2017 DRAFT SUPPLEMENTAL 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 2017

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2017 DRAFT SUPPLEMENTAL
REVISED FINAL ENVIRONMENTAL IMPACT STATEMENT
FOR PROPOSED UNITED STATES PENITENTIARY AND FEDERAL PRISON CAMP

LETCHER COUNTY, KENTUCKY

March 2017

Lead Agency: Federal Bureau of Prisons

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

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Abstract

The Federal Bureau of Prisons (Bureau) has prepared this 2017 Draft Supplemental Revised Final Environmental Impact Statement (RFEIS) 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 2017 Draft Supplemental RFEIS incorporates by reference and builds upon the analyses presented in the published 2016 RFEIS. The 2017 Draft Supplemental RFEIS addresses changes in the proposed action and assesses new circumstances or information relevant to potential environmental impacts. The 2016 RFEIS analyzed the No Action Alternative and two build alternatives, Alternative 1 – Payne Gap and Alternative 2 – Roxana, and identified Alternative 2 – Roxana as the preferred alternative. However, the Bureau was originally considering acquiring approximately 283 hectares (700 acres) at the Roxana site for this project. Following publication of the 2016 RFEIS, the Bureau removed two parcels of land at the Roxana site from acquisition consideration, resulting in a proposed site of approximately 231 hectares (570 acres). This reduction in site size necessitated modifying the facilities layout evaluated for Alternative 2 – Roxana in the 2016 RFEIS. The Modified Alternative 2 – Roxana is the preferred alternative.

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 bed space. 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 2017 Draft Supplemental RFEIS analyzes the direct, indirect, and cumulative impacts of the No Action Alternative and the Modified Alternative 2 – Roxana with regard to land use and zoning, topography, geology, and soils, air quality, noise, infrastructure and utilities, and cultural, water, and biological resources.

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EXECUTIVE SUMMARY

The Federal Bureau of Prisons (Bureau) has prepared this document to supplement the March 2016 *Revised Final Environmental Impact Statement for Proposed United States Penitentiary and Federal Prison Camp, Letcher County, Kentucky*. The 2016 Revised Final Environmental Impact Statement (RFEIS) analyzed the environmental consequences of the No Action Alternative and two action alternatives for acquiring land and constructing and operating a new United States Penitentiary (USP), Federal Prison Camp (FPC), and associated ancillary facilities in Letcher County, Kentucky. The two action alternatives included Alternative 1 – Payne Gap, an approximately 305-hectare (753-acre) site in eastern Letcher County, and Alternative 2 – Roxana, an approximately 283-hectare (700-acre) site in western Letcher County. The 2016 RFEIS identified Alternative 2 – Roxana as the preferred alternative because it best meets the project needs and, on balance, would have fewer impacts to the natural and built environment.

The Bureau was originally considering acquiring approximately 283 hectares (700 acres) at the Roxana site for this project. Following publication of the 2016 RFEIS, the Bureau removed two parcels of land at the Roxana site from acquisition consideration. The Bureau withdrew one parcel because the landowner did not want to sell their property, and withdrew another parcel after determining it was not required for the project. The resulting proposed site is approximately 231 hectares (570 acres). This reduction in site size necessitated modifying the facilities layout evaluated for Alternative 2 – Roxana in the 2016 RFEIS. Consequently, the original site configuration of Alternative 2 – Roxana from the 2016 RFEIS is no longer a feasible alternative. The focus of this 2017 Draft Supplemental RFEIS is the evaluation of potential environmental impacts associated with the revised design of Modified Alternative 2 – Roxana adopted by the Bureau after publication of the 2016 RFEIS.

