotropsis odorata</i>	Sweet Pinesap	T/SOMC
<i>Oenothera oakesiana</i>	Evening Primrose	H/N
<i>Oenothera perennis</i>	Small Sundrops	E/N
<i>Orontium aquaticum</i>	Golden Club	T/N
<i>Pogonia ophioglossoides</i>	Rose Pogonia	E/N
<i>Prosartes maculata</i>	Nodding Mandarin	S/N
<i>Sanguisorba Canadensis</i>	Canada Burnet	E/N
<i>Saxifraga michauxii</i>	Michaux's Saxifrage	T/N
<i>Saxifraga micranthidifolia</i>	Lettuce-leaf Saxifrage	E/N
<i>Solidago curtisii</i>	Curtis' Goldenrod	S/N
<i>Trillium undulatum</i>	Painted Trillium	T/N
Terrestrial Snails		
<i>Glyphaalinia rhoadsi</i>	Sculpted Glyph	T/N
<i>Neohelix dentifera</i>	Big-tooth Whitelip	T/N
<i>Patera panselenus</i>	Virginia Bladetooth	S/N
Crustaceans		
<i>Cambarus bunting</i>	Longclaw Crayfish	S/N
<i>Cambarus parvoculus</i>	Mountain Midget Crayfish	T/N
Insects		
<i>Amphiagrion saucium</i>	Eastern Red Damsel	E/N
<i>Calephelis borealis</i>	Northern Metalmark T	T/N
<i>Erora laeta</i>	Early Hairstreak	T/N
<i>Litobrancha recurvata</i>	A Burrowing Mayfly	S/N
<i>Papaipema speciosissima</i>	Osmunda Borer Moth	E/N
<i>Phyciodes batesii</i>	Tawny Crescent	H/SOMC
<i>Stylurus notatus</i>	Elusive Clubtail	E/SOMC
<i>Stylurus scudderi</i>	Zebra Clubtail	E/N
Fishes		
<i>Chrosomus cumberlandensis</i>	Blackside Dace	T/LT
<i>Etheostoma sagitta spilotum</i>	Kentucky Arrow Darter	S/PT
Amphibians		
<i>Cryptobranchus a. alleganiensis</i>	Eastern Hellbender	E/SOMC
<i>Plethodon wehrlei</i>	Wehrle's Salamander	E/N
Birds		
<i>Accipiter striatus</i>	Sharp-shinned Hawk	S/N
<i>Corvus corax</i>	Common Raven	T/N
<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak	S/N
<i>Tyto alba</i>	Barn Owl	S/N
<i>Vermivora chrysoptera</i>	Golden-winged Warbler	T/SOMC

Table 4-17. State and Federal Report of Endangered, Threatened, and Special Concern Plants, and Animals of Letcher County, Kentucky

Scientific Name	Common Name	Status (State/Federal)
Mammals		
<i>Clethrionomys gapperi maurus</i>	Kentucky Red-backed Vole	S/SOMC
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	S/SOMC
<i>Mustela nivalis</i>	Least Weasel	S/N
<i>Myotis grisescens</i>	Gray Bat	T/E
<i>Myotis leibii</i>	Eastern Small-footed Myotis	T/SOMC
<i>Myotis septentrionalis</i>	Northern Long-Eared Bat	E/T
<i>Myotis sodalis</i>	Indiana Bat	E/E
<i>Sorex cinereus</i>	Cinereus Shrew	S/N
<i>Sorex dispar blitchi</i>	Long-tailed Shrew	E/N
<i>Spilogale putorius</i>	Eastern Spotted Skunk	S/N
<i>Ursus americanus</i>	American Black Bear	S/N

Notes: E = Endangered, H = Historical, LT = Listed as Threatened, N = None, PT = Proposed Threatened, S = Special Concern, SOMC = Species of Management Concern, T = Threatened.

Sources: Kentucky State Nature Preserves Commission 2014; USFWS 2014, 2015c, d.

Based on coordination with the USFWS, four federally listed species have the potential to occur within the Payne Gap site: gray bat, Indiana bat, northern long-eared bat, and Kentucky arrow darter (USFWS 2014).

The gray bat (*Myotis grisescens*) is federally listed as endangered and listed by Kentucky as threatened. The gray bat roosts in caves throughout the year although suitable caves are rare. For winter hibernacula the bats require vertical caves with domed halls. The winter caves must also have a temperature of between 6 and 11 degrees Celsius. Forested areas along the banks of streams and lakes provide important protection for adults and young. Summer caves are always within 1 kilometer (0.62 mile) of a river or reservoir where the bats forage. Forests provide important feeding areas for young bats, which will not forage in areas where the forests have been cleared (Natureserve 2013a).

The Indiana bat (*Myotis sodalis*) is federally and state-listed as endangered. The Indiana bat hibernates in caves; however, maternity sites are generally behind loose bark of dead or dying trees or in tree cavities. They forage in riparian areas, upland forests, ponds, and fields, but forested landscapes are the most important habitat. They typically hibernate in the coldest area of a cave to ensure a low enough metabolic rate in order to conserve fat reserves throughout the winter; however, they will move away from areas that dip below freezing. Known roost tree species include elm, oak, beech, hickory, maple, ash, sassafras, birch, sycamore, locust, aspen, cottonwood, pine, and hemlock with a preference for trees with exfoliating bark (Natureserve 2013b).

The northern long-eared bat (*Myotis septentrionalis*) was listed as threatened under the ESA in April 2015 and is listed by Kentucky as endangered (Kentucky State Nature Preserves Commission 2014; USFWS 2015d). The northern long-eared bat hibernates in the small cracks and crevices of caves and mines that have large passages and relatively constant, cool temperatures with high humidity and no air currents. During the summer they roost singly or in colonies underneath bark or in cavities, crevices, or hollows of both live and dead trees within forests, woodlots with dense or loose aggregates of trees, riparian forests, and other wooded corridors. Males or non-reproductive females may also roost in caves or mines. In addition, northern long-eared bats have been observed roosting in structures such as barns and bridges.

They are not considered to be a long-distance migrant, as they typically migrate 35–55 miles between their winter hibernacula and summer habitat (USFWS 2015b).

A Phase I bat survey conducted in December 2014 confirmed the presence of both winter and summer habitat at the Payne Gap site (Copperhead Environmental Consulting 2015). In addition, one mine opening contained a torpid Indiana bat at its entrance. The USFWS concurred with the findings of the Phase I survey and indicated additional studies at the Payne Gap site would be required if this site were moved forward for development (Appendix A, *Agency Coordination*).

The Kentucky arrow darter was proposed for listing as a threatened species under the ESA in September 2015 (USFWS 2015c). The Kentucky arrow darter is known to exist in the upper Kentucky River basin. Habitat for the species consists of pools and transitional areas between riffles and pools in moderate to high gradient streams (USFWS 2015c). The streams within the Payne Gap site are primarily small channels that do not contain riffle and pool complexes.

There is no federally designated critical habitat on the Payne Gap site (USFWS 2013).

4.11.2 Environmental Consequences

4.11.2.1 Vegetation

Direct impacts to vegetation would occur under Alternative 1 as approximately 218 acres (88 hectares) of forested area would be cleared on the Payne Gap site for excavation and grading activities required to prepare the site for development.

4.11.2.2 Wildlife

Wildlife species found on the Payne Gap site would likely be displaced during construction activities due to the loss of habitat and increases in noise. However, approximately 535 acres (217 hectares) of the site would remain undisturbed and continue to provide habitat, including breeding and foraging areas, for wildlife species found on-site. Additionally, the site is surrounded by similar habitat that could accommodate species that are displaced by construction activities. Based on the available habitat that would remain on site and habitat adjacent to the site (Jefferson National Forest), it is anticipated that these impacts would not adversely affect wildlife species that are currently present on-site.

Use of the non-lethal/lethal fence has the potential to result in adverse impacts to small animals and avian species, should they pass through the outer fences and into the area of the non-lethal/lethal fence.

4.11.2.3 Threatened and Endangered Species

Implementation of the proposed action at the Payne Gap site has the potential to impact the federally listed Indiana bat, gray bat, and northern long-eared bat. Approximately 218 acres (88 hectares) of summer roosting habitat would be impacted under Alternative 1. Additionally, based on the presence of mine openings and an Indiana bat, the USFWS requested additional studies be conducted at the Payne Gap site to further assess impacts if the proposed action were to be implemented at the site. These studies would include conducting spring or fall portal surveys on all suitable mine openings that may be either directly or indirectly impacted by the proposed action. Based on the Phase I survey and coordination with the USFWS, the Bureau determined Alternative 1 may affect, is likely to adversely affect the Indiana bat, gray bat, and northern long-eared bat and both their summer roosting habitat and winter hibernaculum. Adverse

effects to these bat species from nighttime light pollution and glare may also occur. Indirect impacts may come from the noise from the proposed outdoor firing range.

It is not anticipated that the Kentucky arrow darter would be impacted by implementation of the proposed action at the Payne Gap site. The streams within the project site are small channels and do not contain riffle pool complexes. Additionally, conductivity measurements were taken within streams on the project site in June 2015. Conductivity measurements ranged from 562 microseconds (μS) to 1,970 μS . Studies have demonstrated that Kentucky arrow darters are not likely to be present when conductivity levels exceed approximately 250 μS (USFWS 2010). Therefore, no significant impacts to Kentucky arrow darter are anticipated under Alternative 1.

4.11.3 No Action Alternative

Under the No Action Alternative, the Payne Gap site would not be developed and there would be no impacts to vegetation, wildlife, or threatened and endangered species.

4.11.4 Mitigation

Mitigation measures for construction impacts to vegetation and wildlife would include minimizing disturbance of existing vegetation to the greatest extent possible. An open area with a direct line of site is required for the areas surrounding the USP and FPC; however, upon completion of construction, disturbed areas would be re-vegetated with native, non-invasive plants to the maximum extent possible while maintaining the Bureau's site requirements.

The Bureau met with the USFWS on May 20, 2015 to discuss the Payne Gap site and potential additional studies and mitigation. If the site were to be developed, additional studies of winter hibernaculum would be required to further assess impacts and potential mitigation. The USFWS currently has a Conservation Memorandum of Agreement (CMOA) for impacts to summer habitat of 100 acres (40 hectares) or less. Impacts to summer habitat under Alternative 1, which would be greater than 100 acres, would not be covered under the CMOA; therefore, formal Section 7 consultation with the USFWS would be required for development of the Payne Gap site. Additional studies of summer and winter habitat and the preparation of a biological assessment addressing potential impacts to both summer roosting habitat and winter hibernacula would also be required. The USFWS would then issue a biological opinion on the findings of the biological assessment. Based on discussions with the USFWS, because Alternative 1 is not the preferred alternative and development of the Payne Gap site is not anticipated, no additional studies or coordination are required at this time (Appendix A, *Agency Coordination*). Should this change in the future, the Bureau would be required to notify the USFWS, conduct any required studies, and initiate formal Section 7 consultation, if necessary, prior to any development of the site.

The Bureau has conducted prior impact assessments for the installation of non-lethal/lethal fences, especially for potential impacts to avian and small mammal species (Bureau 2009). These prior assessments have found less than significant adverse impacts; consequently, less than significant impacts are anticipated with the non-lethal/lethal fence to be installed as part of this proposed action. However, following activation of the non-lethal/lethal fence, the Bureau would monitor the fence line to determine if wildlife, particularly avian species, is being adversely affected. The Bureau would collect data regarding these occurrences including identification of species and photographs. The data would be used to document and analyze emerging trends. If adverse effects were identified, the Bureau would contact the

USFWS and appropriate state wildlife agencies to determine if changes to the operation of the fence are warranted.

4.12 HAZARDOUS MATERIALS AND WASTE

4.12.1 Affected Environment

4.12.1.1 Hazardous Materials

The Payne Gap site is located in a relatively undeveloped area. No hazardous materials are known to be in storage or in use in this area. According to the USEPA “Cleanups In My Community” mapping tool, there are no Brownfield, Superfund, or Resource Conservation and Recovery Act (RCRA) Corrective Action sites in the vicinity of the Payne Gap site. No sites in the town of Payne Gap were listed in the USEPA’s Toxic Substances Control Act (TSCA), Toxics Release Inventory (TRI), or RCRA databases. No hazardous materials or evidence of their presence (i.e., stressed vegetation, stained soils, drums) on the site were observed during site visits conducted by Cardno in 2011, 2013, and 2014.

A Phase I Environmental Site Assessment was performed on the Payne Gap site in July 2015. The Environmental Site Assessment was conducted in accordance with the American Society for Materials and Testing International Designation: E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM E1527-13). The goal of the assessment was to identify Recognized Environmental Conditions (RECs) on the Payne Gap site. An REC is defined in ASTM E1527-13 as “the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment.” An REC includes hazardous substances or petroleum products even under conditions in compliance with laws. *De minimis* conditions are not RECs, generally do not present a threat to human health or the environment, and generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Structures on the Payne Gap site were also assessed for the potential presence of asbestos-containing material, lead-based paint, and radon, although no samples were collected during the Phase I Environmental Site Assessment.

As part of the Phase I Environmental Site Assessment, federal, state, and local databases were searched to meet, at a minimum, the government records search requirements of ASTM E1527-13. Only one of the numerous databases searched, the KY SPILLS database, contained information relevant to the Payne Gap site. The KY SPILLS database is a listing of spill and/or release related incidents. One incident, recorded in 2006, documents the reporting of fugitive emissions of dust from coal truck traffic in an area off of U.S. Route 119 halfway between Jenkins and Whitesburg in Bill Lewis Hollow. Based on the nature and location of the reported release, approximately 2 miles the east of the Payne Gap site, it is not considered to pose a threat of contaminating to the site.

Visual inspections of the site and the adjoining properties (to the extent adjoining properties were accessible) were conducted to identify evidence of potential environmental contamination, such as:

- stained surface soils or distressed vegetation;
- disturbed surface soils or reclaimed areas;
- discarded containers, residues, and pools of liquid;
- electrical equipment such as transformers and capacitors;

- aboveground storage tanks (ASTs), underground storage tanks (USTs), piping, sumps, or other types of impoundment structures;
- abandoned structures and associated utilities; and
- drainage structures and direction of stormwater runoff on the subject parcels and adjacent areas.

No RECs or hazardous materials were observed on the site. Appendix G contains the Phase I Environmental Site Assessment for the Payne Gap site.

4.12.1.2 Hazardous Wastes

No hazardous wastes are known to be stored on the Payne Gap site or generated in this area. According to the USEPA “Cleanups In My Community” mapping tool, there are no Brownfield, Superfund, or RCRA Corrective Action sites in the vicinity of the Payne Gap site. No sites in the town of Payne Gap were listed in the USEPA’s TSCA, TRI, or RCRA databases. No hazardous wastes or evidence of their presence (i.e., stressed vegetation, stained soils, drums, batteries) on the site and no evidence of acid mine drainage was observed during site visits conducted by Cardno in 2011, 2013, and 2014. No slurry ponds or coal mine waste facilities are located on or near the Payne Gap site (USEPA 2015a, USEPA 2015b, and Sierra Club 2015).

The Phase I Environmental Site Assessment database search did not identify any hazardous waste sites or generators at or near the Payne Gap site. In addition, no hazardous wastes were observed on the site during the site inspections conducted in July 2015.

Coal mining occurs in Letcher County; however, no active mining sites are located in the vicinity of the proposed Payne Gap site. Investigations using the Coal Impoundment Location and Information System (National Technology Transfer Center at Wheeling Jesuit University 2009) indicate that there are no active coal mines, coal processing facilities, or waste disposal sites on the Payne Gap site or within a 1-mile radius.

Maps of active mines in Kentucky prepared by the Kentucky Department of Energy Development and Independence and the Kentucky Geological Survey were reviewed (KGS 2015) and cross referenced with maps prepared by the Kentucky Mine Mapping Information System to determine their current status. No currently active mines were found within a 1-mile radius of the proposed site. Therefore, coal mining in the area is not adversely affecting the environment of the site.

4.12.1.3 Toxic Substances

During site inspections, remnants of a 75 foot by 35 foot warehouse type structure were observed. The structure was of concrete block construction with a concrete slab-on-grade floor and steel roof trusses. Based on review of historic aerial photos, the structure appears to have been constructed in the late 1990s. Therefore, it would not contain hazardous building materials, such as asbestos-containing material or lead-based paint. No toxic substances were observed on the site.

Radon is a naturally occurring, colorless, odorless, radioactive gas produced by the decay of uranium in rock and soil. Radon is a known carcinogen, responsible for increasing the risk of lung cancer when inhaled. Electrically charged radon atoms can attach to indoor air dust particles. Subsequently these dust particles may be inhaled and adhere to the lining of the lungs. The deposited atoms decay by emitting radiation that has the potential to cause cellular damage. Typically outside air contains very low levels of radon (USEPA 2015c), but tends to accumulate in enclosed indoor spaces. When present, radon gas would

typically concentrate in relatively airtight buildings with little outside air exchange. The USEPA classifies Letcher County as having a moderate potential for radon intrusion (Zone 2). Zone 2 counties have a predicted average indoor radon screening level between 2 and 4 picocuries per liter (pCi/L). The USEPA action level for radon requiring treatment is 4 pCi/L.

4.12.2 Environmental Consequences

4.12.2.1 Hazardous Materials

Construction activities would require the use of hazardous materials. The majority of the hazardous materials expected to be used are common to construction and include diesel fuel, gasoline, and propane to fuel the construction equipment; hydraulic fluids, oils, and lubricants; and batteries. The transport and use of hazardous materials would have the potential to result in accidental spills that could adversely impact soil and groundwater on and adjacent to the construction site or along transportation routes. Hazardous materials associated with construction activities would be delivered and stored in a manner that would prevent these materials from leaking, spilling, and potentially polluting soils or groundwater, and in accordance with applicable federal, state, and local environmental and public and occupational health and safety regulations. With the implementation of appropriate handling and management procedures, hazardous materials used during construction would have no significant impacts to the environment.

4.12.2.2 Hazardous Wastes

Hazardous waste would be generated during construction activities and would include but not be limited to empty containers, spent solvents, waste oil, spill cleanup materials (if used), and lead-acid batteries from construction equipment. Construction contractors would be responsible for safely removing these construction-generated wastes from the construction site and for arranging for recycling or disposal in accordance with applicable regulations. The total monthly generation of hazardous waste during construction is anticipated to be less than 100 kilograms during a calendar month. The construction contractor would be responsible for determining their regulatory status regarding hazardous waste generation during construction, and obtaining and maintaining compliance in accordance with federal and state laws. Hazardous wastes associated with construction activities would be handled and stored in a manner that would minimize human exposure to these materials and prevent these materials from polluting soils or groundwater, and in accordance with applicable federal, state, and local environmental and human health and safety regulations. Adherence to these policies, procedures, and regulations would minimize the potential impacts from exposure and accidental releases during construction. In the event of an accidental release, contaminated media would be treated on-site or would be promptly removed and disposed of in accordance with applicable federal and state regulations. With the implementation of appropriate handling and management procedures, hazardous wastes generated during construction would have no significant impacts to the environment.

Operation of the USP and FPC would require the use of small amounts of hazardous materials such as petroleum, oils, and lubricants for lawn maintenance equipment, pesticides, and paints. These materials would be acquired as needed and large volumes would not be stored on site. Those volumes that are stored on site would be stored, used, and disposed in accordance with applicable regulations and would have no significant impacts on the environment.

The outdoor firing range at the proposed USP and FPC would be used an average of once a month for small arms training and maintenance, and would include the use of lead bullets. The range would be

designed according to Bureau Technical Design Guidelines, which require incorporating safety baffles, berms, and backstops to contain bullets to a designated area. Impoundments, traps, and other structures would catch lead particles. The design of the firing range would also include stormwater systems to gather runoff and allow infiltration within the range bermed area. This aids in preventing contamination outside of the range itself. To ensure this feature continues to work, regular range maintenance would include adding more soil to the berm and ensuring it is seeded with grass. If there is cause, the berm soil would be sifted to remove the lead. The lead would then be recycled and the soil replaced on the range berm. Bureau institutions with an active firing range use the web-based software TRI-Me to report releases of lead to USEPA. Therefore, firing range operations would have no significant impacts to the environment.

4.12.2.3 Toxic Substances

Under Alternative 1, facilities intended for human occupancy would be designed to prevent occupant exposures to radon above the USEPA action level of 4 pCi/L. Therefore, there would not be adverse impacts associated with radon under Alternative 1.

4.12.3 No Action Alternative

Under the No Action Alternative, the Payne Gap site would not be developed and there would be no impacts associated with hazardous materials and waste.

4.12.4 Mitigation

Alternative 1 would have no significant impacts to hazardous materials and wastes; therefore, no mitigation is required.

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5.0 ALTERNATIVE 2 – ROXANA

5.1 LAND USE AND ZONING

5.1.1 Affected Environment

Land use associated with the proposed location of Alternative 2 primarily consists of forest and reclaimed land from previous surface mining. Other on-site land uses include an agricultural field, a residential area, oil and gas wells, and a small model airplane airstrip. Land use surrounding the site is also primarily forested, with small single-family residences in the area. There are also several state parks and nature preserves within the area. They include Bad Branch Falls State Nature Preserve, Kingdom Come State Park, Lilley Cornett Woods, and Pine Mountain Wildlife Management Area. Coal mining once occurred throughout the area, but currently there are five active coal mining operations located between 1 and 6 miles from the Roxana site (Kentucky Mine Mapping Information System 2008). There are no zoning ordinances or land use classifications identified for this area (DePriest 2013). Land use associated with the Roxana site is depicted in **Figure 5-1**.

5.1.2 Environmental Consequences

5.1.2.1 Construction

Changes to land use on the 700-acre (283-hectare) Roxana site would occur from construction of a USP and FPC. Approximately 118 acres (48 hectares) of the site would be converted from a primarily forested area to a government institution consisting of several facilities, parking lots, and roads. Additionally, the model airplane strip would be removed. The oil and gas wells would be plugged and abandoned; these impacts are further discussed in Section 5.8, *Infrastructure and Utilities*. A buffer area would remain around the USP and FPC, separating the federal correctional facility from the adjacent properties. The buffer area would be compatible with the adjacent land uses. Due to the lack of zoning ordinances and land use classifications, construction of the proposed USP and FPC would not result in incompatible land uses from a regulatory perspective.

5.1.2.2 Operations

There would be no impacts to adjacent land uses from operation of the USP and FPC, as the federal correctional facility would be separated from adjacent properties by a buffer area. The buffer area would be compatible with adjacent land uses.

5.1.3 No Action Alternative

The No Action Alternative would be the same as that described in Section 4.1.3.