This 2017 Draft Supplemental RFEIS 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). Consistent with the guidance provided in 40 CFR 1502.9, this 2017 Draft Supplemental RFEIS addresses changes in the proposed action and new circumstances or information relevant to environmental concerns and bearing on the proposed action and its impacts. This 2017 Draft Supplemental RFEIS incorporates by reference and builds upon the analyses presented in the 2016 RFEIS, while focusing on new information about the proposed project. The 2016 RFEIS and any other documents incorporated by reference in this 2017 Draft Supplemental RFEIS are available on the project website at http://www.fbopletchercountyeis.com.

PURPOSE AND NEED

The purpose of and need for the proposed federal correctional facility in Letcher County, Kentucky, has not changed since the issuance of the March 2016 RFEIS. The purpose of the project 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 Bureau has determined that there is a need for additional high-security facilities within this region to reduce the demonstrated overcrowding in the USPs in the Mid-Atlantic Region that compromises the mission of the Bureau.

SCOPE OF THE SUPPLEMENTAL RFEIS ANALYSIS

For this 2017 Draft Supplemental RFEIS, the baseline data and impact analyses focus on eight environmental resource areas, each of which was previously analyzed and discussed in the 2016 RFEIS, but have been updated in this document to address potential changes in analyses or impacts as a result of the proposed modifications to the Bureau's preferred alternative, Modified Alternative 2 – Roxana. The eight resource areas (and the respective sections in the 2016 RFEIS in which each was discussed) are: land use and zoning (Sections 3.1 and 5.1); topography, geology, and soils (Sections 3.2 and 5.2); air quality (Sections 3.6 and 5.6); noise (Sections 3.7 and 5.7); infrastructure and utilities (Sections 3.8 and 5.8); cultural resources (Sections 3.9 and 5.9); water resources (Sections 3.10 and 5.10); and biological resources (Sections 3.11 and 5.11). The affected environment description for each relevant resource area in this 2017 Draft Supplemental RFEIS focuses on current conditions and incorporates new or updated information and analyses that have been developed as a result of the modifications to the preferred Alternative 2 – Roxana since the 2016 RFEIS.

The Bureau determined that there is no significant new information relevant to environmental concerns and no appreciable changes to potential impacts as a result of the modifications to the Roxana site size and facilities layout under Modified Alternative 2 – Roxana regarding four environmental resource areas discussed in the 2016 RFEIS. These resource areas (and the respective sections in the 2016 RFEIS in which each was discussed) are: socioeconomics and environmental justice (Sections 3.3 and 5.3), community facilities and services (Sections 3.4 and 5.4), transportation and traffic (Sections 3.5 and 5.5), and hazardous materials and waste (Sections 3.12 and 5.12). Information in the 2016 RFEIS on these environmental resource areas continues to be relevant and unchanged. As previously noted, the 2016 RFEIS, including the respective material regarding these four resource areas, is incorporated herein by reference.

Table ES-1 summarizes the chapters in the 2016 RFEIS that have been changed or updated in this 2017 Draft Supplemental RFEIS, and the 2016 RFEIS chapters in which information remains unchanged and is incorporated by reference.

Table ES-1. Information from 2016 RFEIS Changed or Incorporated by Reference, by Chapter		
2016 RFEIS Chapter Number and Title	**Summary of Changes Made**	**Location of Updated Information in 2017 Draft Supplemental RFEIS**
1.0 Purpose and Need for the Proposed Action	Most sections in this chapter have been updated or revised	1.0 Purpose and Need for the Proposed Action
2.0 – Alternatives	The primary change in this chapter comprises updating Modified Alternative 2 – Roxana to include the proposed modifications to the site size and facilities layout	2.0 Description of the Proposed Action and Alternatives
3.0 – Definition of Resource	The definitions of land use; topography, geology, and soils; air quality; noise; infrastructure and utilities; cultural resources; water resources; and biological resources are summarized in the 2017 Draft Supplemental RFEIS. The definitions of socioeconomics and environmental justice, community facilities and services, transportation and traffic, and hazardous materials and waste remain unchanged and are incorporated by reference.	3.0 Affected Environment and Environmental Consequences Not applicable (n/a)
4.0 Alternative 1 – Payne Gap	Information remains unchanged and is incorporated by reference	N/a
5.0 Alternative 2 – Roxana	Information on land use; topography, geology, and soils; air quality; noise; infrastructure and utilities; cultural resources; water resources; and biological resources has been updated and revised. Information on socioeconomics and environmental justice, community facilities and services, transportation and traffic, and hazardous materials and waste remains unchanged and is incorporated by reference.	3.0 Affected Environment and Environmental Consequences N/a
6.0 Relationship Between Short-Term Use of the Environment and the Maintenance and Enhancement of Long-Term Productivity	Section updated for Modified Alternative 2 – Roxana	4.0 Relationship Between Short-Term Use of the Environment and the Maintenance and Enhancement of Long-Term Productivity
7.0 Irreversible and Irretrievable Commitments of Resources	Section updated for Modified Alternative 2 – Roxana	5.0 Irreversible and Irretrievable Commitments of Resources
8.0 Cumulative Impacts	Chapter has been revised and updated to describe potential cumulative impacts of Modified Alternative 2 – Roxana in conjunction with other actions to the resources described in the 2017 Draft Supplemental RFEIS	6.0 Cumulative Impacts
9.0 References	Contains the references cited in the 2017 Draft Supplemental RFEIS	7.0 References

Table ES-1. Information from 2016 RFEIS Changed or Incorporated by Reference, by Chapter		
2016 RFEIS Chapter Number and Title	**Summary of Changes Made**	**Location of Updated Information in 2017 Draft Supplemental RFEIS**
10.0 List of Preparers	Updated to list those primarily responsible for preparing the 2017 Draft Supplemental RFEIS	8.0 List of Preparers
11.0 Distribution List	The 2016 RFEIS distribution list has been updated to include a few additional interested parties	9.0 Distribution List
Appendix A Agency Coordination	National Historic Preservation Act (NHPA) correspondence has been moved to a new appendix (Appendix E); U.S. Fish and Wildlife Service (USFWS) Endangered Species Act correspondence had been moved to a new appendix (Appendix F)	Appendix E NHPA Correspondence; Appendix H USFWS Endangered Species Act Consultation
Appendix B Excavation and Grading Calculations	Information remains unchanged and is incorporated by reference	N/a
Appendix C Air Emissions Calculations	Contains the updated air emissions calculations for the Modified Alternative 2 – Roxana	Appendix C Air Emissions Calculations
Appendix D Enhanced Utility Report	Information remains unchanged; final report included in an appendix to the 2017 Draft Supplemental RFEIS for background information related to Section 3.5 Infrastructure and Utilities	Appendix D Enhanced Utility Report
Appendix E-1 Responses to Comments on Draft EIS	Information remains unchanged and is incorporated by reference	N/a
Appendix E-2 Comments on Final EIS	Information remains unchanged and is incorporated by reference	N/a
Appendix F Traffic Impact Study	Information remains unchanged and report is incorporated by reference	N/a
Appendix G Environmental Site Assessments	Information remains unchanged and reports are incorporated by reference	N/a
Appendix H Investigation of Rock Rubble Material, Roxana Site	Information remains unchanged; final report included in an appendix to the 2017 Draft Supplemental RFEIS for background information related to Sections 3.7.1.1 and 3.7.2.1, Surface Water	Appendix F Investigation of Rock Rubble Material, Roxana Site

PUBLIC INVOLVEMENT

The Bureau published its Notice of Intent to prepare a Supplemental RFEIS in the *Federal Register* on November 18, 2016. The notice was also published in the *Lexington Herald-Leader* on November 18, 2016, and the *Mountain Eagle* on November 23, 2016. There was no formal scoping meeting held for this Supplemental RFEIS; however, the Bureau has considered prior comments received in the development and preparation of the environmental impacts analysis of this 2017 Draft Supplemental RFEIS, including comments received during the 30-day review period on the March 2016 RFEIS. Appendix I, *Comments on 2016 Revised Final EIS* includes all comments received on the March 2016 RFEIS during the 30-day review period.