5.1.4 Mitigation

Federal agencies are not subject to local/regional zoning or land use development regulations. However, the Bureau would take the following measures to help minimize potential adverse impacts to surrounding land uses:

- provide an open space and vegetative buffer between the USP and FPC to maintain visual compatibility with surrounding properties
- design and locate the facilities to reduce the visual presence of the facility from neighboring properties

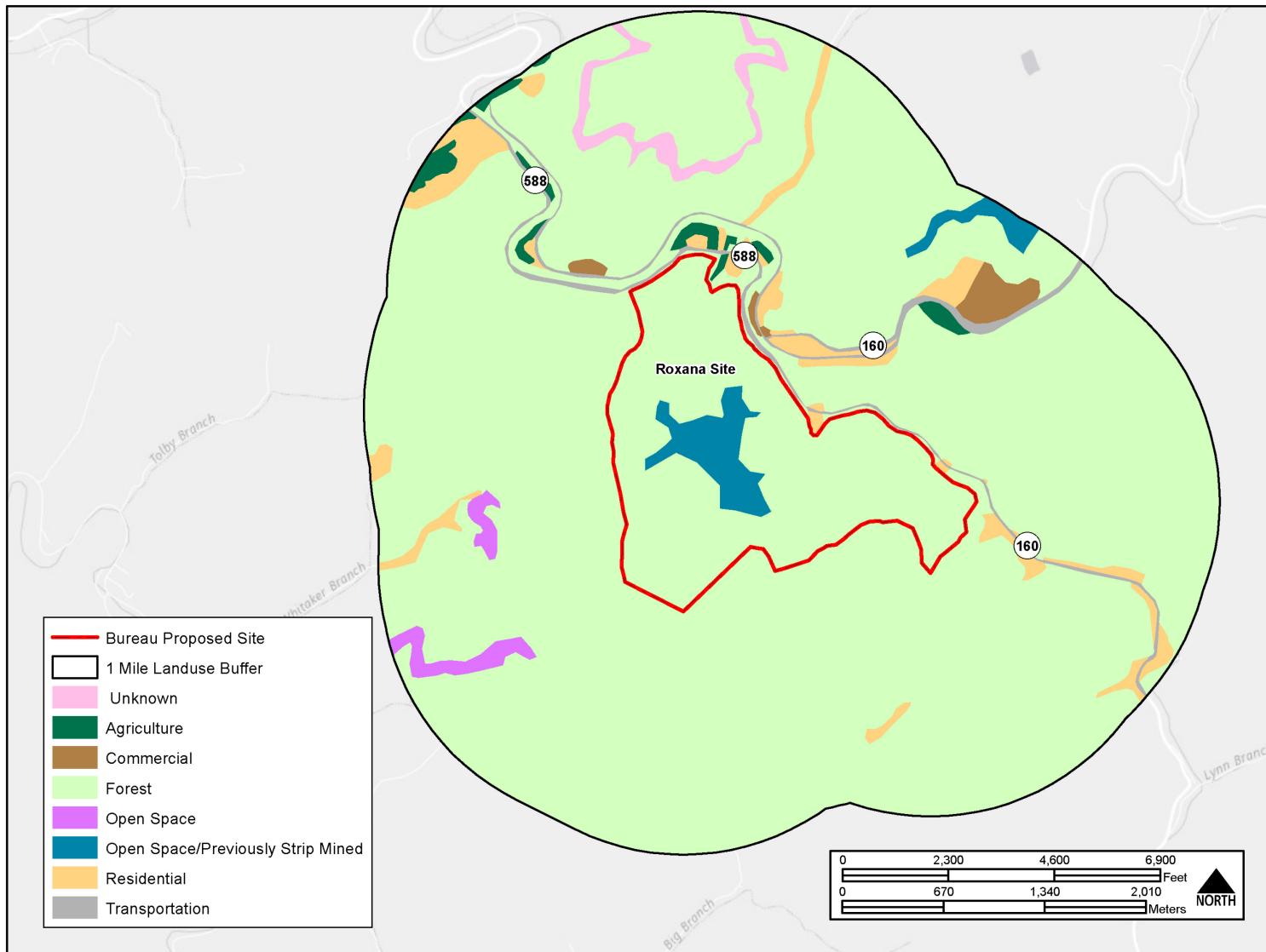


Figure 5-1. Roxana Land Use

5.2 TOPOGRAPHY, GEOLOGY, AND SOILS

5.2.1 Affected Environment

The topography at the Roxana site has been significantly impacted by mountaintop removal coal mining. A plateau resulting from surface mining has replaced a mountain ridge in the central portion of the site. This change has not been accounted for on USGS topographic maps; however, the highest point and lowest points of the site remain unchanged. The highest elevation is located in the southeastern portion of the site at an elevation of approximately 1,850 feet AMSL. The lowest elevation on site is approximately 1,035 feet AMSL, located in the northwestern portion of the site adjacent to the North Fork of the Kentucky River.

The Roxana site is underlain by the Breathitt Group, which comprises the Pikeville Formation and the Hyden Formation. The Roxana site is also underlain by the Four Corners Formation. The geology underlying the Roxana site is primarily the Hyden Formation (KGS 2013).

The three most common soils on the Roxana site are the Cloverlick-Kimper-Highsplint complex, (30 to 65 percent slopes), the Kaymine, Fairpoint and Fiveblock soils map unit (2 to 70 percent slopes), and the Shelocta-Highsplint (30 to 65 percent slopes). To a lesser degree the following soils are also on the site: Allegheny Loam (2 to 25 percent slopes), Dekalb-Gilpin-Rayne complex (25 to 65 percent slopes), Fiveblock and Kaymine soils (0 to 30 percent slopes), Gilpin-Shelocta complex (12 to 25 percent), Grigsby sandy loam (occasionally flooded), Grigsby-Urban land complex (0 to 6 percent slopes), Urban land-Udorthents complex (0 to 15 percent slopes), and Urban land-Udorthents-Grigsby complex (0 to 6 percent slopes) (NRCS 2013).

The Roxana site contains a small area of soils classified as farmland of statewide importance (NRCS 2013). The soil is Allegheny Loam and is located in the floodplain of the North Fork of the Kentucky River in the northernmost portion of the site. None of the soils associated with the Roxana site are listed as hydric by NRCS.

5.2.2 Environmental Consequences

5.2.2.1 Construction

Development of the site would require significant excavation and fill activities to create a level pad for construction of the facilities and access roads. A 2:1 fill slope and a 1:1 cut slope were used in the estimate of fill and excavation quantities adjacent to the pads and roads to transition to the original topography at the Roxana site. More detail on the earthwork calculations can be found in Appendix B, *Excavation and Grading Calculations*. As identified in **Table 2-2, Estimated Site Preparation Quantities for Alternative 2 – Roxana**, excavation activities (cut) would include 9,204,340 cubic yards (7,037,223 cubic meters) of spoil material and 953,246 cubic yards (728,809 cubic meters) of rock. The excavated soil and rock would be compacted to create a structural fill for the building pads and in the valleys. The amount of structural fill was estimated to be 9,402,582 cubic yards (7,188,790 cubic meters). All excavated materials would be used on-site for structural fill. The maximum cut (excavation) at Roxana would be approximately 20 meters and the maximum fill would be approximately 65 meters. Removal of bedrock would require blasting activities. Impacts resulting from the cut and fill activities would include loss of productive soil, erosion, and destabilization of slopes. As a result of the excavation and fill activities, the topography of the site would change at the maximum cut from 465 meters to 445 meters

MSL in the main building area and at the maximum fill from 370 meters to 445 meters MSL in the firing range area.

No construction would occur in the area of soils classified as farmland of statewide importance; therefore, farmland soils would not be impacted and no coordination with NRCS would be required.

5.2.2.2 Operations

No further impacts to topography, geology or soils are anticipated from the operation of the USP and FPC.

5.2.3 No Action Alternative

The No Action Alternative would be the same as that described in Section 4.2.3.

5.2.4 Mitigation

The Bureau would prepare a soil erosion and sediment control plan and submit it to the Kentucky Division of Water for approval prior to construction. The erosion and sediment control plan would outline the measures and BMPs to be used for controlling on-site erosion and sedimentation during construction. BMPs could include placement of silt fencing adjacent to surface waters and wetlands to prevent the introduction of sediment; the use of hay bales to minimize the spread of sediment off the construction site; stabilization of steep slopes; use of tree clearing plans; and stormwater control plans to manage stormwater runoff and keep it on-site during construction. Additionally, construction of the USP, FPC, and ancillary facilities could be phased to occur at different times, resulting in the minimization of disturbed soil by clearing only the area necessary for the current phase of construction. Re-vegetation of disturbed areas following the completion of construction would also occur to minimize the erosion of exposed soil.

5.3 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

5.3.1 Affected Environment

5.3.1.1 Population

The 2013 population of Letcher County was 24,025. Letcher County's population decreased by approximately 3 percent between 2000 and 2010 (**Table 5-1**). The City of Whitesburg grew by approximately 34 percent from 2000 to 2010 and the City of Jenkins population decreased by 3 percent during the same time period. The decrease in population is likely the result of people who leave the area for better education and employment opportunities (KRAADD 2013). This trend is anticipated to continue within the county with the population decreasing by an additional 7 percent by the year 2020.

Table 5-1. Study Area Population Trends, 2000–2010

Geographic Area	2000	2010	Percent Change 2000–2010	2020 Projected Population*	Projected Percent Change 2010–2020
Whitesburg, Kentucky	1,598	2,139	33.85	---	---
Jenkins, Kentucky	2,273	2,203	-3.08	---	---
Letcher County, Kentucky	25,275	24,519	-2.99	22,655	-6.88
Kentucky	4,041,769	4,339,357	7.36	4,699,880	8.3

Note: *2020 Projections only available for county and state.

Sources: U.S. Census Bureau 2000, U.S. Census Bureau 2010, Proximity One 2014.

5.3.1.2 Employment and Income

Letcher County's 2013 employed civilian labor force was 7,103, out of a total civilian labor force of 8,201. Employment by industry in Letcher County is depicted in **Table 5-2**. The industries that employ the greatest number of people in Letcher County include educational services, and health care and social assistance (33.4 percent); agriculture, forestry, fishing and hunting, and mining (13.0 percent); and retail trade (12.7 percent). In Kentucky, the largest industry employers are educational services, and health care and social assistance (24.5 percent); manufacturing (13.7 percent); and retail trade (11.8 percent) (U.S. Census Bureau 2014a).

Letcher County is part of the largest coal producing area in eastern Kentucky. While study area jobs in the coal mining industry have been declining, positions in the health care, retail, and the secondary wood industries have increased. However, these jobs typically pay less than coal mining jobs. The study area is part of a region characterized by high unemployment and poverty rates (KRADD 2013).

Table 5-2. Study Area Employment, 2013

Industry	Letcher County, Kentucky		Kentucky	
	Number Employed	Percent Employed	Number Employed	Percent Employed
Agriculture, forestry, fishing and hunting, and mining	922	13.0	52,348	2.8
Construction	442	6.2	111,646	6.0
Manufacturing	213	3.0	255,938	13.7
Wholesale Trade	209	2.9	49,171	2.6
Retail Trade	904	12.7	219,721	11.8
Transportation and warehousing, and utilities	360	5.1	112,005	6.0
Information	98	1.4	29,217	1.6
Finance and insurance, and real estate and rental/leasing	199	2.8	102,380	5.5
Professional, scientific, management, and administrative and waste management services	413	5.8	144,589	7.8
Educational services, health care and social assistance	2,369	33.4	456,293	24.5
Arts, entertainment, recreation, accommodation, and food services	468	6.6	159,679	8.6
Other services, except public administration	252	3.5	87,228	4.7
Public administration	254	3.6	85,390	4.6
Total	7,103		1,865,605	

Source: U.S. Census Bureau 2014a.

While unemployment rates in Kentucky have decreased from a peak of 10.3 percent in 2009 to 6.5 percent in 2014, the unemployment rate in Letcher County increased dramatically from 10.6 percent in 2009 to 17.3 percent in 2013 (**Table 5-3**). The preliminary 2014 unemployment rate for Letcher County has decreased to 11.5 percent. The comparable rate for the U.S. was 6.3 percent (KYLM 2014).

Unemployment rates in the study area are higher than the comparable rates for the state and the nation. Along with the “displaced worker,” the study area has a higher percentage of “discouraged” workers who no longer actively seek employment and are, therefore, not included in the official unemployment statistics. Therefore, the official unemployment rate in the study area is deceptively lower than actual unemployment (KRADD 2013).

Table 5-3. Study Area Percent Unemployment Rates

Jurisdiction	2007	2008	2009	2010	2011	2012	2013	2014 ^a
Letcher County, Kentucky	7.7	7.1	10.6	11.4	10.3	13.8	17.3	11.5
Kentucky	5.6	6.6	10.3	10.2	9.5	8.3	8.3	6.5

Notes: Unemployment rates are not seasonally adjusted. ^aAugust 2014, preliminary.

Source: KYLM 2014.

Total personal income includes net earnings by place of residence; dividends, interest, and rent received; and benefits paid by federal, state, and local governments and businesses. A larger portion of personal income in Letcher County comes from government and business benefits than for Kentucky and the U.S (U.S. Department of Commerce 2014).

Total personal income in Letcher County decreased by almost 2 percent from 2010 to 2012, while over the same period, personal income increased by approximately 10 percent in Kentucky (**Table 5-4**).

Between 2010 and 2012, per capita income increased in Letcher County by less than 1 percent while per capita income in Kentucky increased by 8 percent. The national per capita income was \$43,735 (U.S. Department of Commerce 2014).

Table 5-4. Study Area Personal and Per Capita Income

Jurisdiction	2010 Personal Income (000) ^a	2012 Personal Income (000) ^a	Percent Change 2010–2012	2010 Per Capita Income	2012 Per Capita Income	Percent Change 2010–2012
Letcher County, Kentucky	\$686,680	\$674,369	-1.8	\$27,948	\$28,155	0.7
Kentucky	\$143,210,961	\$157,043,042	9.7	\$32,947	\$35,643	8.2

Notes: Not adjusted for inflation.

Source: U.S. Department of Commerce 2014.

5.3.1.3 Housing

There were 11,519 housing units in Letcher County in 2013, with a total vacancy rate of approximately 19 percent (**Table 5-5**). The vacancy rate for owner-occupied units was 0.3 percent and the vacancy rate for rental units was 1.9 percent. The comparable vacancy rates in Kentucky were higher, at 12.4 percent, 2.1 percent, and 6.7 percent respectively (U.S. Census Bureau 2014b).

Table 5-5. Study Area Housing Units, 2013

Geographic Area	Housing Units	Vacant Housing Units	Percent Vacant	Homeowner Vacancy Rate	Rental Vacancy Rate
Letcher County, Kentucky	11,519	2,155	18.7	0.3	1.9
Kentucky	1,933,019	239,620	12.4	2.1	6.7

Source: U.S. Census Bureau 2014b.

5.3.1.4 Environmental Justice

For the purpose of this evaluation, minority refers to people who identified themselves in the census as Black or African American, Asian, Hawaiian or Pacific Islander, American Indian or Alaskan Native, other non-White races, or as being of Hispanic or Latino origin. Persons of Hispanic and Latino origin may be of any race (CEQ 1997). The CEQ identifies these groups as minority populations when either (1) the minority population of the affected area exceeds 50 percent or (2) the minority population percentage in the affected area is meaningfully greater than the minority population percentage in the general population or the geographic region of comparison (most often the state in which the affected area is part). The geographical unit for comparison in this analysis is Kentucky.

U.S. Census Bureau data on the racial and ethnic composition of the study area in 2013 are summarized in **Table 5-6**. Overall, the majority of the study area is white. Letcher County has a smaller percentage of minority and Hispanic populations than Kentucky.

Table 5-6. Study Area Percent Race and Ethnicity, 2013

Jurisdiction	White	Black/African American	American Indian/Alaska Native	Asian	Native Hawaiian/Other Pacific Islander	Hispanic or Latino Origin^a
Whitesburg, Kentucky	97.1	1.5	0.0	0.6	0.0	1.3
Jenkins, Kentucky	98.4	0.5	0.2	0.0	0.0	0.9
Letcher County, Kentucky	98.3	0.2	0.0	0.6	0.0	0.7
Kentucky	87.8	7.9	0.2	1.2	0.0	3.2

Notes: Data presented reflects most reported race and ethnicity categories; percentages may not add to 100 percent due to rounding. *Hispanic origin may be of any race.

Source: U.S. Census Bureau 2014c.

Table 5-7 presents data on low-income families and individuals in the study area. The percentages of low-income families and individuals in Letcher County with incomes below poverty level (based on family size and composition) are greater than for Kentucky. In the study area, the City of Jenkins has the highest percentages of families and individuals with incomes below the poverty level.

Table 5-7. Study Area Percent Below Poverty Level, 2013

Jurisdiction	Families Below Poverty Level	Individuals Below Poverty Level
Whitesburg, Kentucky	5.5	14.2
Jenkins, Kentucky	27.6	32.1
Letcher County, Kentucky	20.0	24.2
Kentucky	14.6	19.1

Source: U.S. Census Bureau 2014a.

5.3.1.5 Protection of Children

The percentage of children under the age of 18 is lower in Whitesburg, Jenkins, and Letcher County than for Kentucky (**Table 5-8**).

Table 5-8. Study Area Percent Under the Age of 18, 2013

Jurisdiction	<18
Whitesburg, Kentucky	16.4
Jenkins, Kentucky	20.8
Letcher County, Kentucky	22.3
Kentucky	23.3

Source: U.S. Census Bureau 2014c.

5.3.2 Environmental Consequences

5.3.2.1 Population

Approximately 300 new employees would be needed to operate the proposed USP and FPC. It is anticipated that some of these employees would be existing Bureau employees who would relocate to the area and the rest would be hired locally. Under a maximum case scenario, all 300 new personnel are assumed to move to the study area.

The Bureau personnel would likely be accompanied by their families or other household members. The U.S. Census Bureau has determined that the average household size for the U.S., which is assumed to be similar to the average household size of transfer employees, is 2.58 (U.S. Census Bureau 2010). Under this assumption, approximately 774 people would be added to the study area population. This would represent 3.2 percent of the Letcher County 2013 population. This gain would help to offset some of the

recent and projected population losses in Letcher County. Alternative 2 would result in a minor beneficial impact to the study area's short- and long-term population trends.

5.3.2.2 Employment and Income

The increase of 300 full-time positions would represent approximately 4 percent of the Letcher County 2013 civilian labor force. Study area personal income would also increase as a result of job growth. Some of the increased wage earnings would be paid to taxes, and some would be saved and invested, but most would be spent on consumer goods and services in the study area.

This spending would, in turn, "ripple" through the economy, generating additional indirect jobs and income and benefitting the study area economy. Given the rate of unemployment in the study area (11.5 percent), it would be expected that many of these indirect positions would be filled by unemployed local residents. In addition, inmates' family members would be expected to visit, boosting visitor spending in hotels/motels and restaurants in the study area. No population in-migration to the study area would be expected as a result of indirect job growth.

The increase in construction spending would also generate direct construction jobs and indirect jobs, typically in food services and retail trade. Additional construction workers may move into the study area in response to the direct construction jobs, but these workers would most likely leave the area for other opportunities when the construction project nears completion. Further, given the study area unemployment rate, it would be expected that most of the indirect positions would be filled by unemployed study area workers. While there may be some population in-migration to the study area as a result of construction spending, it would not be expected to significantly affect population trends. Alternative 2 would result in beneficial employment and income impacts in the study area.

While the purchase of land by the Bureau for Alternative 2 would reduce property tax revenues, additional taxes would accrue to federal, state, and local governments as a result of the increase in payrolls, and operational and construction spending. It is anticipated that, on balance, the fiscal/economic impacts would be beneficial and there would be no significant adverse fiscal/economic impacts.

5.3.2.3 Housing

Alternative 2 would result in an increase of 300 full-time positions in the study area. Under a conservative scenario, all these personnel would seek housing in Letcher County at the same time. This would represent about 2.6 percent of Letcher County's total housing units and approximately 14 percent of the vacant units. Some additional housing may be developed by the private market to support USP and FPC employees who choose to live in Letcher County. However, not all new personnel would live in Letcher County and the increase in personnel would occur over the construction period before the USP and FPC become operational, reducing any potential negative impacts to the study area's housing market.

5.3.2.4 Environmental Justice

Based on the assessment of socioeconomic and potential environmental impacts for the proposed Roxana facility, beneficial employment and income impacts, as well as minor beneficial impacts to population in the surrounding communities would be expected as a result of Alternative 2. There are no adverse environmental impacts that would have disproportionately high or adverse environmental effects on minority or low-income populations. Therefore, Alternative 2 would not result in significant adverse impacts to environmental justice communities.

5.3.2.5 Protection of Children

There are no adverse environmental impacts that would result in disproportionate health or safety risks to children. Therefore, Alternative 2 would not result in significant adverse impacts to the health or safety of children.

5.3.3 No Action Alternative

The No Action Alternative would be the same as that described in Section 4.3.3.

5.3.4 Mitigation

No adverse impacts to socioeconomics, environmental justice populations, or children would be expected; therefore, no mitigation would be warranted.

5.4 COMMUNITY FACILITIES AND SERVICES

5.4.1 Affected Environment

5.4.1.1 Police

Law enforcement servicing the area around and including the Roxana site includes the Whitesburg Police Department, Letcher County Sheriff, and Kentucky State Police. The Whitesburg Police Department is comprised of 6 police officers, 1 chief of police, 1 second in command, and 1 secretary. They are currently short staffed one police officer. The department has eight squad cars and provides 24-hour coverage (Whitesburg Police Department 2013).

The Letcher County Sheriff's office is comprised of 13 full-time employees including 10 deputies and 3 dispatchers. The office operates 10 squad cars and is headquartered in Whitesburg. The office provides 24-hour coverage, seven days a week (Letcher County Sheriff 2013).

The Kentucky State Police Post 13 operates out of Hazard, and covers five counties, including Letcher County. The Hazard Post currently has 39 state troopers, 18 dispatchers, 3 clerks, 1 custodian, 1 criminal analyst, and 1 arson specialist. They operate 39 squad cars, and have 8 to 10 spare squad cars available in the event one is needed (Kentucky State Police 2013).

5.4.1.2 Fire

Fire departments that provide emergency services for the Roxana area include Letcher County Fire and Rescue, Whitesburg Fire and Rescue, and the Kings Creek Volunteer Fire Department. The Letcher County Fire and Rescue provide fire response to the area of the Roxana site. Letcher County Fire and Rescue is comprised of 32 firefighters (20 paid and 12 volunteer). Fifteen of the personnel are EMTs. Letcher County Fire and Rescue has stations in Jeremiah, Blackey, and Hallie, and services the western portion of Letcher County. Fire rescue equipment includes five ambulances, two tanker trucks, and three engines (Letcher County Fire and Rescue 2013).

Whitesburg Fire and Rescue consists of 30 firefighters: 25 volunteer and 5 paid. Five of the firefighters are EMTs. The station has five engines and a boom truck with a snorkel. Whitesburg Fire and Rescue has mutual aid agreements with the rest of Letcher County and is able to assist with emergencies throughout the county if dispatched (Whitesburg Fire and Rescue 2013).

The Kings Creek Volunteer Fire Department is located on KY 60 approximately 1.5 miles from the Roxana site. The fire department has 23 volunteers, 1 pumper truck, and 2 large tanker trucks. The Kings

Creek Volunteer Fire Department has relationships with other local volunteer fire departments and through a local paging system, can request assistance from these departments (Kings Creek Volunteer Fire Department 2015).

5.4.1.3 Health Care

Appalachian Regional Healthcare (ARH) serves over 350,000 residents in eastern Kentucky and southern West Virginia. Their operations in Letcher County, Kentucky include the Whitesburg ARH Hospital, ARH Whitesburg Clinic, Jenkins ARH Family Care Center, Neon ARH Family Care Center, Whitesburg ARH Surgical Clinic, ARH Cardiology Associates-Whitesburg, and Whitesburg ARH Home Health Agency. Whitesburg ARH completed an \$11 million renovation project in 2011 that included a 15,000 square foot addition to the facility that houses surgical, obstetric, and newborn patients. Renovations to the existing space included a complete remodel of the third floor to include six Intensive Care Unit beds and 20 private patient rooms. Whitesburg ARH Hospital provides 24-hour emergency service for both adult and pediatric patients and has an on-site heliport for receiving and transferring patients. Whitesburg ARH is an acute care hospital that covers internal medicine, family practice, pediatrics, general surgery, advanced laparoscopic surgery, obstetrics and gynecology, cardiology, pulmonology, radiology and emergency services (ARH 2014).

Mountain Comprehensive Health Corporation is one of the largest rural health centers in Kentucky. Its Whitesburg facility is the largest clinic, and offers dental, family and internal medicine, pediatrics, cardiology, pulmonology, and obstetrics and gynecological services, as well as a rehabilitation program. Mountain Comprehensive Health Corporation also has a full service laboratory (Mountain Comprehensive Health Corporation 2015).

5.4.1.4 Schools

The schools in Letcher County are administered by the Letcher County School District. There are five elementary schools, three middle schools, and one high school. **Table 5-9** identifies the names of the schools, the grades they serve, the number of students enrolled for the 2014–2015 school year, and the actual capacity of each school.

Table 5-9. Letcher County Schools Enrollment and Capacity for 2014–2015

School	Grades	Number of Students	Capacity
Arlie Boggs Elementary	K-8	127	248
Cowan Elementary	K-8	423	440
Fleming Neon Middle School	6-8	202	352
Letcher County Elementary	K-5	372	418
Letcher County Middle School	6-8	158	225
Letcher County Central High School	9-12	929	1,033
West Whitesburg Elementary School	K-5	392	440
Whitesburg Middle School	6-8	170	225
Martha Jane Potter Elementary	K-5	438	425

Source: Wagoner 2014.

5.4.2 Environmental Consequences

5.4.2.1 Police

The vast majority of inmate incidents that arise at USPs, including those that could arise at the proposed USP at Roxana, would be addressed internally through the Bureau's disciplinary process. However,

should a law enforcement emergency arise at the proposed USP for which outside law enforcement assistance is needed, the Letcher County Sheriff and Kentucky State Police have advised that they would be able to provide such assistance if needed. Both these agencies, respectively, have stated that they would be willing to discuss development of an MOU with the Bureau to provide these services. Both of these law enforcement agencies also advised that the proposed facility would not result in impacts to their services or require the hiring of additional staff. A Whitesburg city official indicated that the Whitesburg Police Department could also assist if requested, although doing so might have some impact on its operations and might require additional equipment (refer to communication logs in Appendix A, *Agency Coordination*). Therefore, while there is potential for impacts to the Whitesburg Police Department if requested to respond to a law enforcement emergency at the proposed USP, given that other state and local law enforcement agencies would be available to respond, less than significant impacts to law enforcement resources are expected under Alternative 2.

5.4.2.2 Fire

The proposed USP and FPC would have designated Bureau staff and on-site fire-fighting equipment and resources capable of responding to and handling most fires or fire-related emergencies that might occur. However, to the extent that limited and infrequent response by outside fire or emergency resources would be needed, the local emergency service providers have indicated they would be able to provide assistance in the event of an emergency that was beyond the capabilities of Bureau staff. These providers have indicated interest in discussing the development of an MOU with the Bureau to provide these services. They have also indicated that providing such services, if requested, would not be expected to result in impacts to their services or require the hiring of additional staff (refer to communication logs Appendix A, *Agency Coordination*). Therefore, Alternative 2 would not have significant impacts to local fire and emergency services.

5.4.2.3 Health Care

Most health care needs or emergencies that would arise at the proposed USP and FPC would be handled by Bureau medical staff. However, health care facilities are located near the Roxana site and would be able to accommodate inmates at the proposed USP and FPC if needed. Discussions with ARH indicate they have staff familiar with accommodating inmates and the necessary security requirements that would need to be implemented to bring an inmate into an ARH facility. ARH indicated this would not be a problem and they would be able to accommodate the facility if an inmate would require care outside of the USP or FPC. ARH also indicated they would be willing to work with the Bureau to develop an MOU (Sparkman 2014). Therefore, there would be no adverse impact to health care services under Alternative 2.

5.4.2.4 Schools

Approximately 300 new employees would be needed to operate the proposed USP and FPC. It is anticipated that some of these employees would be existing Bureau employees that would relocate to the area. Under a maximum case scenario, it is assumed that Bureau employees relocating to operate the facility would reside within the immediate area (Whitesburg, Jenkins, or Letcher County). With the exception of Martha Jane Potter Elementary school, all the schools within Letcher County School District have sufficient capacity to accept new students.

5.4.3 No Action Alternative

The No Action Alternative would be the same as that described in Section 4.4.3.

5.4.4 Mitigation

With the exception of the potential for an adverse impact to the Whitesburg Police Department, no impacts to community facilities and services would occur; therefore, no mitigation would be warranted. With respect to the Whitesburg Police Department, the Bureau would discuss the development of an MOU with the chief of police and the Mayor of Whitesburg and determine the department's status and what steps may be taken to off-set those impacts.

5.5 TRANSPORTATION AND TRAFFIC

5.5.1 Affected Environment

The Roxana site is located approximately 7.5 miles west of Whitesburg, and would be constructed to the south of KY 588 and to the west of KY 160. Proximate to the proposed correctional facility, KY 588 is a two-lane roadway designated as a Class II highway. Class II highways have lower speed collector roads and are primarily designed to provide access. KY 160 is classified as a rural major collector (KYTC 2014a). In terms truck weight, both KY 588 and KY 160 are Class "A" roadways that can accommodate trucks having a gross vehicle weight of up to 44,000 pounds (KYTC 2014c; KYTC 2015). Potential access points include a connection to the north to KY 588, a connection to the east to KY 160, and/or a connection to the west to an existing roadway that traverses north/south between KY 588 and Lilly Cornett Branch Road.

A traffic impact study (Appendix F) was conducted for the proposed action in April 2015. Based on the analysis in the traffic impact study, the current Annual Average Daily Traffic for KY 160 is 550 per day, and for KY 588 it is 330 per day (Parsons 2015). KY 588 a.m. and p.m. peak periods both function at an LOS A.

5.5.2 Environmental Consequences

The transportation network associated with the Roxana site is primarily two-lane unstriped rural roadways. The infrastructure would not be able to support construction equipment and vehicles traveling to the site.

As defined by KYTC, rural minor collectors "provide service to...smaller communities, link locally important traffic generators to larger towns, and collect traffic from local roads. They should be spaced at intervals consistent with population density to bring all developed areas within a reasonable distance of a collector road" (KYTC 2014a).

Per KYTC, rural major collectors "provide service to county seats, larger towns, and other traffic generators of intracounty importance, which are not directly served by a higher system and link them to larger towns or routes with higher classifications. Examples of traffic generators for this classification include schools, shipping points, county parks, and important mining and agricultural areas" (KYTC 2014a).

For the purposes of this analysis it was assumed the most likely access to the site would be from KY 588.

5.5.2.1 Construction

Alternative 2 would involve the same types of construction activities as Alternative 1, and would temporarily increase traffic volumes during the construction period. Trucks would be used to deliver/remove construction materials and equipment, and to haul excess fill material and/or construction debris. Because traffic volumes are relatively low on roadways that provide access to the site, the temporary increase in truck traffic is not expected to have a significant effect on street capacity. However, particularly heavy trucks could exceed the maximum weight limit of certain bridges located near the Roxana site. This potential impact would be avoided or reduced to a less than significant level with the implementation of the mitigation described below in Section 5.5.4, *Mitigation*. With the implementation of this measure, the addition of construction related trips is not expected to result in a significant traffic-related impact. Additionally, impacts to KY 588 are anticipated due to truck traffic transporting construction equipment and materials to the proposed Roxana site. KY 588 has narrow lane widths and pavement design that is not at a level for a national or state truck route (Parsons 2015).

5.5.2.2 Operations

Following construction, the proposed federal correctional facility would add traffic to the surrounding street network on a recurring basis. This traffic increase would include commuting trips of 300 full-time employees plus additional trips such as the transfer of inmates, inmate visitors, and delivery of supplies and equipment, which would not necessarily coincide with peak commuting periods. **Table 5-10** presents peak hour traffic generation. As shown in this table, the proposed facility would add approximately 156 trips during the morning peak hour and 204 trips during the afternoon peak hour. Accordingly, operations traffic for Alternative 2 has the potential to incrementally increase congestion on the surrounding roadway network. Potential effects include increased delay at intersections and/or reduced travel speed on roadway segments. These potential impacts would be avoided or reduced to a less than significant level with the implementation of mitigation described below in Section 5.5.4, *Mitigation*.

Table 5-10. Estimated Peak Hour Trip Generation					
AM Peak Hour Trips			PM Peak Hour Trips		
In	Out	Total	In	Out	Total
97	59	156	55	149	204

Note:^(a) Land use and trip rates from ITE Trip Generation Manual, 9th Edition (ITE 2012) for Land Use 571 (Prison).

Source: Parsons 2015.

Based on the trip generation and existing conditions, the traffic impact analysis determined that KY 588 in the vicinity of the Roxana site would function at LOS B. Additionally, the traffic impact analysis determined that the intersection of KY 588 and the proposed access to the Roxana site would function at LOS A during a.m. and p.m. peak periods for both northbound and westbound traffic (Parsons 2015). Based on the traffic impact analysis, there would be no significant impacts to traffic.

5.5.3 No Action Alternative

The No Action Alternative would be the same as that described in Section 4.5.3.

5.5.4 Mitigation

Mitigation measures would include a requirement that the selected construction contractor perform an assessment of the routing of construction traffic to the site. The construction contractor would also be required to:

- Route construction vehicles so that gross vehicle weight does not exceed the maximum weight limitations established by the KYTC
- Bond the roads where limitations may be exceeded and repair the roads upon completion of construction
- Develop and implement a maintenance of traffic plan to maintain traffic flow when construction equipment is being transported to the site

5.6 AIR QUALITY

5.6.1 Affected Environment

Like Alternative 1, the affected environment for Alternative 2 includes the Appalachian Intrastate Air Quality Control Region. Air quality in the study area is considered good, with the study area designated as unclassifiable, attainment, or better than national standards for all criteria pollutants.

5.6.2 Environmental Consequences

The results of the air emissions analysis show that construction and operational emissions under Alternative 2 would remain well below the significance thresholds and would not have a significant impact on the local or regional air quality. A summary of the analysis is presented below and the complete analysis is provided in Appendix C, *Air Emissions Calculations*.

5.6.2.1 Construction

Direct impacts from emissions from construction would include combustion emissions from fossil fuel-powered equipment and fugitive dust emissions (PM_{10} and $PM_{2.5}$) during clearing, demolition activities, earth moving activities, and operation of equipment on bare soil. **Table 5-11** presents estimates for the primary construction activities that would utilize heavy duty diesel equipment for the Roxana site.

Table 5-11. Construction Emission Estimates for Roxana Site							
Site	Year	VOC Tons	CO Tons	NO _x Tons	SO ₂ Tons	PM ₁₀ Tons	PM _{2.5} Tons
Roxana	1	3.27	13.87	42.32	0.83	158.71	18.05
Roxana	2	3.27	13.87	42.32	0.83	106.64	12.85

Fugitive dust from land disturbance activities would be the primary source of emissions during construction, with most of the emissions occurring during Year 1. PM_{10} emissions are estimated using wetting and other typical reduction practices to reduce dust release by 50 percent. PM_{10} emissions are predicted to be greatest in Year 1 at the Roxana site, at 158.71 TPY. These emissions, however, would remain well below the significance threshold of 250 TPY. Construction emissions would not have direct or indirect significant impacts on the region's air quality.

Direct impacts to air quality may also include emissions from the burning of construction debris, if such an activity were undertaken during construction. Vegetative debris and/or demolition and construction materials would be disposed in accordance with all laws and regulations. Should open burning be necessary, it would be conducted in accordance with 401 KAR 63:005, Open Burning.

5.6.2.2 Operations

Table 5-12 presents the annual emissions based on the site being fully operational. Stationary sources operating on-site would include two 2000-kilowatt diesel-powered emergency generators and three

boilers to provide heat and hot water for the site. The boilers have been estimated at 15 MMBtu/hr. One of the boilers would serve as a backup, so air emission calculations evaluated use of two boilers. All of these stationary sources would require an air permit and be regulated by the KDEP, Division for Air Quality. Analysis of permit requirements based on the final stationary source(s) type and design would be performed as design requirements are more fully delineated. This would ensure regulatory permit compliance and that all requisite source registrations would be submitted.

In addition to stationary sources, the emissions from staff commuting to and from work have been estimated at 300 employees and working 365 days per year. The round trip was estimated at 40 miles because of the rural location of the Roxana site.

Table 5-12. Estimated Annual Operational Emissions

Source	VOC Tons/Year	CO Tons/year	NO _x Tons/ Year	SO ₂ Tons/Year	PM ₁₀ Tons/Year	PM _{2.5} Tons/Year
Generators	0.25	2.15	5.09	0.00	0.27	0.27
Boilers	0.26	3.80	15.2	0.16	0.76	0.19
Staff Vehicles	0.19	23.38	1.07	0.02	0.12	0.11
Total	0.70	29.33	21.36	0.18	1.16	0.58

All of the criteria pollutant emissions remain well below the significance threshold of 250 TPY. Based on the emission estimates, operation of the federal correctional facility at the Roxana site would not have direct or indirect significant impacts on the local or regional air quality.

5.6.3 No Action Alternative

Under the No Action Alternative, construction of the USP and FPC would not occur. The No Action Alternative would not result in emissions of any air pollutants. Therefore, there would be no impact to regional air quality.

5.6.4 Mitigation

Best management practices would be implemented to reduce air emissions. They may include, but are not limited to:

- Periodic wetting during clearing, excavation, filling, and grading activities to minimize impacts to air quality (PM₁₀ emissions) from fugitive dust
- Utilization of alternatively fueled equipment
- Utilization of other emission controls that are applicable to the equipment being used on-site
- Reduction of idling time of equipment and construction vehicles

5.7 NOISE

5.7.1 Affected Environment

The Roxana site is located in a rural area with minimal noise. Areas of the site located immediately adjacent to KY 588 and KY 160 would experience some noise from traffic traveling through the area. There is nothing located on the site that currently generates noise.

5.7.2 Environmental Consequences

5.7.2.1 Construction

Construction activities under Alternative 2 would result in temporary, short-term increases in noise levels. Noise associated with construction equipment and vehicles, as well as blasting activities to remove bedrock, would occur during site preparation and construction.

Alternative 2 would generate noise during the construction phases of the USP and FPC. Phases of construction that would generate noise include: land clearing and excavations, pile driving, foundation and capping, erection of structural materials, and construction of exterior walls. Noise from construction equipment operating at the site, construction/delivery vehicles traveling to and from the site, and pile driving activities required for placement of deep pile foundations would impact noise levels. Noise levels at a given receptor location would depend on the type and number of pieces of construction equipment being operated and the receptor's distance from the construction site. **Table 5-13** lists construction related noise emissions, which can range from 74 to 101 dBA when measured 50 feet from the respective piece of equipment.

Small increases in noise levels would be expected as a result of the operation of delivery trucks and other construction vehicles. However, larger increases in noise levels would result if pile driving activities are necessary. Increased noise levels would be greatest during the early stages of each construction phase, although these periods would be of relatively short duration. However, under the worst case scenario during pile driving, there would be periods during construction when noise would range from 101 dBA at 50 feet from the equipment to 89 dBA at 200 feet from the equipment. The 200-foot radius from the equipment would encompass primarily rural undeveloped areas, depending on the location of the pile driving equipment at any given time on the Roxana site. Residences adjacent to the Roxana site are well over 200 feet from the majority of construction areas. When compared to the existing noise conditions at the Roxana site (35 dBA) and the OSHA noise thresholds for workers, the pile driving activities would result in significant short-term impacts to noise receptors located within 200 feet of the pile driving equipment location at the construction site, which would vary as the foundation piles would be driven throughout the foundation footprint. Moderate noise impacts would extend up to 1.5 miles from the construction site, as this is the distance at which noise levels would attenuate down to 55–60 dBA.

In conclusion, temporary and short-term noise disturbance would occur during construction; however, implementation of noise attenuation measures described below would reduce potential disturbance from noise. Therefore, implementation of Alternative 2 would have no significant impacts to sensitive noise receptors from noise.

Table 5-13. Airborne Construction Related Noise Emissions

Equipment Description	Actual Measured L _{max} at 50 feet (dBA)
Flat Bed Truck	74
Welder/Torch	74
Man Lift	75
Dump Truck	76
Backhoe	78
Compressor (air)	78
Concrete Mixer Truck	79
Drill Rig Truck	79
Front End Loader	79
Rivet Buster/Chipping Gun	79
Ventilation Fan	79
Drum Mixer	80
Vibratory Concrete Mixer	80
Concrete Pump Truck	81
Crane	81
Generator	81
Pumps	81
Dozer	82
Boring Jack Power Unit	83
Warning Horn	83
Auger Drill Rig	84
Scraper	84
Pneumatic Tools	85
Vacuum Excavator	85
Vibrating Hopper	87
Jackhammer	89
Concrete Saw	90
Mounted Impact Hammer (hoe ram)	90
Sheers (on backhoe)	96
Impact Pile Driver	101
Vibratory Pile Driver	101

Source: Federal Highway Administration 2006.

5.7.2.2 Operations

The operation of the proposed USP and FPC, once construction is completed, is not expected to significantly increase ambient noise levels.

5.7.3 No Action Alternative

The No Action Alternative would be the same as that described in Section 4.7.3.

5.7.4 Mitigation

To minimize the impact to noise receptors during the operation of the pile driving equipment, a variety of measures would be taken, including but not limited to:

- Using noise bellows systems to provide further noise attenuation
- Performing the work during daytime hours
- Scheduling the louder construction activities for less intrusive times (mid-morning to mid-afternoon)

5.8 INFRASTRUCTURE AND UTILITIES

5.8.1 Affected Environment

5.8.1.1 Potable Water

The LCWSD purchases water from Knott County to distribute in the Roxana area. The Bureau reviewed the Consumer Confidence Reports (CCRs or Water Quality Reports) for the LCWSD and the Knott County Water and Sewer District for the past three reporting years of 2012, 2013, and 2014. The LCWSD CCR for 2012 indicated two violations of turbidity levels for water provided to LCWSD by Knott County. LCWSD also had an issue in 2014 for failing to submit reports to the drinking water database on time. The Knott County Water and Sewer District CCR for 2012 indicates their system exceeded the turbidity standard on two occasions, as mentioned above. In 2013, Knott County had no violations for the water their system provided; however, they were cited for failing to provide their customers with a CCR. In 2014, the Knott County Water and Sewer District had no violations.

Knott County Water and Sewer District has a withdrawal permit of 4 million gallons per day. Current usage between Knott County and the LCWSD is approximately 2 million gallons per day (Lewis 2015).

The LCWSD is currently in the process of extending their water system to the eastern property boundary of the proposed Roxana site. The water main at this location is 8 inches in diameter and has water pressure near the connection point of approximately 110 pounds per square inch. Potable water would be provided by the LCWSD via this connection at the eastern property boundary (Cardno 2014a).

Because municipally supplied water in Knott County is drawn from surface waters of the North Fork of the Kentucky River, indirect impacts to public health have the potential to occur if drinking water quality were to be compromised by coal mining or other activities in the watershed (LCWSD 2014). The water supply would need be treated to meet drinking water standards prior to distribution to consumers. If drinking water standards cannot be met a public health advisory would be issued and consumers would be advised as to how to further treat the water at home (i.e., boiling) or a consumption ban would be implemented and consumers would be provided with bottled water (KDEP 2015).

5.8.1.2 Wastewater

The LCWSD provides sanitary sewer service to the Roxana area. As with the water service, the LCWSD is currently extending their wastewater collection service in the area of the Roxana site. The closest existing connection is approximately 2.75 miles from the Roxana site (**Figure 5-2**). The LCWSD does not currently have plans to extend the sanitary sewer service to the property boundary of the Roxana site (Cardno 2014a). The LCWSD has a permitted capacity of 600,000 gallons per day and currently treats approximately 300,000 gallons per day.

5.8.1.3 Natural Gas

The Roxana site contains multiple gas wells and gas transmission lines. There are 14 Hayden Harper gas wells and one EQT gas well within the Roxana site (Cardno 2014a). Gas transmission lines are also adjacent to the Roxana site.

5.8.1.4 Electricity

AEP lines extend along KY 160 and Big Branch-Tolson Creek Road in the vicinity of the Roxana site and would be able to provide electricity to the Roxana site (Cardno 2014a).