In addition, the Bureau has and will continue to provide opportunities for the public to provide input about the proposed project. The issuance of this 2017 Draft Supplemental RFEIS begins a 45-day public comment period, during which a public meeting will be held in the community of Whitesburg. There will also be a 30-day public review period following release of the Final Supplemental RFEIS and before the Record of Decision is signed and published. All comments submitted during the public comment period for this 2017 Draft Supplemental RFEIS, as well as the Bureau's responses to the comments, will be incorporated into the Final Supplemental RFEIS.

PROPOSED ACTION

The proposed action evaluated in this 2017 Draft Supplemental RFEIS is the acquisition of property and the construction and operation of a federal correctional facility in Letcher County, Kentucky. The Bureau proposes to acquire up to 324 hectares (800 acres) 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, garage/landscape building, access roads, and parking lots. A non-lethal/lethal fence and site 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. Operation of the USP and FPC would require approximately 300 full-time staff.

DEVELOPMENT OF ALTERNATIVES

The Bureau conducted an analysis of several alternative sites for the proposed federal correctional facility for their potential to meet the project purpose and need. The Bureau considered the land/facilities it controls in the Mid-Atlantic Region and also looked at other land and facilities it does not control within the Mid-Atlantic Region. No reasonable alternatives (land or existing facilities) not controlled by the Bureau were identified. In addition, no lands/facilities in the Mid-Atlantic Region controlled by the Bureau have sufficient space to accommodate the development of the proposed facilities.

The Letcher County Planning Commission identified potential sites for development for a new USP and FPC in Letcher County, and contacted the Bureau to determine if the Bureau had an interest in developing a new facility at one of the locations. In 2008, the Bureau initiated a site reconnaissance study of the suitability for development of four sites in Letcher County that had been offered to the Bureau by members of the community. The four sites included: Meadow Branch, Payne Gap, Roxana, and Van/Fields. Based on the 2008 study, a second study was conducted in 2010 to rank these sites and verify that issues originally identified in 2008 had not changed. Based on the data collected from both the 2008 and 2010 studies, it was determined that these four sites should be studied in more detail in a feasibility study to identify if there would be constraints associated with the development of the sites.

In 2012, the Bureau completed a feasibility study that evaluated the benefits, challenges, and potential risks associated with development of each site. During the initial phases of the feasibility study, the Meadow Branch site was removed from further consideration due to unavailability of the proposed land; therefore, no detailed analysis of the site was included in the feasibility study. Cultural resources,

wetlands, geologic conditions, and utilities were assessed for each of the three remaining sites. The feasibility study determined that there were no constraints that would prevent development of any of the three sites. During the finalization of the feasibility study, the Van/Fields site was likewise removed from further consideration due to unavailability of the proposed land. The remaining two sites, Payne Gap and Roxana, were identified as alternatives to be carried forward for study in an EIS.

Alternatives Evaluated in the 2016 RFEIS

The 2016 RFEIS evaluated the No Action Alternative and two build alternatives: Alternative 1 – Payne Gap and Alternative 2 – Roxana. The 2016 RFEIS identified Alternative 2 – Roxana as the preferred alternative because it best meets the project needs and would have fewer impacts to the human environment. Therefore, Alternative 1 – Payne Gap has been eliminated from further evaluation in this 2017 Draft Supplemental RFEIS.

Alternative 1 – Payne Gap

Under Alternative 1, the Bureau would have acquired approximately 305 hectares (753 acres) 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. Surface and deep mining had been conducted on portions of the site.

The Bureau would have required a minimum of 121 hectares (300 acres) for construction of the USP, FPC, and ancillary facilities at this site. The Bureau proposed developing the north half of the Payne Gap site with the USP, FPC, and ancillary buildings, and accessing the site from U.S. Route 119.