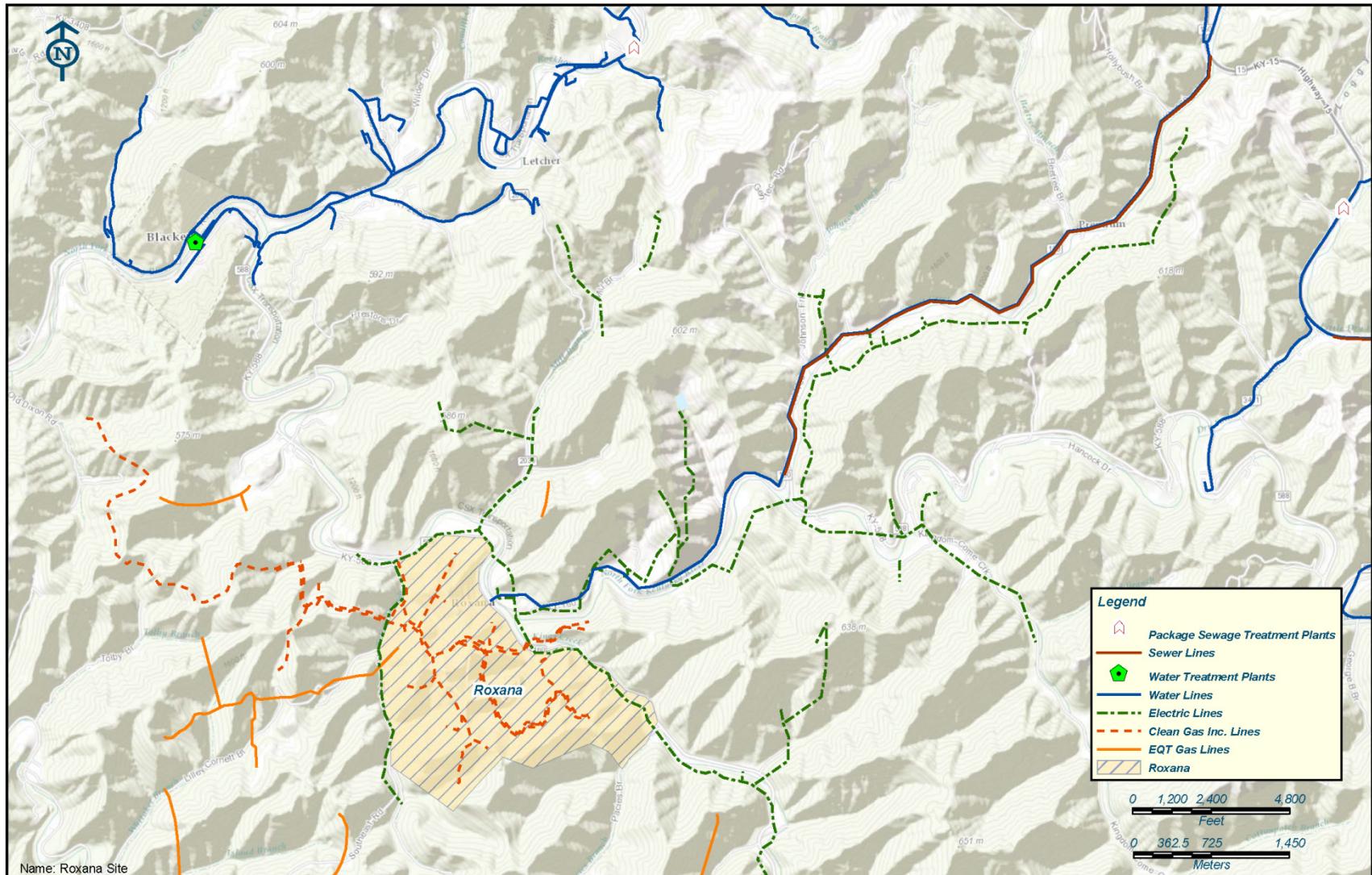


Figure 5-2. Roxana Existing Utilities

5.8.1.5 Telecommunications

Birch Communications provides telecommunications services to the area where the Roxana site is located. Birch Communications has the capacity to provide telecommunications service to the Roxana site (Cardno 2014a).

5.8.1.6 Solid Waste

Solid waste generated within Letcher County is disposed of at the Laurel Ridge Landfill in London, Kentucky, approximately 90 miles west of Whitesburg (Laurel Ridge Landfill 2014). The Laurel Ridge Landfill has a maximum annual limit of 350,000 tons. The landfill currently receives approximately 320,000 tons annually. Based on their current capacity, the landfill has a 30-year life expectancy.

5.8.2 Environmental Consequences

5.8.2.1 Potable Water

The LCWSD has assured the Bureau that the Knott County Water and Sewer District, the supplier of potable water to the LCWSD for the Roxana site, has resolved past water quality issues and should not have further violations of drinking water quality standards (Lewis 2015). The most recent water report for LCWSD (2014) indicates no violations of drinking water standards. Therefore, implementation of Alternative 2 would have no significant impacts related to water quality.

The USP and FPC are anticipated to require 214 gallons per day per inmate. Based on an anticipated inmate population of 1,200, a total of 258,000 gallons per day would be required under the proposed action. Additionally, the utility plant, warehouses, and training building would require approximately 6,160 gallons per day. Therefore, operation of the proposed federal correctional facility would require approximately 264,000 gallons of potable water per day. The Knott County Water and Sewer District has a withdrawal permit of 4 million gallons per day. Current usage between Knott County and LCWSD is approximately 2 million gallons per day; therefore, available capacity is 2 million gallons per day. The LCWSD does not have a limit on the amount of water it can purchase. The proposed action requirement for 264,000 gallons per day is well within the available capacity. Therefore, the additional usage by the USP, FPC, and ancillary facilities would not result in impacts to the water supply under Alternative 2.

5.8.2.2 Wastewater

Implementation of the proposed action under Alternative 2 would generate approximately 224,000 gallons per day of wastewater. This would increase wastewater treatment at the LCWSD to 524,000 gallons per day, which would not result in the LCWSD exceeding their permitted capacity of 600,000 gallons per day. Therefore, no adverse impacts to wastewater would occur under Alternative 2.

5.8.2.3 Natural Gas

Implementation of the proposed action under Alternative 2 would require the closure and plugging of 15 gas wells that are located within the Roxana site. It would take approximately six months to close these wells. Closure of the 15 gas wells would result in significant impacts to Hayden Harper and EQT, the owners of the gas wells. The Bureau would be able to connect to the natural gas distribution system located adjacent to the Roxana property for the cost of the meter and tap, which is estimated to be \$110,000. There is sufficient natural gas available and, therefore, the use of natural gas at the USP and FPC would not impact natural gas availability.

5.8.2.4 Electricity

In coordination with the electric service provider, AEP has indicated it has ample capacity to provide service to the federal correctional facility. AEP would extend overhead lines to a predetermined handoff point to the secure perimeter, and the Bureau would extend the service on-site to the needed facilities (Cardno 2014a). There would be no charge to extend the overhead lines to the handoff point and no issues with capacity; therefore, no adverse impacts to electrical capacity would occur under Alternative 2.

5.8.2.5 Telecommunications

Implementation of the proposed action under Alternative 2 would not result in impacts to the available capacity of Birch Communications; however, in order to provide the service a new remote terminal would need to be constructed, as well as the installation of approximately 4 miles of fiber optic cables and 0.5 miles of copper cable. Construction of the terminal and cables would be the responsibility of the Bureau (Cardno 2014a). Costs to complete construction and install the cables would be approximately \$190,000.

5.8.2.6 Solid Waste

The Bureau estimates that an inmate would generate 4 pounds of solid waste per day or 1,460 pounds per year. With an estimated 1,200 inmates, the proposed action would generate 4,800 pounds per day of solid waste, or 1,752,000 pounds per year (876 TPY). The solid waste generated at the federal correctional facility would increase the amount of solid waste taken to the Laurel Ridge Landfill from 320,000 TPY to 320,876 TPY. This increase would not result in the landfill going over its current yearly maximum intake of solid waste; therefore, there would be no adverse impacts to the Laurel Ridge Landfill from implementation of Alternative 2.

5.8.3 No Action Alternative

The No Action Alternative would be the same as that described in Section 4.8.3.

5.8.4 Mitigation

Mitigation for impacts to the gas wells at the Roxana site would require the Bureau to pay the owners of the wells (Hayden Harper and EQT) for the costs associated with closure and abandonment of the wells. The anticipated costs range from \$300,000 to \$1,000,000 per well based on the remaining production of each well. The anticipated cost to close all 15 wells is \$12.75 million (Cardno 2014a; see Appendix D, *Enhanced Utility Report*). All gas wells on the Roxana site would be permanently closed and abandoned and the pipes relocated according to standards required by federal and state regulations. Groundwater at the Roxana site would not be used for any purpose at the USP or FPC. No other mitigation would be required.

5.9 CULTURAL RESOURCES

An APE was defined to take into consideration both potential direct and indirect effects to cultural resources from implementation of the proposed action at the Roxana site. The APE for Alternative 2 includes the 700-acre (283-hectare) Roxana site and adjacent areas to the north (**Figure 5-3**). The APE extends beyond the north boundary of the Roxana site because of the potential for visual effects to any historic properties that may be present within the viewshed of the proposed federal correctional facility's one- to four-story buildings. Effects to archaeological resources, however, would be limited to the 300-acre (121-hectare) area within the APE where construction (direct ground disturbance) would occur.

5.9.1 Affected Environment

5.9.1.1 Archaeological Resources

Mapping, aerial photos, and a pedestrian reconnaissance in August 2011 and August 2014 indicated that the Roxana site had been completely disturbed by former surface mining activities. Photo-documentation was conducted at the site; however, no subsurface testing was completed. In addition, background research indicated that no previously identified archaeological sites were present at the proposed Roxana site. No archaeological resources eligible for listing on the NRHP are present and no further work was recommended at the Roxana site as a result of the 2011 and 2014 archaeological surveys. Concurrence was received from the SHPO on January 24, 2012 and on December 22, 2014 (Appendix A, *Agency Coordination*).

5.9.1.2 Traditional Cultural Properties

Under Section 106 of the NHPA, a federal agency is required to give consideration to issues of traditional religious or cultural areas concerning Native American groups. No TCPs have been identified within the APE for Alternative 2.

5.9.1.3 Architectural Resources

The 2011 reconnaissance survey of the Roxana site APE identified two architectural resources for further investigation; the other architectural resources in the APE were not recommended for further work because they were not associated with significant historical or architectural contexts of Letcher County and/or were in poor condition (TEC, Inc. 2011a). An intensive-level survey of two mid-twentieth century square-plan pyramidal houses (LR152 and LR153) was conducted in 2013 to determine the NRHP eligibility of the properties (**Figure 5-3; Table 5-14**). One of the houses (LR153) also included several domestic and agricultural outbuildings. Both properties were recommended not eligible for listing in the NRHP because they do not meet the NRHP criteria for eligibility (Cardno 2014b). The KHC concurred that both properties are not eligible (KHC 2014) (Appendix A, *Agency Coordination*).

Table 5-14. Architectural Resources in the Roxana Site APE Evaluated for NRHP Eligibility

Site Number	Property Name	Year Built	Description	NRHP Eligibility
LR152	Pearl Whitaker House	Ca. 1940	Square-plan pyramidal house	Not Eligible
LR153	George Whitaker House	1940	Square-plan pyramidal house and nine outbuildings	Not Eligible

5.9.2 Environmental Consequences

The cultural resources surveys for the proposed action did not identify any archaeological sites or architectural resources eligible for inclusion in the NRHP in the APE for the Roxana site. Therefore, Alternative 2 would have no effect on NRHP-listed or eligible cultural resources.

5.9.3 No Action Alternative

The No Action Alternative would be the same as that described in Section 4.9.3.

5.9.4 Mitigation

Alternative 2 would have no impact to NRHP-listed or eligible cultural resources; therefore, no mitigation is required.

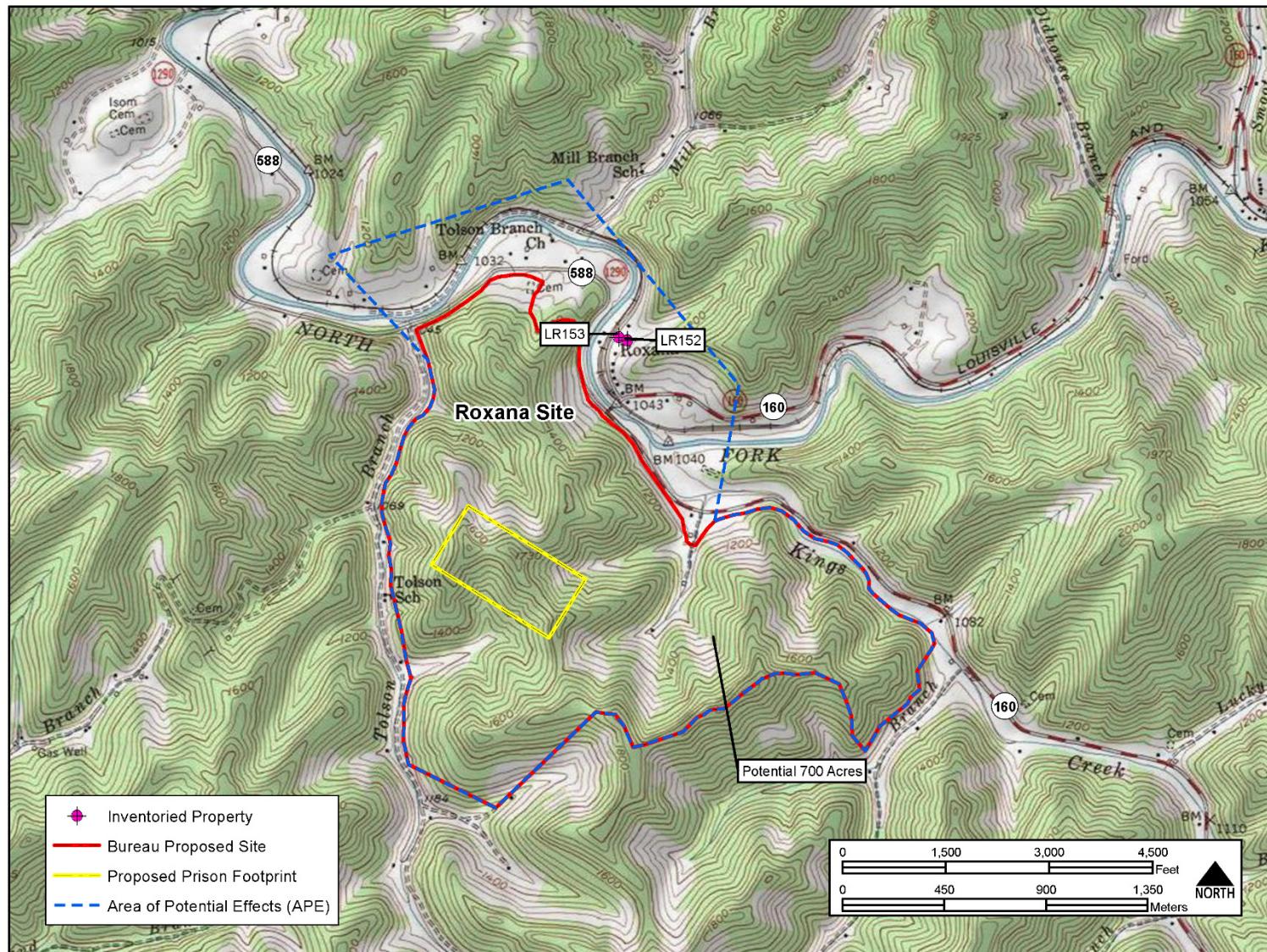


Figure 5-3. Architectural Resources Evaluated in the APE for Alternative 2

5.10 WATER RESOURCES

5.10.1 Affected Environment

5.10.1.1 Surface Water

The Roxana site is situated on top of a plateau, which is the result of surface mining of a portion of the mountain. As a result of the mining, the hydrology of the site has been greatly disturbed. There are several ephemeral, intermittent, and perennial unnamed, small streams identified and mapped within the proposed project area. Additionally, an open water wetland (pond) comprising approximately 0.41 acres (0.17 hectares) is located along the eastern boundary, north of Rise Branch.

The Roxana site lies in the same watershed as the Payne Gap site. The HUC units are the Ohio Region (HUC 05); Kentucky-Licking Subregion (HUC 0510); the Kentucky River Basin (HUC 051002); and the North Fork Kentucky River Watershed (HUC 05100201) (USEPA 2013a). The Roxana site contains surface water features including headwater intermittent and perennial streams.

Water quality of the streams on the Roxana site has not been assessed by the USEPA, and there are no identified impaired waters or TMDLs for the Roxana site (USEPA 2013a). The closest assessed water body to the Roxana site is the North Fork of the Kentucky River, located approximately 0.2 miles north of the site on the opposite side of KY 588/KY 160. The North Fork of the Kentucky River was assessed for primary contact recreation and was determined to be impaired as a result of elevated levels of fecal coliform. The elevated levels of fecal coliform were believed to be the result of point source discharges from sewage package plants (USEPA 2013a).

Mining operations have the potential to affect water quality of the North Fork Kentucky River Watershed. There are five active mining operations in the watershed. These mining operations have no direct impacts on water quality of the Roxana site due to their distance (approximately 1 mile or greater) and hydrological separation from the site. Because municipally supplied water is drawn from the North Fork in Letcher County, indirect impacts to public health have the potential to occur if drinking water quality were to be compromised by coal mining or other activities in the North Fork watershed. The water supply would need be treated to meet drinking water standards prior to distribution to consumers. If drinking water standards cannot be met, a public health advisory would be issued and consumers would be advised as to how to further treat the water at home (i.e. boiling) or a consumption ban would be implemented and consumers would be provided with bottled water (KDEP 2015). The potable water supply is discussed further in Section 5.8, *Infrastructure and Utilities*.

Regular post-mining surface water monitoring was conducted on the Roxana site in the mid-1990s. Results from mining permit-related water quality reports from 1993 to 1995 show the waters exhibited net alkalinity and moderate pH values, indicating alkaline-rich minerals that neutralize acid production, and low iron and manganese, indicating low dissolved metals concentrations in general (Cardno 2016a). This condition signifies that any acidity generated upon initial exposure of the rock was fully neutralized by the inherent alkalinity, such that acidic and/or metals-rich discharges did not occur.

An investigation of the previous surface mining-related overburden at the Roxana site was conducted in November 2015 and finalized in January 2016 (see Appendix H) to determine the geochemical character of the rock rubble and whether its excavation and on-site relocation for development of the proposed federal correctional facility would be likely to generate material environmental impacts on the site and/or to streams receiving drainage from the redistributed material. The investigation included subsurface

sampling of the rubble material itself and sampling of existing water discharges on the site to document existing surface and groundwater quality and determine whether there is likelihood of acid mine drainage, including dissolution of metals of possible health concern.

For the water sampling, water samples were collected from six different locations on the site: the discharges of three hollow fills in the east, southeast, and northwest portions of the site, the eastern hollow fill discharge below the pond, and the mouths of the two small streams flowing westerly from the site. The water samples were analyzed for general chemistry including metals to document existing water quality and identify indications of water quality impacts from contact with the mine overburden. Analysis of the water samples shows the existing water in the hollow fill discharges contains elevated levels of total dissolved solids and sulfate, indicating a high degree of weathering has occurred since mining and the continued flushing out of weathering-produced dissolved sulfidic minerals. However, the water also contains substantial acid-neutralizing minerals (principally calcium and magnesium), which fully neutralize any acidic drainage generated during the weathering process. Specifically, the results of the samples indicate there are no concentrations of metals at levels of human health concern in water that has percolated through the rock rubble (Cardno 2016a).

The subsurface sampling of the rock rubble consisted of drilling two boreholes each at the proposed locations of the USP, the FPC, and the Outside Warehouse and Central Utility Plant. Forty-five rock samples from the six borings were tested to determine the acid-production or acid-neutralization potential of the mine overburden material. The results of the boring sample tests indicate the sampled material is relatively low in sulfur content, with very low potential to generate acidic drainage. Additionally, the rock that would be excavated and relocated is generally well-weathered material that contains more acid-neutralizing than acid-generating potential, and thus, is likely to produce neutral or somewhat alkaline drainage upon weathering, rather than acid drainage (Cardno 2016a). That finding is consistent with that of the water sampling program. No significant change in water quality is expected to result from redistribution of the rubble material. A detailed report on the results of the investigation is provided in Appendix H, *Investigation of Rock Rubble Material, Roxana Site*.

5.10.1.2 Wetlands

Site-specific wetland data was collected through onsite field work, aerial photographs, topographic maps, NWI wetland maps, and Natural Resources Conservation Service soil surveys. Wetland delineations on the Roxana site were conducted in May 2011 and August 2014, and included identification of waters of the U.S.

Approximately 3.1 acres (1.3 hectares) of wetlands were delineated on the Roxana site. The majority of the wetlands are located within the east and west sides of the south-central portion of the site. In addition, several intermittent, perennial, and ephemeral streams were delineated on site (TEC, Inc. 2011c; Cardno 2014c). Hydrology supporting the wetlands on the Roxana site is a result of surface runoff from the surrounding lands, groundwater, and direct precipitation. Dominant vegetation within the wetlands identified on the Roxana site is typified by broadleaf cattail, black willow, spicebush (*Lindera benzoin*), Nepalese browntop (*Microstegium vimineum*), cinnamon fern (*Osmunda cinnamomea*), and woolgrass. **Table 5-15** summarizes acres by wetland type and linear feet of jurisdictional stream within the Roxana site. **Figure 5-4** depicts wetlands and streams delineated within the Roxana site.

Table 5-15. Wetland and Streams Delineated at Roxana		
Feature Type	Roxana Site	
	<i>Acres/Hectares</i>	<i>Linear Feet</i>
Wetlands		
Palustrine Emergent	0.8/0.3	N/A
Palustrine Scrub-Shrub	1.4/0.6	N/A
Palustrine Forested	0.7/0.3	N/A
Palustrine Upland Island	0.2/0.1	N/A
Streams		
Jurisdictional Stream	-	8,383
Non-Jurisdictional Stream	-	182
Total	3.1/1.3	8,565

Notes: N/A = Not Applicable.

5.10.1.3 Groundwater

There are no groundwater wells on the Roxana site, but there is a domestic single household well located approximately 250 feet north of the site at an elevation of 1,200 feet with a depth to water of 80 feet (KGS 2013). Groundwater flow tends to follow the sloped topography and is assumed to flow to the north, east, and west towards the North Fork Kentucky River, Kings Creek, and Tolson Branch, respectively. Variations in groundwater conditions are expected based on location and elevation across the site, seasonal conditions, and weather patterns. The Roxana site is underlain by subsurface geology of the Breathitt Group, which is comprised of the Pikeville Formation and the Hyden Formation, and the Four Corners Formation. The Breathitt Group yields more than 500 gallons of groundwater per day in more than three-quarters of the wells drilled in valley bottoms, more than 500 gallons per day in about three-quarters of the wells on hillsides, and more than 100 gallons per day to nearly all wells on ridges within Letcher County (KGS 2013). There are no sole source aquifers underlying the site (USEPA 2013b).

The quality of the groundwater in Letcher County ranges from moderately hard in most of the county to moderately soft south of Pine Mountain. Naturally occurring contaminants present in the groundwater consist of sulfate, salt (sodium chloride), iron, and manganese (KGS 2013).

According to the Kentucky Division of Water, Groundwater Branch, Letcher County has areas of moderate and high sensitivity to groundwater pollution. The hydrogeologic sensitivity reflects the ease and speed with which a contaminant can move into and within a groundwater system. The hydrogeologic sensitivity of Letcher County has been assigned a value of three out of five, with five being the most susceptible to groundwater pollution and one being the least susceptible. The region is given a three due to subcutaneous drain and enlarged fractures influence groundwater recharge, fissure networks influence flow, and bidirectional dispersal patterns influence overall dispersion (KDEP 1994).

As described above in Section 5.10.1.1, *Surface Water*, the rock overburden from previous surface mining consists of well-weathered material with significant amounts of acid-neutralizing minerals. The six water samples from the site confirm that any acid production from the weathering process has been completely neutralized (refer to Appendix H, *Investigation of Rock Rubble Material, Roxana Site*).

Analysis of the results of the water samples also indicates there has been no impact to groundwater quality from the existing gas wells within the site (refer to Section 5.8.1.3, *Natural Gas*), as the samples contain very low concentrations of sodium, chloride, and barium, parameters that are often indicators of leakage from gas or oil wells (Cardno 2016a).

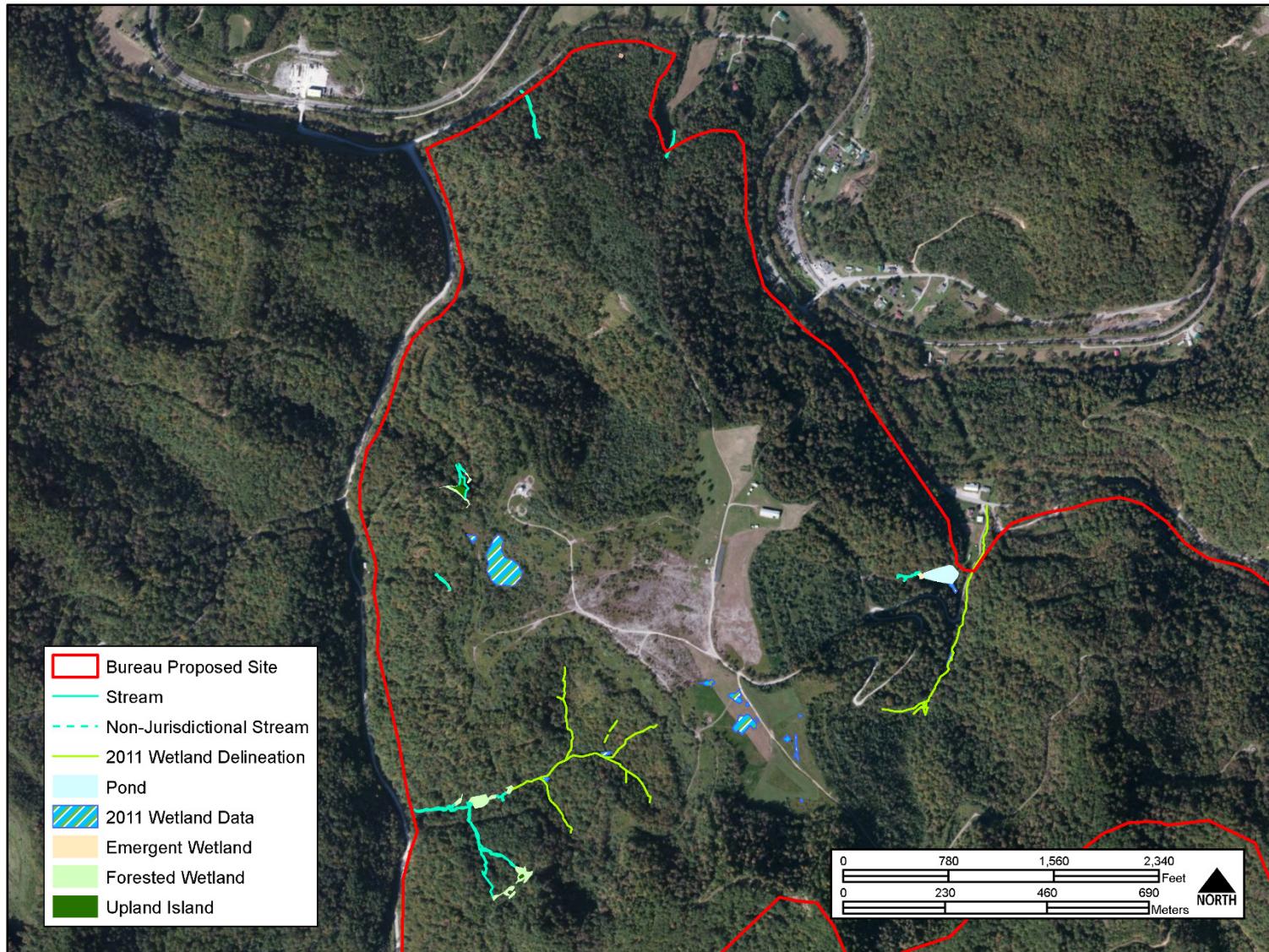


Figure 5-4. Roxana Wetlands and Streams

5.10.1.4 Floodplains

The Roxana site is not located in a 100-year floodplain (Environmental Data Resources 2015).

5.10.2 Environmental Consequences

5.10.2.1 Surface Water

It is not anticipated that water quality of nearby streams and wetlands would be adversely impacted by on site construction. BMPs would be implemented based on an approved erosion and sediment control plan, which would minimize sediment and pollutants from the construction site being carried into nearby water courses.

An investigation of the previous surface mining-related overburden at the Roxana site and water discharges at the hollow fills around the perimeter of the reclaimed mine site indicates a very low likelihood that acid mine drainage would be generated by the excavation and on-site relocation of the rock material for development of the proposed federal correctional facility (Appendix H, *Investigation of Rock Rubble Material, Roxana Site*). The sampled rock from the deep borings consists of well-weathered, low-reactivity material exhibiting more acid-neutralizing potential than acid-generating potential, and poses no significant risk of producing acidic drainage or drainage with significant levels of dissolved metals of concern to human health in occupancy of the site. Furthermore, there are no concentrations of metals at levels of potential human health concern in water that has drained through the rubble rock material. The water quality of current drainage is similar to that which existed after surface mining operations ended, and would not be likely to change by the proposed site development activities. Therefore, under Alternative 2, construction of the USP and FPC would not result in significant impacts to surface water quality.

5.10.2.2 Wetlands

Implementation of the proposed action at the Roxana site would result in permanent impacts to approximately 4,117 linear feet of stream, 0.37 acres (0.15 hectares) of forested wetlands, 0.7 acres (0.28 hectares) of emergent wetlands, and 1.38 acres (0.56 hectares) of scrub-shrub wetlands. These impacts would be to the streams and wetlands delineated in 2011 and 2014 (**Table 5-15**) and would result primarily from the excavation and grading activities that would be required to prepare the site for the development of the USP, FPC, ancillary buildings, and roads.

5.10.2.3 Groundwater

The Bureau would prepare and implement a groundwater protection plan in accordance with Kentucky regulations (401 KAR 5:037) to protect groundwater quality during construction and operation of the federal correctional facility under Alternative 2. The site-specific groundwater protection plan would describe the activities that have the potential to pollute groundwater and include the measures and practices that will be implemented during construction and operation of the facility such as providing secondary containment for petroleum storage tanks. Groundwater at the Roxana site would not be used for any purpose at the USP or FPC; therefore, there would not be human health impacts associated with groundwater use, nor would there be direct or indirect impacts to groundwater quantity. Therefore, construction and operation of the USP and FPC under Alternative 2 would have no significant impacts related to groundwater.

An investigation of the previous surface mining-related overburden on the Roxana site and water discharges at the hollow fills around the perimeter of the reclaimed mine site indicates a very low likelihood that acid mine drainage would be generated by the excavation and on-site relocation of the rock material for development of the proposed federal correctional facility (Appendix H, *Investigation of Rock Rubble Material, Roxana Site*). The sampled rock from the deep borings consists of well-weathered, low-reactivity material exhibiting more acid-neutralizing potential than acid-generating potential, and poses no significant risk of producing acidic drainage or drainage with significant levels of dissolved metals of concern to human health in occupancy of the site. Furthermore, there are no concentrations of metals at levels of potential human health concern in water that has drained through the rubble rock material. The water quality of current drainage is similar to that which existed after surface mining operations ended, and would not be likely to change by the proposed site development activities. Therefore, under Alternative 2, construction of the USP and FPC would not result in significant impacts to groundwater quality.

As discussed in Section 5.8.2.3, *Natural Gas*, under Alternative 2 the gas wells on the Roxana site would be permanently closed and plugged, and associated transmission lines relocated. The test results of the water discharge samples from the Roxana site reveal that the water includes very low concentrations of sodium, chloride, and barium. This finding indicates that there is no significant or detectable impact from deep saline waters that may have been encountered with installation of the gas wells at the site. Their closure would ensure that no such impact is likely to occur in the future.

5.10.2.4 Floodplains

The Roxana site is not located within a 100-year floodplain; therefore, no impacts to floodplains would occur under Alternative 2.

5.10.3 No Action Alternative

The No Action Alternative would be the same as that described in Section 4.10.3.

5.10.4 Mitigation

The Bureau met with the USACE on May 19, 2015 to discuss mitigation for the Roxana site. Wetland mitigation would be paid into an in-lieu fee fund. Wetland impact mitigation is calculated by adding total acreage of wetlands to be impacted and multiplying by 2. Wetland impacts on the Roxana site total 2.43 acres X 2 = 4.86 AMUs (Adjusted Mitigation Units) to be purchased. To determine the cost associated with wetland mitigation, the Bureau would contact the Kentucky Department of Fish and Wildlife Resources to determine the cost of AMUs at the time of purchase. The last recent quote was \$43,000 per AMU, which would equate to \$208,980 for wetland impact mitigation at the Roxana Site. These rates may increase depending on when the Section 404 permit is acquired. Stream mitigation would be based on Ecological Integrity Units (EIU). The EIU is calculated based on the stream rating (assessed using the USEPA's Rapid Bioassessment Protocol Sheets). To account for cumulative and temporary impacts, the EIU is multiplied by 1.2 (20 percent cumulative and temporary impacts); the result is a total of 1,414 EIUs. The current In Lieu Fee Credits are \$755 per credit (EIU). Therefore, the total for stream mitigation would be \$1,067,570 at current 2015 rates. When construction funding becomes available, the Section 404 permit would be applied for and mitigation costs would be updated according to the current mitigation rates and permit requirements. Mitigation In Lieu Fees for stream and wetland mitigation combined, using 2015 In Lieu Fee rates would total \$1,276,550.

5.11 BIOLOGICAL RESOURCES

5.11.1 Affected Environment

5.11.1.1 Vegetation

A large portion of the Roxana site has been disturbed by historic mining activities, which created a relatively level area on the mountaintop. A site visit indicated a level portion of the site is farmed and portions not under agriculture are routinely bushhogged or are dominated by scrub shrub vegetation (e.g., autumn olive, multiflora rose, etc.). The mountain slopes are primarily forested with the exception of slopes created by fill from mining; these slopes are dominated by invasive species such as autumn olive and paradise tree (*Ailanthus altissima*). Upland vegetation includes northern red oak, eastern red cedar (*Juniperus virginiana*), sericea lespezea, paradise tree, Allegheny blackberry, Virginia pine (*Pinus virginianana*), bluestem broomsedge (*Andropogon virginicus*), tuliptree, American beech, Virginia creeper (*Parthenocissus quinquefolia*), Ohio buckeye (*Aesculus glabra*), red maple (*Acer rubrum*), stinging nettle (*Urtica dioica*), and Christmas fern (*Polystichum acrostichoides*). Wetland vegetation at the Roxana site includes American sycamore, woolgrass, black willow, spicebush, Nepalese browntop, small spike falsoenettle (*Boehmeria cylindrica*), and cinnamon fern.

5.11.1.2 Wildlife

Non-avian species likely to be found on the Roxana site include coyote (*Canis latrans*), Virginia opossum (*Dipelphis virginiana*), American black bear (*Ursus americanus*), eastern gray squirrel (*Sciurus carolinensis*), southern flying squirrel (*Glaucomys volans*), eastern spotted skunk (*Spilogale putorius*), white tailed deer (*Odocoileus virginianus*), green frog (*Rana clamitans melanota*), American toad (*Bufo americanus*), black rat snake (*Elaphe obsoleta obsoleta*), copperhead (*Agkistrodon contortrix*), eastern hognose snake (*Heterodon platirhinos*), and fence lizard (*Sceloporus undulatus*) (Kentucky Department of Fish and Wildlife Resources 2013).

Representative migratory bird species potentially occurring in Letcher County and within the project area include tufted titmouse (*Baeolophus bicolor*), red-tailed hawk (*Buteo jamaicensis*), bald eagle (*Haliaeetus leucocephalus*), black-billed cuckoo (*Coccyzus erythrophthalmus*), blue-winged warbler (*Vermivora pinus*), cerulean warbler (*Dendroica cerulea*), Kentucky warbler (*Oporornis formosus*), prairie warbler (*Dendroica discolor*), Swainson's warbler (*Limnothlypis swainsonii*), worm eating warbler (*Helmitheros vermivorum*), fox sparrow (*Passerella iliaca*), wood thrush (*Hylocichla mustelina*), Louisiana waterthrush (*Parkesia motacilla*), least bittern (*Ixobrychus exilis*), red-winged blackbird (*Agelaius phoeniceus*), rusty blackbird (*Euphagus carolinus*), willow flycatcher (*Empidonax traillii*), loggerhead shrike (*Lanius ludovicianus*), pied-billed grebe (*Podilymbus podiceps*), wild turkey (*Meleagris gallopavo*), and short-eared owl (*Asio flammeus*) (USFWS 2015a).

5.11.1.3 Threatened and Endangered Species

Due to the number of state-listed species listed by Kentucky as potentially occurring in Letcher County, the following section focuses on federally listed species. A full list of listed species and their status is included in **Table 5-16**.

Table 5-16. State and Federal Report of Endangered, Threatened, and Special Concern Plants, and Animals of Letcher County, Kentucky

Scientific Name	Common Name	Status (State/Federal)
Liverworts		
<i>Plagiochila caduciloba</i>	Gorge Leafy Liverwort	E/N
Mosses		
<i>Anomodon rugelii</i>	None	T/N
<i>Brachythecium populeum</i>	Matted Feather Moss	E/N
<i>Cirriphyllum piliferum</i>	None	T/N
<i>Dicranodontium asperulum</i>	None	E/N
<i>Entodon brevisetus</i>	None	E/N
<i>Neckera pennata</i>	None	T/N
<i>Oncophorus raui</i>	None	E/N
<i>Polytrichum pallidisetum</i>	A Hair Cap Moss	T/N
<i>Polytrichum strictum</i>	None	E/N
<i>Sphagnum quinquefarium</i>	Five-ranked Bogmoss	E/N
Vascular Plants		
<i>Adlumia fungosa</i>	Allegheny-vine	H/N
<i>Angelica triquinata</i>	Filmy Angelica	E/N
<i>Baptisia tinctoria</i>	Yellow Wild Indigo	T/N
<i>Botrychium matricariifolium</i>	Matricary Grape-fern	E/N
<i>Boykinia aconitifolia</i>	Brook Saxifrage	E/N
<i>Carex aestivalis</i>	Summer Sedge	E/N
<i>Carex appalachica</i>	Appalachian Sedge	T/N
<i>Castanea pumila</i>	Allegheny Chinkapin	T/N
<i>Circaea alpina</i>	Small Enchanter's Nightshade	S/N
<i>Corydalis sempervirens</i>	Rock Harlequin	S/N
<i>Cymophyllum fraserianus</i>	Fraser's Sedge	E/N
<i>Cypripedium parviflorum</i>	Small Yellow Lady's-slipper	T/N
<i>Eupatorium steelei</i>	Steele's Joe-pye-weed	T/N
<i>Gentiana decora</i>	Showy Gentian	S/N
<i>Hexastylis contracta</i>	Southern Heartleaf	E/SOMC
<i>Houstonia serpyllifolia</i>	Michaux's Bluels	E/N
<i>Hydrophyllum virginianum</i>	Eastern Waterleaf	T/N
<i>Juglans cinerea</i>	White Walnut	T/SOMC
<i>Leucothoe recurve</i>	Red-twig Doghobble	E/N
<i>Lilium superbum</i>	Turk's Cap Lily	T/N
<i>Listera smallii</i>	Kidney-leaf Twayblade	T/N
<i>Monotropsis odorata</i>	Sweet Pinesap	T/SOMC
<i>Oenothera oakesiana</i>	Evening Primrose	H/N
<i>Oenothera perennis</i>	Small Sundrops	E/N
<i>Orontium aquaticum</i>	Golden Club	T/N
<i>Pogonia ophioglossoides</i>	Rose Pogonia	E/N
<i>Prosartes maculata</i>	Nodding Mandarin	S/N
<i>Sanguisorba Canadensis</i>	Canada Burnet	E/N
<i>Saxifraga michauxii</i>	Michaux's Saxifrage	T/N
<i>Saxifraga micranthidifolia</i>	Lettuce-leaf Saxifrage	E/N
<i>Solidago curtisii</i>	Curtis' Goldenrod	S/N
<i>Trillium undulatum</i>	Painted Trillium	T/N
Terrestrial Snails		
<i>Glyptophysalia rhoadsi</i>	Sculpted Glyph	T/N
<i>Neohelix dentifera</i>	Big-tooth Whitelip	T/N
<i>Patera panselenus</i>	Virginia Bladetooth	S/N

Table 5-16. State and Federal Report of Endangered, Threatened, and Special Concern Plants, and Animals of Letcher County, Kentucky

Scientific Name	Common Name	Status (State/Federal)
Crustaceans		
<i>Cambarus bunting</i>	Longclaw Crayfish	S/N
<i>Cambarus parvoculus</i>	Mountain Midget Crayfish	T/N
Insects		
<i>Amphiagrion saucium</i>	Eastern Red Damsel	E/N
<i>Calephelis borealis</i>	Northern Metalmark T	T/N
<i>Erora laeta</i>	Early Hairstreak	T/N
<i>Litobrancha recurvata</i>	A Burrowing Mayfly	S/N
<i>Papaipema speciosissima</i>	Osmunda Borer Moth	E/N
<i>Phyciodes batesii</i>	Tawny Crescent	H/SOMC
<i>Stylurus notatus</i>	Elusive Clubtail	E/SOMC
<i>Stylurus scudder</i>	Zebra Clubtail	E/N
Fishes		
<i>Chrosomus cumberlandensis</i>	Blackside Dace	T/LT
<i>Etheostoma sagitta spilotum</i>	Kentucky Arrow Darter	S/PT
Amphibians		
<i>Cryptobranchus alleganiensis alleganiensis</i>	Eastern Hellbender	E/SOMC
<i>Plethodon wehrlei</i>	Wehrle's Salamander	E/N
Birds		
<i>Accipiter striatus</i>	Sharp-shinned Hawk	S/N
<i>Corvus corax</i>	Common Raven	T/N
<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak	S/N
<i>Tyto alba</i>	Barn Owl	S/N
<i>Vermivora chrysoptera</i>	Golden-winged Warbler	T/SOMC
Mammals		
<i>Clethrionomys gapperi maurus</i>	Kentucky Red-backed Vole	S/SOMC
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	S/SOMC
<i>Mustela nivalis</i>	Least Weasel	S/N
<i>Myotis griseescens</i>	Gray Bat	T/E
<i>Myotis leibii</i>	Eastern Small-footed Myotis	T/SOMC
<i>Myotis septentrionalis</i>	Northern Long-Eared Bat	E/T
<i>Myotis sodalis</i>	Indiana Bat	E/E
<i>Sorex cinereus</i>	Cinereus Shrew	S/N
<i>Sorex dispar blitchi</i>	Long-tailed Shrew	E/N
<i>Spilogale putorius</i>	Eastern Spotted Skunk	S/N
<i>Ursus americanus</i>	American Black Bear	S/N

Notes: E = Endangered, H = Historical, LT = Listed as Threatened, N = None, PT = Proposed Threatened, T = Threatened, S = Special Concern, SOMC = Species of Management Concern.

Sources: Kentucky State Nature Preserves Commission 2014; USFWS 2014, 2015c, d.

Based on coordination with the USFWS, four federally listed species have the potential to occur within the Roxana site: gray bat, Indiana bat, northern long-eared bat, and Kentucky arrow darter (USFWS 2014).

The gray bat is federally listed as endangered and listed by Kentucky as threatened. The gray bat roosts in caves throughout the year although suitable caves are rare. For winter hibernacula the bats require vertical caves with domed halls. The winter caves must also have a temperature of between 6 and 11 degrees Celsius. Forested areas along the banks of streams and lakes provide important protection for adults and young. Summer caves are always within 1 kilometer (0.62 mile) of a river or reservoir where the bats

forage. Forests provide important feeding areas for young bats, which will not forage in areas where the forests have been cleared (Natureserve 2013a).

The Indiana bat is federally and state-listed as endangered. The Indiana bat hibernates in caves; however, maternity sites are generally behind loose bark of dead or dying trees or in tree cavities. They forage in riparian areas, upland forests, ponds, and fields, but forested landscapes are the most important habitat. They typically hibernate in the coldest area of a cave to ensure a low enough metabolic rate in order to conserve fat reserves throughout the winter; however, they will move away from areas that dip below freezing. Known roost tree species include elm, oak, beech, hickory, maple, ash, sassafras, birch, sycamore, locust, aspen, cottonwood, pine, and hemlock with a preference for trees with exfoliating bark (Natureserve 2013b).

The northern long-eared bat was listed as threatened under the ESA in April 2015 and is listed by Kentucky as endangered. The northern long-eared bat hibernates in the small cracks and crevices of caves and mines that have large passages and relatively constant, cool temperatures with high humidity and no air currents. During the summer they roost singly or in colonies underneath bark or in cavities, crevices, or hollows of both live and dead trees within forests, woodlots with dense or loose aggregates of trees, riparian forests, and other wooded corridors. Males or non-reproductive females may also roost in caves or mines. In addition, northern long-eared bats have been observed roosting in structures such as barns and bridges. They are not considered to be a long-distance migrant, as they typically migrate 35–55 miles between their winter hibernacula and summer habitat (USFWS 2015b).

Based on coordination with the USFWS, the Roxana site is known P1/P2 swarming habitat for the Indiana bat (USFWS 2014). A Phase I bat survey conducted in December 2014 identified the presence of summer habitat for Indiana, northern long-eared and gray bats, but no potential winter habitat (i.e., caves or hibernacula) for Indiana, northern long-eared, and gray bats (Copperhead Environmental Consulting 2015). The USFWS concurred with the findings of the Phase I survey (Appendix A, *Agency Coordination*).

The Kentucky arrow darter was proposed for listing as a threatened species under the ESA in September 2015 (USFWS 2015c). The Kentucky arrow darter is known to exist in the upper Kentucky River basin. Habitat for the species consists of pools and transitional areas between riffles and pools in moderate to high gradient streams (USFWS 2015c). The streams within the Roxana site are primarily small channels that do not contain riffle and pool complexes (USFWS 2013).

There is no federally designated critical habitat on the Roxana site (USFWS 2013).

5.11.2 Environmental Consequences

5.11.2.1 Vegetation

Direct impacts to vegetation would occur under Alternative 2 as approximately 93 acres (38 hectares) of forested area would be cleared on the Roxana site for excavation and grading activities required to prepare the site for development.

5.11.2.2 Wildlife

Wildlife species found on the Roxana site would likely be displaced during construction activities due to the loss of habitat and increases in noise. However, approximately 607 acres (246 hectares) of the site would remain undisturbed and continue to provide habitat, including breeding and foraging areas, for wildlife species found on-site. Additionally, the site is surrounded by similar habitat that could accommodate species that are displaced by construction activities. Based on the available habitat that

would remain on site and habitat adjacent to the site (Jefferson National Forest), it is anticipated that these impacts would not adversely affect wildlife species that are currently present on-site.