Alternative 1 – Payne Gap would have required extensive earthwork to prepare the site for development. All excavated materials, which would include the removal of mine spoil, would be used on-site for structural fill or placed as spoil fill. 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 have been required prior to the beginning of construction activities.

Alternative 2 – Roxana

Under Alternative 2, the Bureau would have acquired approximately 283 hectares (700 acres) of land known as the Roxana site. The site is located 7.5 miles west of Whitesburg, Kentucky. A portion of the site comprises a reclaimed surface mine site.

The Bureau would have required a minimum of 121 hectares (300 acres) for construction of the USP and FPC at this site. The Bureau proposed constructing the FPC in the north portion of the Roxana site and the USP and ancillary buildings in the central portion of the site. The proposed facilities layout included an access road extending along the east side of the facilities from KY 588.

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

Alternatives Evaluated in this Supplemental RFEIS

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 2017 Draft Supplemental RFEIS 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. Therefore, the assessment of the No Action Alternative is an important component of all NEPA documents.

Modified Alternative 2 – Roxana

Under Modified Alternative 2 – Roxana, the Bureau would acquire approximately 231 hectares (570 acres) of land at Roxana. The size of the proposed Roxana site was reduced by approximately 53 hectares (130 acres) because one property was not available for acquisition because the landowner did not want to sell their property. The Bureau determined another property under consideration was not required for the project. The Bureau conducted a number of detailed studies at the Roxana site and determined this smaller site size would still be a viable alternative for constructing and operating a USP, FPC, and ancillary facilities. In the modified facilities layout under this alternative compared with the 2016 alternative, the FPC would be situated closer to the USP and the access road would extend from KY 588 along the west side of the FPC rather than the east side.

Preparation of the site for construction would require excavating approximately 6,585,085 cubic meters (8,612,966 cubic yards) of spoil material and approximately 557,908 cubic meters (729,716 cubic yards) of rock. All excavated materials, which would include soil, rock, and mine spoil, would be used on-site for structural fill. The amount of structural fill is estimated to be 6,683,976 cubic meters (8,742,310 cubic yards). The excavated material would be compacted to create a structural fill for the building foundations or transported to the valleys adjacent to the northwest of the proposed FPC location and southwest of the proposed USP location and compacted as structural fill.

PREFERRED ALTERNATIVE

Modified Alternative 2 – Roxana is the preferred alternative because it best meets the purpose of the proposed action by providing an additional high-security penitentiary and an associated prison camp to increase capacity for current inmate populations in the Mid-Atlantic Region. Modified Alternative 2 – Roxana satisfies the continuing need for additional high-security facilities within this region, despite recent declines in other than high-security inmate population groups, to reduce the demonstrated overcrowding that compromises the mission of the Bureau.

In addition, Modified Alternative 2 – Roxana is the preferred alternative because it would, on balance, have fewer impacts to the human environment as compared with Alternative 1 – Payne Gap evaluated in the 2016 RFEIS. Although both build alternatives would have direct adverse impacts to topography, geology, and soils, much greater site preparation work would be required at the Payne Gap site. Except for the potential impact to the natural gas infrastructure, Modified Alternative 2 – Roxana would have less than significant impacts to infrastructure and utilities, while Alternative 1 – Payne Gap would have significant impacts to potable water capacity, wastewater treatment capacity, and natural gas infrastructure. Under Modified Alternative 2 – Roxana, impacts to streams and forest would be less than those under Alternative 1 – Payne Gap. Development of the proposed action at the Payne Gap site would impact approximately 40 more hectares (100 more acres) of summer habitat of federally listed bat species

when compared with the Roxana site. **Table ES-2** provides a comparison of these and other potential environmental effects from the alternatives evaluated in this 2017 Draft Supplemental RFEIS, the No Action Alternative and Modified Alternative 2 – Roxana, and Alternative 1 – Payne Gap evaluated in the 2016 RFEIS.