Use of the non-lethal/lethal fence has the potential to result in adverse impacts to small animals and avian species, should they pass through the outer fences and into the area of the non-lethal/lethal fence.

5.11.2.3 Threatened and Endangered Species

Implementation of the proposed action at the Roxana site has the potential to impact the federally listed Indiana bat and northern long-eared bat. A Phase I bat habitat survey was conducted for Indiana, northern long-eared, and gray bats. Based on the conceptual design, the proposed action would impact approximately 93 acres (38 hectares) of potential summer roosting and foraging habitat for the Indiana bat and northern long-eared bat and potential summer foraging habitat for the gray bat at the Roxana site. The survey did not identify suitable winter roosting habitat for Indiana and northern long-eared bats or summer and winter roosting habitat for gray bats at the Roxana site. Therefore, the Bureau determined Alternative 2 may affect, is likely to adversely affect the Indiana bat and the northern long-eared bat. Adverse effects to both bat species from nighttime light pollution and glare may also occur. Indirect impacts may result from the noise from the proposed outdoor firing range. The Bureau met with the USFWS on May 20, 2015 to discuss additional studies and mitigation (Appendix A, *Agency Coordination*).

It is not anticipated that the Kentucky arrow darter would be impacted by implementation of the proposed action at the Roxana site. The streams within the Roxana site are small channels and do not contain riffle pool complexes. Additionally, conductivity measurements were taken within streams on the project site in June 2015. Conductivity measurements were taken within one stream that contained flow and the result was a conductivity of 332 µS. Studies have demonstrated that Kentucky arrow darters are not likely to be present when conductivity levels exceed approximately 250 µS (USFWS 2010). Therefore, no significant impacts to the Kentucky arrow darter are anticipated under Alternative 2.

5.11.3 No Action Alternative

The No Action Alternative would be the same as that described in Section 4.11.3.

5.11.4 Mitigation

Mitigation measures for construction impacts to vegetation and wildlife would include minimizing disturbance of existing vegetation to the greatest extent possible. An open area with a direct line of site is required for the areas surrounding the USP and FPC; however, upon completion of construction, disturbed areas would be re-vegetated with native, non-invasive plants to the maximum extent possible while maintaining the Bureau's site requirements.

The USFWS issued comments on the July 2015 Final EIS and stated that the Bureau sufficiently identified the potential impacts to threatened and endangered species as a result of the proposed project (refer to Appendix E-2 for correspondence from the USFWS). The Bureau will mitigate for take of Indiana bats and northern long-eared bats through a Conservation Memorandum of Agreement (CMOA) following the guidance provided in the USFWS's April 2015 Conservation Strategy for Forest Dwelling Bats in the Commonwealth of Kentucky (Conservation Strategy). The Biological Opinion that supports the Conservation Strategy concludes with a "non-jeopardy" determination for adverse effects to the Indiana bat and the northern long-eared bat and exempts the take resulting from the habitat removal specified in the CMOA (the CMOA does not cover tree removal in June and July). Once the CMOA has been completed, the Bureau will be in compliance for these species for this project.

Under the CMOA, the Bureau would pay into the Imperiled Bat Conservation Fund for summer roosting habitat impacted under Alternative 2. Payment into the fund would be based on the time of year habitat is removed. Based on 2015 rates, mitigation costs would range from \$732,375 to \$1,024,325. The Imperiled Bat Conservation Fund would then provide the mitigation fees to the Kentucky Natural Lands Trust to purchase and protect important bat habitat.

The Bureau would implement conservation measures to avoid and minimize potential effects of site lighting on the Indiana bat and northern long-eared bat during construction and operations. To maintain the character of the surrounding rural environment, hooded lights with reflectors would be used to completely conceal the light source above the rim of the fixture, and which would result in maximum down-lighting effects. Illumination of forest will be kept to an absolute minimum. In addition, all outdoor construction activities would be conducted during daylight hours in known or suitable summer habitat to avoid harassment of foraging Indiana and northern long-eared bats (April 15 through October 31).

The Bureau has conducted prior impact assessments for the installation of non-lethal/lethal fences, especially for potential impacts to avian and small mammal species (Bureau 2009). These prior assessments have found less than significant adverse impacts; consequently, less than significant impacts are anticipated with the non-lethal/lethal fence to be installed as part of this proposed action. However, following activation of the non-lethal/lethal fence, the Bureau would monitor the fence line to determine if wildlife, particularly avian species, is being adversely affected. The Bureau would collect data regarding these occurrences including identification of species and photographs. The data would be used to document and analyze emerging trends. If adverse effects were identified, the Bureau would contact the USFWS and appropriate state wildlife agencies to determine if changes to the operation of the fence are warranted.

5.12 HAZARDOUS MATERIALS AND WASTE

5.12.1 Affected Environment

5.12.1.1 Hazardous Materials

The Roxana site is located in a relatively undeveloped area. No hazardous materials are known to be in storage or in use in this area. According to the USEPA “Cleanups In My Community” mapping tool, there are no Brownfield, Superfund, or RCRA Corrective Action sites in the vicinity of the Roxana site. No sites in the town of Roxana were listed in the USEPA’s TSCA or TRI databases. Site visits conducted in 2011, 2013, and 2014 did not observe any hazardous wastes or evidence of their presence (i.e., stressed vegetation, stained soils, drums) on the site.

A Phase I Environmental Site Assessment was performed on the Roxana site in July 2015. The Environmental Site Assessment was conducted in accordance with the American Society for Materials and Testing International Designation: E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM E1527-13). The goal of the assessment was to identify RECs on the Roxana site. An REC is defined in ASTM E1527-13 as “the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment.” An REC includes hazardous substances or petroleum products even under conditions in compliance with laws. *De minimis* conditions are not RECs, generally do not present a threat to human health or the environment, and generally would not be

the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Structures on the Roxana site were also assessed for the potential presence of asbestos-containing material, lead-based paint, and radon, although no samples were collected during the Phase I Environmental Site Assessment.

Federal, state, and local databases were searched and three of the numerous databases, the Kentucky State Hazardous Waste Sites (KY SHWS), Kentucky Underground Storage Tank (KY UST), and KY SPILLS databases, contained information relevant to the Roxana site.

The KY SHWS database is Kentucky's equivalent of the federal Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS). These sites may or may not already be listed on the CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. One KY SHWS site was reported to be located over 1 mile from the Roxana site. The Kentucky West Virginia Gas Pipeline (well line W-837) is located 1.215 miles north-northwest of the Roxana site. According to the report, this gas line has been closed and the site restored. Therefore, it would not have any impact on site conditions at the Roxana site.

The KY UST database contains information regarding USTs regulated under Subtitle I of RCRA that must be registered with the commonwealth. Two registered USTs were reported to occur within 0.125 mile of the Roxana site. The Lee Gentry property, located at Highway 588 West, approximately 0.014 mile north-northeast of the site, was reported to contain a 560-gallon diesel UST and a 1,000-gallon gasoline UST. The USTs were reportedly removed in March 1998. This property is located at a lower elevation than the Roxana site, and consequently, would not have an impact on site conditions. The John W. Ison Grocery, located at 14858 Highway 160, approximately 0.115 miles east of the site, was reported to contain one 1,000-gallon, one 2,000-gallon, and two 3,000-gallon gasoline USTs. The 1,000-gallon and 2,000-gallon USTs were reportedly removed in July 1994 and the 3,000-gallon USTs were reportedly removed in January 2014. This property is located at a lower elevation than the Roxana site and consequently, would not have an impact on site conditions.

The KY SPILLS database is a listing of spill and/or release related incidents. One spill was reported to have occurred within 0.25 mile of the Roxana site in 2004. According to the report, a coal company was oiling a haul road resulting in soil contamination on the site. The incident was reported as being in compliance. As a result, the spill would not have any impacts on the Roxana site that would constitute a REC.

A site inspection of the property was conducted on July 20 and 21, 2015, in association with the Phase I Environmental Site Assessment. Relevant observations are described in the following paragraphs.

Several large ASTs were observed on the Roxana site. A storage tank was considered to be an REC due to the fact that an open drainage valve presented a material threat of release. The tank was associated with an active oil extraction operation and, therefore, was assumed to contain petroleum crude oil, as placarded. A large plastic oil storage tank was observed approximately 1,000 feet east of a natural gas compressor station and was damaged resulting in a release of a portion of its contents. This AST is within a lined and bermed area; however, the liner was observed to have deteriorated and was essentially ineffective. This site was considered to be an REC.

The natural gas compressor station was observed to have experienced a release, and cleanup methods to address the leak were observed to be insufficient. The compressor station and surrounding soils are considered to be an REC. Additionally, two open topped containers of petroleum were observed adjacent to the compressor station and, as such, presented a material threat of release. The containers and the compressor station were considered to be RECs.

Two transformers on the site could not be discounted as containing PCBs. No placarding was observed on either transformer. As such, these transformers were assumed to contain PCBs and were considered RECs. Appendix G contains the Phase I Environmental Site Assessment (July 2015) for the Roxana site.

Following recommendations contained in the Phase I, a Phase II Environmental Site Assessment was conducted in November 2015 and concluded in February 2016 to assess the conditions at each of the aforementioned RECs (see Appendix G, *Environmental Site Assessments*). Soil samples were collected and analyzed to determine the absence or presence of environmental contamination both in vertical and horizontal contexts, as appropriate. Groundwater was not encountered during sample collected so no groundwater samples were collected or analyzed. The results of the soil chemical analyses were compared to the USEPA Regional Screening Levels (RSLs), used in accordance with 401 KAR 100:030, Remediation Requirements, and with standards established by the Commonwealth of Kentucky to determine the absence/presence of contaminants of concern.

Arsenic was detected in all soil samples collected at the identified RECs at concentrations well above the USEPA RSL. With regards to inorganic compounds (i.e., metals), the Commonwealth of Kentucky provides guidance for establishing background concentrations in the Kentucky Guidance for Ambient Background Assessment (January 8, 2004; as found in KDEP 2009, Appendix B). According to the Kentucky Guidance, surface and subsurface site data should be compared with the generic statewide ambient background numbers and the following three criteria should be used to demonstrate whether or not the site data is background (i.e., not attributable to an identifiable release):

1. The mean site concentration for inorganic constituents must be below the 95 percent Upper Confidence Limit (UCL) of the mean concentrations of background for inorganic constituents
2. At least half of the data points should be less than the 60th percentile
3. No data points should be above the upper bound value (95th percentile)

Table 5-17 presents the background concentration numbers for Kentucky for arsenic.

Table 5-17. Generic Statewide Ambient Background Concentrations for Arsenic

Mean ($\mu\text{g}/\text{kg}$)	95% UCL of Mean ($\mu\text{g}/\text{kg}$)	60th Percentile ($\mu\text{g}/\text{kg}$)	90th Percentile ($\mu\text{g}/\text{kg}$)
8,900	9,400	8,300	21,200

Note: $\mu\text{g}/\text{kg}$ = micrograms per kilogram.

Source: KDEP 2009, Appendix B.

Arsenic concentrations in the collected samples for the RECs ranged between “Not Detected” and 7,790 $\mu\text{g}/\text{kg}$. Because all of the detected arsenic values fall below the mean generic statewide ambient background concentration, the 95 percent UCL of mean, the 60th percentile, and the 95th percentile, arsenic concentrations can be attributed to background conditions and, as such, arsenic is not a contaminant of concern on the Roxana site.

The results of the Phase II Environmental Site Assessment also indicated that soils at three of the REC locations on the Roxana site have been adversely impacted by petroleum: the AST open drain valve, the damaged AST, and the natural gas compressor station. Exceedances of Kentucky petroleum standards, as set forth in 401 KAR 100:030 for petroleum releases not regulated under the underground storage tank program, were observed for Total Petroleum Hydrocarbons at each of these locations. Contaminated soils on these cited areas of the subject property are limited to the top 2 feet of soil or less and are not considered hazardous or require special handling (Cardno 2016b).

5.12.1.2 Hazardous Wastes

No hazardous wastes are known to be stored on the Roxana site or generated in this area. According to the USEPA's "Cleanups In My Community" mapping tool, there are no Brownfield, Superfund, or RCRA Corrective Action sites in the vicinity of the Roxana site. No sites in the town of Roxana were listed in the USEPA's TSCA, TRI, or RCRA databases. Three sites were listed in the USEPA's RCRA database: Roxana BP, Coastal Coal Company LLC, and Enterprise Mining Company LLC. The Roxana BP site is a service station located approximately 500 feet east of the proposed Roxana site and is unlikely to impact site conditions based on the topography and inferred hydrology of the area. The Coastal Coal and Enterprise Mining sites are located over a mile to the east of the proposed Roxana site and are also unlikely to impact site conditions based on the topography and inferred hydrology of the area. Site visits conducted in 2011, 2013, and 2014 did not observe any hazardous wastes or evidence of their presence (i.e., stressed vegetation, stained soils, drums, batteries) on the site and no evidence of acid mine drainage was observed.

Coal mining occurs in Letcher County; however, no active mining sites are located in the vicinity of the proposed Roxana site. Maps of active mines in Kentucky prepared by the Kentucky Department of Energy Development and Independence and the Kentucky Geological Survey were reviewed (KGS 2015) and cross referenced with maps prepared by the Kentucky Mine Mapping Information System to determine their current status. No currently active mines were found within a 1-mile radius of the proposed correctional facility site. Therefore, coal mining in the area does not affect the environment of the Roxana site.

Additional investigations using the Coal Impoundment Location and Information System (National Technology Transfer Center at Wheeling Jesuit University 2009) also indicate that there are no active coal mines, coal processing facilities, or waste disposal sites on the Roxana site or within a 1-mile radius of the proposed site. According to the Kentucky Mine Mapping Information System (2008) mine reports, the mines close to the Roxana site are abandoned. While coal is processed at the Old House Branch mine over a mile away, no combustion or disposal of coal ash or other combustion byproducts occurs at the site. Once washed, the ore is trucked off-site to generation plants located elsewhere (Mullins 2015). Additionally, the Old House Branch impoundment is contained within a topographic ridge along its western side while the loading facility is located at a substantially lower elevation than the proposed correctional facility. The presence of the ridge between the impoundment and the Roxana site would act as a barrier and hinder the movement of wind-blown particles generated at the impoundment site. As a result, any fugitive dust generated by the operations of the Old House Branch mine is unlikely to affect the environment of the Roxana site.

There is a coal slurry impoundment located approximately 1.5 miles northeast of the Roxana site (Enterprise Mining Company). According to the Coal Impoundment Location and Information System,

the impoundment has a maximum capacity of 50 acre-feet (2,178,000 cubic feet or 16,292,572 gallons). According to the U.S. Department of Labor Mine Safety and Health Administration, no violations have been reported at this facility. In the event of failure, the release of water from this impoundment would have no direct impacts on the Roxana site as the site is hydrologically and topographically separated from the impoundment. If the drinking water supply were to be affected the LCWSD would be required to take steps to meet federal minimum drinking water quality standards.

5.12.1.3 Toxic Substances

A Phase I Environmental Site Assessment was performed on the property and several structures were observed to be present. The structures observed on the Roxana site appear to have been constructed in the early 1980s and therefore are not likely to contain lead-based paint or asbestos. However, painted items of undetermined age were observed inside of one structure and may contain lead-based paint.

The USEPA classifies Letcher County as having a moderate potential for radon intrusion (Zone 2). Zone 2 counties have a predicted average indoor radon screening level between 2 and 4 pCi/L. The USEPA action level for radon is 4 pCi/L.

5.12.2 Environmental Consequences

5.12.2.1 Hazardous Materials

Construction activities would require the use of hazardous materials. The majority of the hazardous materials expected to be used are common to construction and include diesel fuel, gasoline, and propane to fuel the construction equipment; hydraulic fluids, oils, and lubricants; and batteries. The transport and use of hazardous materials would have the potential to result in accidental spills that could adversely impact soil and groundwater on and adjacent to the construction site or along transportation routes. Hazardous materials associated with construction activities would be delivered and stored in a manner that would prevent these materials from leaking, spilling, and potentially polluting soils or groundwater, and in accordance with applicable federal, state, and local environmental and public and occupational health and safety regulations. With the implementation of appropriate handling and management procedures, hazardous materials used during construction would have no significant impacts to the environment.

Operation of the proposed correctional facility would require the use of batteries, pesticides, herbicides, paints, solvents, and fluorescent light fixtures. Paints, solvents, pesticides, and herbicides would be used up, and thus, not require disposal. Pesticides and herbicides would be used as part of routine grounds and facility maintenance and would be applied and managed in accordance with applicable regulations and manufacturer instructions. Those hazardous materials that do require disposal would be properly managed and stored in accordance with federal and state regulations. As a result, operation of the proposed correctional facility would have less than significant impacts with regards to hazardous materials.

The Phase II Environmental Site Assessment identified that soils at three of the REC locations on the Roxana site have been adversely impacted by petroleum. All areas affected by petroleum releases would be cleaned up to acceptable federal and state standards prior to construction of the proposed federal correctional facility. Specifically, remediation of the petroleum releases would be achieved through removal of the contaminants to acceptable levels based on the current update of the USEPA RSLs and the procedures outlined for ASTs and surface releases in DEP 7079C, Closure Report for Petroleum Releases and Exempt Petroleum Tank Systems (KDEP 2009). Upon decommissioning of the petroleum extraction

operation, the identified contaminated soils would be excavated and disposed of at a permitted disposal facility (i.e., a soil recycling facility or landfill permitted to accept petroleum contaminated soil). The walls and floor of all excavated areas would be sampled to demonstrate compliance with Kentucky cleanup standards for petroleum hydrocarbons in residential areas as per DEP 7079C, Table B. All reports, analytical results, mapping, chain of custody forms, and waste manifests would be submitted to the KDEP, Division of Waste Management, Superfund Branch-Petroleum Cleanup Section in accordance with the procedures outlined for clean closure of ASTs and surface releases in DEP 7079C.

5.12.2.2 Hazardous Wastes

Hazardous waste would be generated during construction activities and would include but not be limited to empty containers, spent solvents, waste oil, spill cleanup materials (if used), and lead-acid batteries from construction equipment. Construction contractors would be responsible for safely removing these construction-generated wastes from the construction site and for arranging for recycling or disposal in accordance with applicable regulations. The total monthly generation of hazardous waste during construction is anticipated to be less than 100 kilograms during a calendar month. The construction contractor would be responsible for determining their regulatory status regarding hazardous waste generation during construction, and obtaining and maintaining compliance in accordance with federal and state laws. Hazardous wastes associated with construction activities would be handled and stored in a manner that would minimize human exposure to these materials and prevent these materials from polluting soils or groundwater, and in accordance with applicable federal, state, and local environmental and human health and safety regulations. Adherence to these policies, procedures, and regulations would minimize the potential impacts from exposure and accidental releases during construction. In the event of an accidental release, contaminated media would be treated on-site or would be promptly removed and disposed of in accordance with applicable federal and state regulations. With the implementation of appropriate handling and management procedures, hazardous wastes generated during construction would have no significant impacts to the environment.

Operation of the USP and FPC is anticipated to generate small volumes of hazardous waste such as petroleum, oils, lubricants, solvents, and batteries. Hazardous wastes would be properly managed and stored in accordance with federal and state regulations. As a result, operation of the proposed correctional facility would have less than significant impacts with regards to hazardous wastes.

The outdoor firing range at the proposed USP and FPC would be used an average of once a month for small arms training and maintenance, and would include the use of lead bullets. The range would be designed according to Bureau Technical Design Guidelines, which require incorporating safety baffles, berms, and backstops to contain bullets to a designated area. Impoundments, traps, and other structures would catch lead particles. The design of the firing range would also include stormwater systems to gather runoff and allow infiltration within the range bermed area. This aids in preventing contamination outside of the range itself. To ensure this feature continues to work, regular range maintenance would include adding more soil to the berm and ensuring it is seeded with grass. If there is cause, the berm soil would be sifted to remove the lead. The lead would then be recycled and the soil replaced on the range berm. Bureau institutions with an active firing range use the web-based software TRI-Me to report releases of lead to USEPA. Therefore, firing range operations would have no significant impacts to the environment.

5.12.2.3 Toxic Substances

Under Alternative 2, facilities intended for human occupancy would be designed to prevent occupant exposures to radon above the USEPA action level of 4 pCi/L. Therefore, there would not be adverse impacts associated with radon under Alternative 2.

5.12.3 No Action Alternative

The No Action Alternative would be the same as that described in Section 4.12.3.

5.12.4 Mitigation

Alternative 2 would have no significant impacts to hazardous materials and wastes; therefore, no mitigation is required.

6.0 RELATIONSHIP BETWEEN SHORT-TERM USE OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Regulations for the preparation of Environmental Impact Statements require they address the relationship between short-term use of the environment and the maintenance of long-term productivity.

Construction of proposed facilities on the site would last an estimated 36 to 48 months following ground-breaking. Construction would involve clearing and grubbing, excavating and filling, paving, erecting structures, installation of lighting and signage, and landscaping. There would also be temporary disruptions to traffic associated with construction vehicles and equipment utilizing area roadways. It is anticipated that disruptions would be temporary and that construction and operation of the proposed USP and FPC would generate economic productivity in terms of new construction jobs, new payrolls, induced personal income, purchasing of materials, supplies, and services, and potential purchasing of new homes by Bureau staff once the facility opens.

The economic viability of the Letcher County, Kentucky region would experience long-term benefits by virtue of the approximately 300 new permanent jobs that would need to be filled at the USP and FPC.

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7.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Regulations for the preparation of EISs also require they address irreversible and irretrievable commitments of resources associated with the proposed action. Construction and operation of the proposed USP and FPC would result in both direct and indirect commitments of resources. In some cases, resources committed would be recovered in a relatively short period of time. In other cases resources would be irreversibly or irretrievably committed by virtue of being consumed or by the apparent limitlessness of the period of their commitment to a specific use. Irreversible and irretrievable commitments of resources can sometimes be compensated for by the provision of similar resources with substantially the same use or value.

Under the proposed action only a portion of the site would be required for the actual construction of the USP and FPC. Resources consumed as a result of the development of the correctional facility would be offset by the creation of the facility and the resulting societal benefits. The use of the developed portion of the land could be considered irretrievably committed. The proposed action would also require the commitment of various construction materials, including cement, aggregate, steel, asphalt, and lumber. There is the potential, however, that these materials could be recycled at some point in the future; therefore, they may not be an irreversible or irretrievable commitment of resources.

The proposed action would also require the consumption of fossil fuels and electrical energy during both the construction and operation of the facility and would be considered an irretrievable commitment of these resources.

Costs associated with roadway and utility improvements to serve the site are not precisely known at this time; however, these costs would be offset by the direct economic benefits of the total project-related expenditures and the annual operating budget. Over the long term, construction of the proposed facility could result in an increase in the pace of development within Letcher County than would occur if the project were not constructed. Although the nature of such development can be controlled through the application of land use regulations, any induced land development is for all practical purposes, an irreversible and irretrievable commitment of land and materials.

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8.0 CUMULATIVE IMPACTS

This chapter (1) describes past, present, and reasonably foreseeable future actions relevant to cumulative impacts, (2) analyzes the incremental interaction the proposed action may have with other actions, and, (3) evaluates cumulative impacts potentially resulting from these interactions. The definition of cumulative impacts was discussed in Section 3.13, *Cumulative Impact Analysis*.

8.1 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

This section identifies past, present, and reasonably foreseeable future actions not related to the proposed action that have the potential to cumulatively impact the resources in the affected environment for the proposed action and its regionally affected area. Geographic distribution, intensity, duration, and historical effects of similar activities are considered when determining whether a particular activity may contribute cumulatively and significantly to the impacts of Alternative 1 or Alternative 2 on the resources identified in the EIS. Based on discussions with the economic development leaders for Letcher County, development within the county has not been strong and there are very few past, present, or reasonably foreseeable future actions that when combined with the proposed action would result in cumulative impacts to the resources evaluated in this Revised Final EIS (DePriest 2016). An ongoing project in the area is the Gateway Regional Business Park. One future project identified includes a new regional airport. In addition to these projects, there are infrastructure and utility projects associated with the proposed action that have the potential to result in cumulative impacts.

8.1.1 Gateway Regional Business Park

The Gateway Regional Business Park is approximately 262 acres (106 hectares) located just north of Payne Gap. The site was developed about 10 years ago and initially included eight businesses; four businesses are currently operating on the site (DePriest 2016). The original master plan for the business park accommodated 24 lots (Appalachian Industrial Authority 2004). Construction and operation of the business park would have potential impacts to land use, topography and soils, socioeconomics, transportation and traffic, air quality, noise, infrastructure and utilities, and water resources. The Gateway Regional Business Park has the potential to be incompatible with surrounding land uses; however, Letcher County does not have any zoning ordinances that would regulate development and compatibility. Topography and soils would have been impacted as a result of construction activities. An increase in job opportunities in the area from operation of the businesses would likely have a positive impact on the local economy. Full development of the business park would likely increase traffic on U.S. Route 119 and may contribute to impacts to congestion on area roadways. It is anticipated that short-term temporary impacts to air quality and noise would have occurred as a result of construction activities. Infrastructure and utilities would have the potential to be impacted due to increased demands on potable water, wastewater treatment, natural gas, electricity, and solid waste. Additionally, the business park has the potential for water resources to be impacted by changes to drainage patterns, redirecting or increasing surface water runoff, and increases to erosion and sedimentation.

8.1.2 Letcher County Airport Project

In 2006, the Letcher County Airport Board applied to be included in the Federal Aviation Administration's (FAA's) National Plan of Integrated Airport Systems Program and be eligible to receive FAA funding for the Letcher County Airport project. The Kentucky Department of Aviation funded a site

selection study, and based on the study, a site near Isom in the northern part of Letcher County was identified for development of the airport (Summit Engineering 2008). The site is approximately 11.5 miles from Payne Gap and 8 miles from Roxana. The airport board recently executed a purchase option for 600 acres. Preparation of an EIS is planned to begin in late 2016 (DePriest 2016). Potential impacts resulting from the project could include land use, topography, geology, and soils, socioeconomics, transportation and traffic, air quality, noise, infrastructure and utilities, cultural resources, water resources, and biological resources. Siting of the airport may have impacts to land use compatibility with adjacent land uses. Excavation and grading activities to prepare the site for development may result in changes and impacts to topography, geology, and soils. Development of the airport has the potential to result in short-term and long-term impacts to traffic as a result of construction vehicles accessing the site during construction and long-term impacts as a result of increased traffic to area roadways once the airport is operational. Both short- and long-term impacts to air quality could occur as the result of construction and operation activities of the airport. Short-term and long-term impacts due to increases in noise would likely result from construction activities and the operation of aircraft. It is anticipated that infrastructure and utilities would have increased demands placed on them during construction as well as operation of the airport. Other impacts that could result due to construction of the airport include cultural, water, and biological resources. Beneficial impacts to the economy of the region would be anticipated due to new jobs and potential tax base.

8.1.3 Infrastructure and Utility Projects

Alternative 1 and Alternative 2 would both require utility companies to upgrade facilities, extend cable, and construct new facilities to provide service to the proposed USP, FPC, and ancillary facilities. These projects would be dependent on the preferred alternative and conducted by the individual utility company.

Letcher County has several future sewer extension projects planned, two in Jenkins and three in Whitesburg (Kentucky Infrastructure Authority 2015). These projects would provide service to residents with failing septic systems or to those using direct discharge to waterways via straight pipes. The City of Jenkins also has a future project for sewer line repairs and improvements to the WWTP that will reduce inflow and improve capacity of the plant. The future projects are designed to provide for expansion of the Gateway Regional Business Park. These projects are reasonably foreseeable in the future, but have not been funded. Letcher County has many residents using illegal straight pipes that have not yet been included in future sewer projects. These residential areas may ultimately be included in future wastewater infrastructure planning.

Impacts associated with these projects have the potential to include land use, soils, air quality, noise, infrastructure and utilities, cultural resources, water resources, and biological resources. The projects have the potential to be incompatible with surrounding land use, disturb soils that could result in erosion and sedimentation issues, result in temporary increases to air emissions and temporary air quality impacts, result in temporary noise impacts due to construction activities, and impact cultural, biological, and water resources depending on the type and location of the upgrade or new construction and placement of cable. The projects would also result in a cumulative impact on the demand for wastewater treatment.

8.1.4 Proposed Action

Implementation of the proposed action would have potential impacts to land use, topography, geology, and soils, socioeconomics, transportation and traffic, air quality, noise, infrastructure and utilities, water resources, and biological resources. The proposed action would result in conversion of land uses. Letcher

County does not have any zoning ordinances that would regulate development and compatibility. Nonetheless, the buffer area to be maintained around the federal correctional facility would be compatible with adjacent land uses. The proposed action would disturb and redistribute soils and rock, resulting in significant impacts on topography, geology, and soils within the project area of either Alternative 1 or 2. These impacts would be managed through the use of appropriate BMPs to prevent erosion and sedimentation. It is expected the proposed action would have a positive impact on the local economy in terms of employment and income. The proposed action would result in temporary traffic impacts during construction, and post-construction increases in traffic associated with the operation of the federal correctional facility at either alternative site. The proposed action would also contribute to short-term temporary increases to noise, and increase local air emissions, as well as have an overall contribution to greenhouse gases (GHGs). The proposed action would result in a significant impact to potable water capacity, wastewater treatment capacity, and natural gas infrastructure under Alternative 1. Under Alternative 2, the proposed action would have a significant impact to natural gas infrastructure. Implementation of the proposed action under either Alternative 1 or Alternative 2 would have adverse impacts on streams and wetlands. The proposed action would result in impacts to vegetation and to federally listed bat species and their habitat during construction of the federal correctional facility.

As discussed in Sections 4.6 and 5.6, *Air Quality*, increases in air emissions for criteria pollutants that would occur at either site under the proposed action would have no direct or indirect significant impacts on local or regional air quality. As a result, this cumulative impacts analysis focuses on GHGs. Since individual sources of GHG emissions are not large enough to have an appreciable effect on climate change and the potential effects of proposed GHG emissions on climate change are global by nature, the study area for this aspect is not defined.

GHGs are gases in the Earth's atmosphere that prevent heat from escaping into space, resulting in climate change as the Earth's surface temperature increases above past levels. GHGs result primarily from the combustion of fossil fuels, and include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, requires federal agencies to inventory and report direct and indirect emissions of GHGs, including those associated with fuel consumption and the purchase of electricity. In addition, facilities with stationary combustion sources must determine applicability of the USEPA's Greenhouse Gas Reporting Program, as promulgated in 40 CFR Part 98, which requires reporting from facilities that emit 25,000 metric tons CO₂ equivalent (CO₂e) or more per year from stationary source fuel combustion. Emission sources evaluated in this Revised Final EIS are associated with construction and site operations. The primary GHG emission associated with these sources is CO₂, and to a lesser extent, CH₄ and N₂O. Emissions of these GHGs are carried forward in the analysis.

GHGs are produced from the burning of fossil fuels, as well as through industrial and biological processes. There are no published NEPA thresholds of significance for GHG emissions resulting from a proposed action and formulation of thresholds is difficult when attempting to identify what level of emissions would substantially contribute to global climate change. The cumulative effects for GHG emissions were evaluated for the proposed construction and subsequent operation activities. Detailed calculations can be found in Appendix C, *Air Emissions Calculations*.

Table 8-1 presents the GHG emissions associated with the proposed construction activities at the Payne Gap site. The estimated GHG emissions from the proposed construction activities at the Payne Gap site

are considerably less than the 25,000 metric ton per year reference point recommended for quantitative disclosure by the CEQ (CEQ 2014). In addition to GHGs that would be generated by the operation of equipment during construction, there is also the overall reduction in carbon sequestration capability that would be the result of the loss of 218 acres (88 hectares) of vegetation that would need to be cleared in order to develop the site. After the site is developed, a portion of it would be re-vegetated with trees, although the portion that can be re-vegetated would be a fraction of the total acreage. As a result, approximately 200 acres (81 hectares) of long-term carbon storage would be permanently lost, which is an estimated annual storage loss of 3,893 metric tons of CO₂ using the method developed by the U.S. Department of Agriculture (USDA) Forest Service to calculate carbon sequestration in a forest approximately 25 years old (Smith et al. 2006).

Table 8-1. Estimated GHG Emissions from Construction Activities at Payne Gap Site	
Year	CO_{2e} (metric tons per year)
1	10,913
2	10,913

Table 8-2 presents the GHG emissions associated with the proposed construction activities at the Roxana site. The estimated GHG emissions from the proposed construction activities at the Roxana site are considerably less than the 25,000 metric ton per year reference point for quantitative disclosure recommended by the CEQ (CEQ 2014). In addition to GHGs that would be generated by the operation of equipment during construction, there is also the overall reduction in carbon sequestration capability that would result from the loss of 161 acres (65 hectares) of vegetation that would be cleared during site development. After the site is developed, a portion of it would be re-vegetated with trees, although the portion that can be re-vegetated would be a fraction of the total acreage. As a result, approximately 150 acres (61 hectares) of long-term carbon storage would be permanently lost, which is an estimated annual storage loss of 2,919 metric tons of CO₂ using the method developed by the USDA Forest Service to calculate carbon sequestration in a forest approximately 25 years old (Smith et al. 2006).

Table 8-2. Estimated GHG Emissions from Construction Activities at Roxana Site	
Year	CO_{2e} (metric tons per year)
1	4,006
2	4,006

The GHG emissions associated with the proposed operation of stationary sources (boilers and emergency generators) and staff commuter emissions once the facilities are operational would be approximately 1,271 metric tons per year. These emissions, which would occur throughout the life of the operating facility, are well below the 25,000 ton per year quantitative threshold recommended for analysis by the CEQ.

Individual sources of anthropogenic GHG emissions are not large enough to have an appreciable effect on climate change. For this reason, emissions of GHGs from the proposed action alone would not cause appreciable global warming that would lead to climate change. These emissions would increase the atmosphere's concentration of GHGs, and, in combination with past and future emissions from all other sources, contribute incrementally to the global warming that produces the adverse effects of climate

change. As such, a net small, adverse impact would result from the development and operation of the proposed action.

8.1.5 Potential Cumulative Impacts

8.1.5.1 Land Use

When past, present, and reasonably foreseeable future projects are analyzed together, there would be changes to land use from projects in Letcher County. The proposed action would likely contribute to permanent impacts to land use. However, Letcher County does not have any zoning ordinances regulating development and compatibility. Nonetheless, under the proposed action, land use compatibility issues with adjacent properties would be minimized through the siting of the facility and use of buffer areas to reduce potential incompatibility issues with surrounding residences and forested/undeveloped areas. Implementation of either Alternative 1 or 2 along with past, present, and reasonably foreseeable future projects would result in cumulative impacts to land use; however, the impacts would not be significant.

8.1.5.2 Topography, Geology, and Soils

Excavation and grading activities associated with the past, present, and reasonably foreseeable future projects would impact topography, geology, and soils. Alternative 1 or Alternative 2 in conjunction with these other projects would result in significant impacts to topography, geology, and soils. However, erosion and sedimentation controls would be employed for all construction projects as required by federal and state regulations, and the impacts would be managed through the use of appropriate BMPs.

When past, present, and reasonably foreseeable future projects are analyzed together with Alternative 1 or Alternative 2, there would be an overall positive impact to the socioeconomics of the region. Except for the infrastructure and utility projects, the cumulative projects would have short- and long-term beneficial economic impacts. It is assumed that short-term jobs would be created in the construction of facilities for the projects, and long-term jobs would be created for their operation. It is anticipated the projects would bring additional residents and workers who would likely spend money in the local area, resulting in beneficial cumulative impacts on the local and regional economy. The proposed action would be expected to result in a minor increase in population when considered in conjunction with the cumulative projects.

8.1.5.3 Traffic and Transportation

Located in northern Letcher County, the proposed Letcher County Airport is unlikely to have the potential to interact with the proposed action under either Alternative 1 or Alternative 2 and would not cumulatively impact traffic in the vicinity of Payne Gap or Roxana. The infrastructure and utility projects are not likely to result in traffic increases. However, there would be potential cumulative traffic impacts from the Gateway Regional Business Park in conjunction with Alternative 1. Regular traffic would be expected on U.S. Route 119 during weekday business hours in association with operation of the businesses at the Gateway Regional Business Park. Under Alternative 1, potential impacts to traffic on U.S. Route 119 may occur during a.m. and p.m. peak periods. However, the potential impact to traffic would be reduced to a less than significant level with the implementation of mitigation outlined in the Traffic Impact Study (Appendix F). Therefore, while Alternative 1 may contribute to cumulative impacts, mitigation measures would be in place and the cumulative impact would be considered less than significant.

8.1.5.4 Air Quality

The past, present, and reasonably foreseeable future projects in conjunction with the proposed action have the potential to contribute to changes in air quality. The majority of the impacts would be short-term construction impacts from the Gateway Regional Business Park and infrastructure and utility projects, which may occur during the same time period as the federal correctional facility construction. Neither the business park nor the infrastructure and utility projects would have long-term impacts to air quality. The Letcher County Airport project would likely have long-term operational emissions. The amount of emissions for any of the criteria pollutants is not known at this time, and would be dependent on the type and frequency of aircraft operations at the airport. The proposed action would not significantly impact local or regional air quality; therefore, in conjunction with past, present, and reasonably foreseeable future projects, the proposed action would not contribute to significant cumulative impacts to air quality.

8.1.5.5 Noise

There is potential for construction of additional businesses at the Gateway Regional Business Park or certain infrastructure and utility projects to overlap with the construction of the proposed action. Therefore, there would be potential for cumulative noise impacts in the vicinity of either Payne Gap or Roxana from construction activities and construction vehicles traveling to/from project sites. Construction activities would be limited during certain days and hours during the week to minimize impacts. These cumulative impacts would be temporary and not significant. Operations of the federal correctional facility in conjunction with the cumulative projects would generate some level of noise, but any increase in ambient noise levels would not be significant. Increases in noise levels would be anticipated from aircraft operations at the Letcher County Airport; however, these impacts would be considered infrequent. Implementation of the proposed action along with past, present, and reasonably foreseeable future projects would not result in significant cumulative noise impacts.

8.1.5.6 Infrastructure and Utilities

The proposed action would contribute to cumulative impacts on infrastructure and utility demand. Cumulative wastewater treatment demand under Alternative 1 would considerably exceed the capacity of the Jenkins WWTP; therefore, cumulative impacts to wastewater treatment capacity would be significant under Alternative 1.

The demand for treatment of wastewater under Alternative 2 would increase the Whitesburg WWTP to approximately 87 percent of its current design capacity; therefore, Alternative 2 combined with reasonably foreseeable future projects would potentially exceed the capacity of the plant and be a significant impact. However, most of the future projects in the Whitesburg service area currently do not have funding and have not been programmed for construction. The effort to include the existing pending projects and any potential future projects requires extensive planning and would need to be approved through the facilities planning and approval process (Nesbitt 2015). The region prepares a facilities plan approximately every 10 years. The city of Whitesburg is currently in the initial phase of this 10-year planning process (Nesbitt 2015).

Furthermore, the Kentucky River Area Development District 2012–2013 Comprehensive Economic Development Strategy Update included planning for infrastructure for a new federal prison. Currently, there is ample capacity to handle the flow from Alternative 2, as wastewater flow from the proposed prison was incorporated into the design of the plant. The existing plant was designed to accommodate

expansion in the future. The WWTP site was selected for its ample space for expansion. Plans for this expansion and an approach to the connection of the illegal straight pipes and any other approved extensions will be incorporated in the next regional facilities plan (Nesbitt 2015). The timing of the future sewer projects and future planning for expansion of the Whitesburg WWTP would minimize the cumulative impacts of Alternative 2.

8.1.5.7 Water Resources

Implementation of the proposed action along with past, present, and reasonably foreseeable future projects would disturb soils and would result in temporary increases in soil disturbance and potential soil erosion and a permanent increase in impervious surfaces in the area, with a consequential increase in stormwater runoff. Implementation of BMPs as parts of an erosion and sediment control plan and groundwater protection plan for construction of the proposed action would minimize these impacts. Under Kentucky regulations, the Letcher County Airport, and likely also the Gateway Regional Business Park, would require a groundwater protection plan. This assessment assumes these projects would implement BMPs to limit erosion and runoff. Therefore, cumulative impacts to local water resources would not be significant.

The proposed action would adversely affect an estimated 10,512 linear feet of streams and 2.4 acres (0.97 hectares) of wetlands under Alternative 1, and approximately 4,117 linear feet of streams and 2.45 acres (1.0 hectares) of wetlands under Alternative 2. As part of its Section 404 permit from the USACE, the Bureau would pay into an in-lieu fee fund to mitigate the impacts under the preferred alternative (Alternative 2). The mitigation would reduce the direct impacts to less than significant. Direct impacts to wetlands and streams by the other past, present, and reasonably foreseeable future construction projects are unknown. Given the size of the projects, particularly the Letcher County Airport, impacts to wetlands or streams would be expected. Compliance with federal regulations for wetlands and stream impacts would require full mitigation of impacts. As a result, cumulative impacts would not be significant.

8.1.5.8 Biological Resources

The proposed action would involve ground disturbing activities and tree clearing for construction of new facilities. Direct impacts to forested land would comprise an estimated 218 acres (88 hectares) under Alternative 1, and an estimated 118 acres (48 hectares) under Alternative 2. When considered cumulatively, it is anticipated that the past, present, and reasonably foreseeable future projects in the area would result in the development of several hundred acres of land in Letcher County. Much of this land is forested. The cumulative loss of several hundred acres of forest would constitute a loss of a small fraction of forested land within the 338 square mile land area of Letcher County, and is not considered to be significant.

Construction-related noise has the potential to temporarily disturb wildlife in the immediate vicinity of the project areas. Permanent impacts to wildlife would result from the cumulative loss of habitat from construction of the proposed action and cumulative projects in the area. Wildlife species would be permanently displaced by the past, present, and reasonably foreseeable future projects, however, suitable habitat would be available on adjacent land areas. Under the proposed action, more than two-thirds of the project site under either Alternative 1 or Alternative 2 would remain undisturbed and continue to provide habitat for wildlife species found on-site. Therefore, cumulative impacts to wildlife would not be significant.

The proposed action has the potential to impact summer roosting habitat and winter hibernaculum of the Indiana bat and northern long-eared bat under Alternative 1, and the summer roosting habitat of both bats under Alternative 2. Under Alternative 2, the preferred alternative, the Bureau would mitigate the direct impacts to the Indiana bat and northern long-eared bat by paying into the Imperiled Bat Conservation Fund. Conservation measures would also be implemented to minimize potential indirect impacts to these bat species from site lighting. Cumulative impacts to both bat species and their habitat could result from construction and operation of the Letcher County Airport; however, specific impacts are not known at this time. If mitigation and conservation measures are implemented for the Letcher County Airport project, it is anticipated that the cumulative impacts to Indiana bat and northern long-eared bat would not be considered significant.

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- Whitesburg Police Department. 2013. Garnet Sexton, City Clerk and Treasurer for Whitesburg. Personal communication, September 4.

10.0 LIST OF PREPARERS

Federal Bureau of Prisons

Thomas Webber, Branch Chief, Capacity
Planning and Construction

Issac Gaston, Site Selection Specialist

Cardno

Cristina Ailes – Public Involvement Specialist
B.S. Environmental Science
B.A. International Studies
Years of Experience: 7

Scott Barker – Transportation and Traffic
M.S. Civil Engineering/City Planning
Years of Experience: 24

Erika Fuery – Hazardous Materials and Waste
M.S. Environmental Science
Years of Experience: 15

Kathy Hall – Quality Control
B.A Earth and Environmental Sciences
Years of Experience: 18

Lesley Hamilton – Air Quality
B.A. Chemistry
Years of Experience: 27

Deborah Henson – Project Manager
M.S. Geo-environmental Studies
Years of Experience: 17

Joanne Lortie – Socioeconomics
M.A. Economics
Years of Experience: 24

Kathleen Riek – Project Director
B.S. Biology
Years of Experience: 21

Kimberly Sebestyen – Archaeological Resources
M.A. American Studies
Years of Experience: 21

Abby Shoff – GIS Specialist, Graphics
B.S. Geographical Information Systems
Years of Experience: 2

Lori Thursby – Architectural Resources
M. Architectural History
Years of Experience: 17

Jill Yamaner – Infrastructure and Utilities
M.S. Environmental Engineering
Years of Experience: 22

Dale Nicholson – Grading and Excavation
Modeling
B.S. Civil Engineering
Years of Experience: 35

John Feddock – Quality Control Grading and
Excavation Modeling
M.S. Mining Engineering
Years of Experience:

Sam Moore – Roadway Design and Site Grading
Years of Experience: 35

Dave McChesney – Cut and Fill Modeling
B.S. Mining Engineering
Years of Experience: 31

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11.0 DISTRIBUTION LIST

Federal Elected Officials

Senator Mitch McConnell 317 Russell Senate Office Building Washington, DC 20510	Representative Harold Rogers 2406 Rayburn House Office Building Washington, DC 20515
Senator Rand Paul 124 Russell Senate Office Building Washington, DC 20510	

State Elected Officials

Governor Matt Bevin 700 Capitol Avenue, Suite 100 Frankfort, KY 40601	Representative Leslie Combs 245 E. Cedar Drive Pikeville, KY 41501
Senator Johnny Ray Turner 849 Crestwood Drive Prestonsburg, KY 41653	Representative John Short 240 Briarwood Lane Mallie, KY 41836

Local Elected Officials

Mayor James Craft 38 East Main Street Whitesburg, KY 41858	James Bates 38 East Main Street Whitesburg, KY 41858
Mayor Todd DePriest P.O. Box 568 Jenkins, KY 41537	Robin Bowen-Watko 27 Della Drive Whitesburg, KY 41858
Keith Adams P.O. Box 5 Jeremiah, KY 41826	Larry Everidge 38 East Main Street Whitesburg, KY 41858
Terry Adams P.O. Box 488 Isom, KY 41824	Jamie Hatton, County Attorney 95 A Main Street Whitesburg, KY 41858
Honorable Edison G. Banks, II 48 East Main Street Whitesburg, KY 41858	Bobby Howard 247 Tunnel Road Whitesburg, KY 41858

Don McCall
156 Main Street
Whitesburg, KY 41858

Jim Ward, Letcher County Judge Executive
156 Main Street, Suite 107
Whitesburg, KY 41858

Honorable Kevin R. Mullins
156 Main Street, Suite 101C
Whitesburg, KY 41858

Danny Webb, Sheriff
6 Broadway Street
Whitesburg, KY 41858

Tom Sexton
38 East Main Street
Whitesburg, KY 41858

John Williams
146 Maryland Drive
Whitesburg, KY 41858

Sheila Short
181 Shady Drive
Whitesburg, KY 41858

Honorable Samuel T. Wright, III
156 Main Street, Suite 205
Whitesburg, KY 41858

Federal Agencies

U.S. Environmental Protection Agency – EIS
Filing Section

Lee Andrews
U.S. Fish and Wildlife Service
Kentucky Field Office
330 W Broadway, Suite 265
Frankfort, KY 40601

Heinz Mueller
U.S. Environmental Protection Agency,
Region 4
61 Forsyth Street
Atlanta, GA 30303

David Baldridge
U.S. Army Corps of Engineers
Louisville District
845 Sassafras Creek Road
Sassafras, KY 41759

State Agencies

State Clearinghouse

Ronald T. Price
Executive Staff Advisor
Office of the Commissioner
Department for Environmental Protection
300 Fair Oaks Lane
Frankfort, KY 40604

Local Agencies

Letcher County Economic Development
Joe DePriest
Box 186
Jenkins, KY 41437

Letcher County Planning Commission
Box 370
Whitesburg, KY 41858

Letcher County Emergency Management
156 Main Street, Suite 107
Whitesburg, KY 41858

Individuals and Organizations

Barbara Adams 69 Adams Ln Redfox, KY 41847	Bobby Adams 1797 Highway 343 McRoberts, KY 41835	D Adams 126 Walter Br Rd Isom, KY 41824
Danielle Adams P.O Box 568 Jenkins, KY 41537	Danny Adams P.O. Box 843 Jenkins, KY 41537	Doug Adams 24 Baker Dr Whitesburg, KY 41858
Frank Adams 309 Seco Dr. Seco, KY 41849	Hettie Adams Address Withheld	Larry Adams P.O. Box 111 Isom, KY 41824
Larry Adams P.O. Box 1054 Hazard, KY 41702	Paul Adams 63 Arizona Avenue Whitesburg, KY 41858	Trish Adams 412 Roy Campbell Drive, Suite 100 Hazard, KY 41701
Wade Adams 1168 Rainbow Valley Whitesburg, KY 41858	Stephen Amber P.O. Box 436 Whitesburg, KY 41858	Emily Anderson 159 Corkwood Ln Mayking, KY 41838
Craig Baily P.O. Box 67 Isom, KY 41824	Kevin and Courtney Baker 3197 Highway 803 Millstone, KY 41838	Marty Baker Address Withheld
Shad Baker P.O. Box 204 Jenkins, KY 41537	Ruth Bamberger 596 River's Breeze Dr Ludlow, KY 41016	Bob Banks 4625 Highway 7 South Letcher, KY 41832
Connie Bates 3267 Highway 15 Whitesburg, KY 41858	Danny and Dionne Bates 44 Steelbridge Rd Blackey, KY 41804	Davis Banks 234 Boney Banks Cemetery Rd Whitesburg, KY 41858
Wendy Bates 126 Big Shelby Creek Jenkins, KY 41537	Sally Barto 100 Tennessee Avenue Whitesburg, KY 41858	Duane Beachey 2670 Highway 1148 Isom, KY 41824

Dan Berger Address Withheld	Scottie Billiter P.O. Box 815 Jenkins, KY 41537	Black Lives Matter Kentucky 3208 W. Broadway Louisville, KY 40211
Benjamin Blair 53 Log Cabin Dr. Mayking, KY 41837	Randy Blair 347 Chissom Rd Jeremiah, KY 41826	Black Lives Matter (Lexington Group) 2369 Aristocracy Circle Lexington, KY 40509
Teresa Blair P.O. Box 587 Whitesburg, KY 41858	Daryl Boggs P.O. Box 806 Whitesburg, KY 41858	Melinda Boggs 334 Highway 3404 Partridge, KY 40862
Zachary Boggs P.O. Box 974 Pound, VA 24279	Anita Bolt 451 Murphy Street NW Norton, VA 24273	Thomas Birnes 98 B & O Hill Jenkins, KY 41537
Chad Bowling 671 Old Long Fork Road Virgie, KY 41572	Tony Bowling 41 Commercial Dr Hazard, KY 41701	Bette Braddock 304 Indian Creek Road Whitesburg, KY 41858
Jeffery Breeding P.O. Box 442 Neon, KY 41840	Shirley Breeding Address Withheld	Tim Breeding P.O. Box 86 Isom, KY 41824
Kinnita Brock 1150 Pert Creek Rd Whitesburg, KY 41858	Henry Brooks P.O. Box 279 Whitesburg, KY 41858	Aaron Brown 101 Tolliver Rd Whitesburg, KY 41858
Charlotte Brown 960 Little Dry Fork Whitesburg, KY 41858	Nancy Brown 18 Tyler Lane Whitesburg, KY 41858	Dana Beasley Brown Kentuckians For The Commonwealth 250 Plaza Dr., Suite 4 Lexington, KY 40503
Regina Brown 4380 Highway 7 South Blackey, KY 41804	Roland Brown 1141 Doty Creek Jeremiah, KY 41826	Tracy Brown 16 Tyler Lane Whitesburg, KY 41858
Ron Brunt 149 Hiram Bailey Loop Letcher, KY 41832	Dwight Buckley Address Withheld	Lori Ann Burd Center for Biological Diversity Address Withheld
Jack Burkich 79 Mountain View Ave Whitesburg, KY 41858	Theresa Callihan 9886 Highway 931 South Whitesburg, KY 41858	Nancy Campbell 40 Windmill Acres Blackey, KY 41804

William Campbell
31 North Adams Ridge
Hazard, KY 41701

Stephanie Cassell
Address Withheld

Holly Caudill
1119 Highway 1148
Isom, KY 41824

Jill Caudill
P.O. Box 560
Whitesburg, KY 41858

Mike and Joy Caudill
P.O. Box 831
Whitesburg, KY 41858

Reed Caudill
Address Withheld

Sally Caudill
25 Mountain View Ave
Whitesburg, KY 41858

Sandy Caudill
P.O. Box 234
Ermine, KY 41818

William Caudill
1936 Carcassonne Rd
Blackey, KY 41804

David Clark
P.O. Box 902
Whitesburg, KY 41858

Sarah Clark
P.O. Box 319
101 Chestnut St
Berea, KY 40404

Harry Collins
562 Smoot Creek
Whitesburg, KY 41858

Victoria Collins
Address Withheld

Johnny Combs
8141 Highway 15
Isom, KY 41824

Debbie Cook
P.O. Box 1052
Thornton, KY 41855

Rebecca Cook
Address Withheld

Sandra Cook
P.O. Box 336
Mayking, KY 41837

Sandra Cook
Virginia Organizing
703 Concord Ave
Charlottesville, VA 22903

Elwood Cornett
262 Elwood Rd
Blackey, KY 41804

Heather Corbett
P.O. Box 626
Jenkins, KY 41537

Terry Cornett
15844 Highway 160
Linefork, KY 41833

Amy Craft
P.O. Box 8
Mayking, KY 41837

Anna Craft
Address Withheld

Roland Craft
P.O. Box 568
Jenkins, KY 41537

Amy Crawford
P.O. Box 333
Mayking, KY 41837

Sandi Curd
P.O. Box 1738
London, KY 40741

Jean Curry
37 Arlington Circle
Jenkins, KY 41537

Rick Damron
60 Camden Rd
Jenkins, KY 41537

Lisa Daniels
131 Summit Dr
Pikeville, KY 41501

Carol Day
P.O. Box 1106
Whitesburg, KY 41858

Dauphus Day
52 Boggs Hollow
Whitesburg, KY 41858

Joe DePriest
P.O. Box 186
Jenkins, KY 41530

Todd DePriest
P.O. Box 2
Jenkins, KY 41537

Michael Dingus P.O. Box 1224 Jenkins, KY 41537	Daniel Dixon 192 Turkey Creek Road Hallie, KY 41821	Jennifer Dixon 168 Emory Ln Blackey, KY 41804
Harlin Eldridge 215 Scarlett Lane Neon, KY 41840	Hazel Eldridge 172 Breezie Ridge Hallie, KY 41821	Kim Ellis Radical Action for Mountain Peoples' Survival P.O. Box 121 Rock Creek, WV 25174
Larry Everidge P.O. Box 844 Whitesburg, KY 41858	James Fields 966 Tolly Br Hallie, KY 41821	Dr. Preston Elrod Eastern Kentucky University 521 Lancaster Ave, Stratton 467 Richmond, KY 40475
Nell Fields 12225 Highway 160 Whitesburg, KY 41858	Brian Fieldsong 2641 Highway 588 Whitesburg, KY 41858	Bea Fleming P.O. Box 432 Pound, VA 24279
Brad and Teresa Fleming P.O. Box 1432 Pound, VA 24279	Dennis Fleming P.O. Box 280 Whitesburg, KY 41858	Nancy Fleming P.O. Box 88 Jenkins, KY 41539
Paul Fleming P.O. Box 88 Jenkins, KY 41537	Charles Frazier 60 Chandler Dr. Hallie, KY 41821	Doris Jean Frazier Address Withheld
Alfred Fysste P.O. Box 428 Isom, KY 41840	Chris Gang 557 Burlew Dr Charleston, WV 25302	Chris Gang Stories from South Central WV Address Withheld
Codell Gibson 533 Coperhead Lane Ermine, KY 41815	Deborah Gibson 337 Highway 3401 Whitesburg, KY 41858	Emily Gillespie 373 Henry St Appalachia, VA 24216
Alana Godner-Abravanel Hampshire College 893 West St Amherst, MA 01002	Peggy Green P.O. Box 263 Jenkins, KY 41537	Michelle Griffin P.O. Box 304 Mayking, KY 41837
David Halcomb 322 Sackett Loop Whitesburg, KY 41850	Glenna Halcomb 200 Noras Road Cornettsville, KY 41731	Brad Hall 3249 N Mayo Trail Pikeville, KY 41501
Dixie Hall Address Withheld	Eric Hall 190 Misty Branch Neon, KY 41840	William and Jennifer Hall 251-C Medical Plaza Whitesburg, KY 41858

April Hall-Illone
P.O. Box 488
Whitesburg, KY 41858

Margaret Hammonds
122 Dow Collins Street
Whitesburg, KY 41858

Margaret Hammonds
Whitaker Bank, Inc.
187 Main St
Whitesburg, KY 41858

Phillip Hampton
P.O. Box 2314
Whitesburg, KY 41858

Robert Hares
Address Withheld

Jill Harmer
Address Withheld

Crystal Hart
P.O. Box 44
Mayking, KY 41837

Jill Hatel
P.O. Box 412
Isom, KY 41824

Douglas and Alice Hayes
20 Bayview Dr.
Jenkins, KY 41537

Gabrielle Helle
150 Rainbow Dr
Whitesburg, KY 41858

Jon Henrikson
3128 Highway 3408
Blackey, KY 41804

Jarrad Hipps
24 Frazier Ave
Whitesburg, KY 41858

Connie Hogg
8371 Highway 160
Whitesburg, KY 41858

Sandy Hogg
Address Withheld

Angie Holbrook
P.O. Box 223
Eolia, KY 40826

Sheila Holbrook
P.O. Box 293
Neon, KY 41840

Robert Holcomb
9538 Highway 15
Isom, KY 41824

Caleb Howard
15 Frazier Ave
Whitesburg, KY 41858

Henry Hughes
700 College Road
Cumberland, KY 40823

Danny and Nancy Ingram
11638 Highway 160
Whitesburg, KY 41858

Carol Ison
Cowan Community Center
81 Sturgill Branch
Whitesburg, KY 41858

James Ison
P.O. Box 149
Isom, KY 41824

Kendall and Carol Ison
5431 Highway 931 South
Whitesburg, KY 41858

Patricia Ison
271 Stallard Road
Whitesburg, KY 41858

Sherwood and Rhoda Ison
9769 Highway 522
Totz, KY 40870

Eliza Jane
P.O. Box 265
Jenkins, KY 41537

Brian Johnson
P.O. Box 1201
Jenkins, KY 41537

James Johnson
953 Sorgen Road
Whitesburg, KY 41815

Tonya Johnson
340 Tyler Ln
Whitesburg, KY 41858

Elizabeth Jones
252 Fairview Ln
Neon, KY 41840

Janet Keating
Ohio Valley Environmental Coalition
P.O. Box 6753
Huntington, WV 25773

Ellis Keyes
240 Hospital Road
Whitesburg, KY 41858

James Kincaid
P.O. Box 105
Roxana, KY 41804

Brenda Kincer
243 Heritage Drive
Whitesburg, KY 41858

G. Kincer
P.O. Box 1202
Jenkins, KY 41537

Robin and Dwayne Kincer
P.O. Box 183
Jenkins, KY 41537

Sandra Kincer
P.O. Box 202
Jenkins, KY 41537

Larry King
Address Withheld

Amelia Kirby
1356 Jenkins Rd
Whitesburg, KY 41858

R.F. and Edna Kiser
559 Bill Moore Br.
Whitesburg, KY 41858

Melissa Knight
82 Improvement Branch
Jenkins, KY 41537

Jeanette Ladd
P.O. Box 261
Cromona, KY 41810

Margaret Lewis
Address Withheld

Shawn Lind
4091 Highway 805
Jenkins, KY 41537

John Lindon
210 Apple Ridge Lane
Hazard, KY 41701

Dewey Little
P.O. Box 43
Pine Top, KY 41731

Shane Lyle
801 Corporate Dr
Lexington, KY 40503

Bridgette Madden
1108 Racetrack Holw
Whitesburg, KY 41858

Royce Maggard Jr.
Address Withheld

Roger Martin
2743 Highway 7 South
Dena, KY 41859

Ricky Mason
588 Stinking Branch
Thornton, KY 41855

Josh May
P.O. Box 18
Mayking, KY 41837

Jordan Mazurek
3401 Gatewood Ct, Apt 56
Lexington, KY 40517

Jim and Karen McAuley
87 Kona Dr
Whitesburg, KY 41858

Bennie McCall
P.O. Box 646
Neon, KY 41840

Bill McClanahan
Address Withheld

Dustin McDaniel
Abolitionist Law Center
P.O. Box 8654
Pittsburgh, PA 15221

James McDannel
116 Vermillion Ave
Whitesburg, KY 41858

Roger and Geraldine McDonald
170 Virginia Ave
Whitesburg, KY 41858

Eddie Meade
2 Stevens Fork
Deane, KY 41812

Eugene Meade
19 Fields Cliff
Whitesburg, KY 41858

Robert Meade
11010 Highway 160
Whitesburg, KY 41858

Shelia Meade
P.O. Box 316
Whitesburg, KY 41858

Twyla Messer
219 Yellow Mt. Rd
Leburn, KY 41831

Delena Miller
9145 Highway 931 S.
Whitesburg, KY 41858

Mary Miller
Address Withheld

Belinda Morris 493 Highway 3404 Partridge, KY 40862	Annette Napier 917 Perry Park Road Hazard, KY 41701	Durward and Deborah Narramore 71 Elm St Jenkins, KY 41537
Lisa Narramore 26 Pine St Whitesburg, KY 41858	Paul Nesbitt 227 North Upper St Lexington, KY 40507	Freddy Oakes P.O. Box 1102 Thornton, KY 41855
Stanley Osborne 3374 Highway 317 Jackhorn, KY 41825	Leslie and Paul Parsons 1771 Highway 931 North Whitesburg, KY 41858	Ike Patterson 166 Long Ave Whitesburg, KY 41858
James and Rhonda Perry P.O. Box 197 Lynch, KY 40855	Anne Petermann Global Justice Ecology Project Address Withheld	Rodney Pigman 71 Darcas Branch Whitesburg, KY 41858
Pine Mountain Grill Address Withheld	Susan Polis 843 Highway 317 Isom, KY 41840	Lona Leigh Pomraning 134 Ohio St Whitesburg, KY 41858
Emily Posner Address Withheld	Gary and Rita Pratt 187 Main Street Whitesburg, KY 41858	Prison Books Collective Address Withheld
Maxine Quillen 77 Sydney Dr Whitesburg, KY 41858	Stephen Raher 1120 N.W. Couch Street 10 th Floor Portland, OR 97209-4128	Tarence Ray 260 Main Street, Apt B Whitesburg, KY 41858
JoAnn Redmond P.O. Box 311 Mayking, KY 41837	Cathy Rose 2792 Highway 3406 Jenkins, KY 41537	Elizabeth Sanders 1348 Jenkins Road Whitesburg, KY 41858
Janet Sandlin P.O. Box 834 Hazard, KY 41702	Charles Saxton 412 Solomon Road Whitesburg, KY 41858	Ann Sayer 50 Twin Creek Drive Eolia, KY 40826
Judah Schept Address Withheld	Corinne Sereni Address Withheld	Tony Sergeant Letcher County Public Schools 224 Parks St Whitesburg, KY 41858
David and Linda Setzer 76 Texas Avenue Whitesburg, KY 41858	Jeannie Sexton 395 Sunset View Loop Mayking, KY 41837	Lovell Sexton Address Withheld

Michael Sexton 3703 Thornton Rd Thornton, KY 41855	Sybil Shell 20 Autumn Winds Lane Whitesburg, KY 41858	Michael Shepherd 24 Brett Dr. Whitesburg, KY 41858
Caleb Short 200 Alaska Ave, Apt 223 Whitesburg, KY 41858	Susan Short 255 Highway 1087 East Leburn, KY 41831	Carl Shoupe P.O. Box 185 Benham, KY 40807
Robert Shubert 72 Goodwater Circle Jenkins, KY 41537	Eugene Slone 122 Company Br Ermine, KY 41815	Joshua Smallwood 466 Pine Valley Rd Hazard, KY 41701
Sharon Smallwood 84 Hummingbird Ln Jenkins, KY 41537	Ada Smith Address Withheld	Kyle Smith Address Withheld
Nathan Snowden 14 Dye Addition Whitesburg, KY 41858	Juanita Spangler 202 Frogpond Lane Whitesburg, KY 41858	Dena Sparkman Address Withheld
Duran/Dena Sparkman 99 Royal Melbourne Ln Jenkins, KY 41537	Major Sparks 440 Foothills Rd Whitesburg, KY 41858	Marjorie Sparks 874 Highway 3406 Mayking, KY 41837
Raphael Sperry Architects/Designers/Planners for Social Responsibility Address Withheld	Paul Stambaugh 230 Chopping Branch McRoberts, KY 41835	Howard Stanfill P.O. Box 363 Blackey, KY 41804
James Stephens P.O. Box 299 Jenkins, KY 41537	Stop Mass Incarceration KY 2369 Aristocracy Circle Lexington, KY 40509	Amanda Stump 600 Highway 3408 Blackey, KY 41858
Stacey Sturgill P.O Box 776 Lynch, KY 40855	Calvin Tackett 40 Main Street Whitesburg, KY 41858	Michael Thornsberry 7266 Highway 582 Pine Top, KY 41843
Lisa Tidal 18 Collier Court Whitesburg, KY 41858	Panagiotti Tsolkas HRDC's Prison Ecology Project Address Withheld	Tanya Turner P.O. Box 463 Whitesburg, KY 41858
Freda Turnmyre 11984 Highway 805 Jenkins, KY 41537	Priscilla Tyler 52 Tyler Ln Whitesburg, KY 41858	Grace Walters 519 Lakeside Dr. Jenkins, KY 41537

Katie and Marlene Walters
350 Ironwood Dr
Hallie, KY 41821

Jim Ward
P.O. Box 630
Whitesburg, KY 41858

Anthony Warlick
2928 Highway 343
McRoberts, KY 41835

Thomas Watko
27 Della Drive
Whitesburg, KY 41858

Bonnell Watts
247 Closes Br.
Letcher, KY 41832

Deborah Watts
P.O. Box 74
Jenkins, KY 41537

Earnest Watts
75 Watts Dr
Cornettsville, KY 41731

Freddie Watts
310 Old Dixon Road
Blackey, KY 41804

Jenna Watts
P.O. Box 34
Whitesburg, KY 41858

Ken Watts
180 Old Dixon Rd
Blackey, KY 41804

Tyler and Linda Watts
310 Old Dixon Road
Blackey, KY 41804

Charles and Tina Whitaker
P.O. Box 217
Cromona, KY 41810

Ivan Whitaker
9024 Highway 588
Roxana, KY 41858

Larry and Betty Whitaker
236 Scarlett Lane
Neon, KY 41840

Marion Whitaker
481 C. Hill Rd.
Cornettsville, KY 41731

Mary Whitaker
5442 Highway 1103
Hallie, KY 41821

Ricky Whitaker
820 Tolby Branch
Hallie, KY 41821

Pamela White
P.O. Box 493
Jenkins, KY 41357

Shellie Williams
P.O. Box 23
Whitesburg, KY 41858

Brady Wilson
P.O. Box 444
Ermine, KY 41815

Women in Transition
P.O. Box 1808
Louisville, KY 40201

Working Narratives
1512 Orange St
Wilmington, NC 28401

Brian Wright
227 Low Gap Branch
Isom, KY 41824

Donald and Mary Wright
2804 Highway 3406
Jenkins, KY 41537

Jennifer Wright
P.O. Box 255
Mayking, KY 41838

Jenny Wright
1013 Lucerne Ave
Lake Worth, FL 33460

Mitchell Wright
P.O. Box 9
Isom, KY 41824

Paul Wright
Human Rights Defense Center
P.O. Box 1151
Lake Worth, FL 33460

Heather Yates
155 Barton Branch
Partridge, KY 40862

Denise Yonts
Letcher County Public Schools
224 Parks St
Whitesburg, KY 41858

Don and Melissa Young
1589 Highway 343
Neon, KY 41840

Fred Young
1117 Highway 343
Neon, KY 41840

Mark Young
P.O. Box 45
McRoberts, KY 41835

Mark and Deborah Young
279 Wintergreen Drive
McRoberts, KY 41835

In addition to the agencies, individuals, and organization listed above, notification of the availability of the Revised Final EIS was sent to 34 individuals who requested their name and address be withheld.

Libraries

Harry M. Caudill Memorial Library
220 Main Street
Whitesburg, KY 41858

Jenkins Public Library
9543 Highway 805
Jenkins, KY 41537

Blackey Public Library
295 Main St. Loop
Blackey, KY 41804

Lillian Webb Memorial Library
1049 Highway 317
Neon, KY 41840