Table ES-2. Summary of Environmental Consequences of No Action Alternative, Alternative 1 – Payne Gap, and Modified Alternative 2 – Roxana			
Resource Area	**No Action Alternative**	**Alternative 1 – Payne Gap**	**Modified Alternative 2 – Roxana (Evaluated in this 2017 Draft Supplemental RFEIS)**
Land Use and Zoning	• No compatibility issues; therefore, no impact on land use	• No significant impact • Changes in land use from forested/reclaimed mining to government institution not incompatible from regulatory perspective • Compatibility issues with adjacent properties minimized by forested buffer that would separate USP/FPC facilities from adjacent land uses	• No significant impact • Changes in land use from forested/reclaimed mining/residential to government institution not incompatible from regulatory perspective • Compatibility issues with adjacent properties minimized by forested buffer that would separate USP/FPC facilities from adjacent land uses • A 125-foot buffer maintained between FPC construction and Whitaker property
Topography, Geology, and Soils	• No impact to topography, geology, or soils	• Significant impact • Direct topographical changes from cut (10.9 million cubic yards) and fill (13.8 million cubic yards) and grading • Direct impact to geology from blasting and excavation of bedrock • Soil disturbance of approximately 88 hectares (218 acres) • No impact to prime farmland soils	• Significant impact • Direct topographical changes from cut (9.3 million cubic yards) and fill (8.7 million cubic yards) and grading • Direct impact to geology from blasting and excavation of bedrock • Soil disturbance of approximately 73 hectares (181 acres) • Impact to 5 hectares (12.3 acres) of soils classified as farmland of statewide importance • No significant impact to prime farmland soils

Table ES-2. Summary of Environmental Consequences of No Action Alternative, Alternative 1 – Payne Gap, and Modified Alternative 2 – Roxana

Resource Area	No Action Alternative	Alternative 1 – Payne Gap	Modified Alternative 2 – Roxana (Evaluated in this 2017 Draft Supplemental RFEIS)
Socioeconomics and Environmental Justice	• No impact; no beneficial socioeconomic impacts	• No significant impact • Minor offset in projected 2020 population decrease • Minor beneficial employment and income impacts • No disproportionately high or adverse human health or environmental effects on minority populations and low-income populations • No environmental health risks or safety risks that may disproportionately affect children	• No significant impact • Minor offset in projected 2020 population decrease • Minor beneficial employment and income impacts • No disproportionately high or adverse human health or environmental effects on minority populations and low-income populations • No environmental health risks or safety risks that may disproportionately affect children
Community Facilities and Services	• No impact; no increase in demand on community facilities and services from operation of a new facility	• No significant impacts to state and local law enforcement agencies, fire and emergency services, health care services, or to school services	• Less than significant impacts to state and local law enforcement agencies • No significant impacts to fire and emergency services, health care services, or school services
Transportation and Traffic	• No increases in traffic from construction and operation of a new facility; therefore, no impact to transportation and traffic	• No significant impact • No significant impacts to traffic associated with construction activities • Less than significant impacts to level of service of U.S. Route 119 are anticipated from traffic associated with operations of the facility • No significant impacts to roadways • Minor roadway improvement (addition of left turn lane on U.S. Route 119) would be implemented	• Less than significant impact with planned mitigation measures • No significant impacts to traffic associated with construction activities • No significant impacts to level of service of KY 588 are anticipated from traffic associated with operations of the facility • Significant impacts to roadways from truck traffic • Planned improvements to roadway infrastructure reduce impacts to less than significant

Table ES-2. Summary of Environmental Consequences of No Action Alternative, Alternative 1 – Payne Gap, and Modified Alternative 2 – Roxana

Resource Area	No Action Alternative	Alternative 1 – Payne Gap	Modified Alternative 2 – Roxana (Evaluated in this 2017 Draft Supplemental RFEIS)
Air Quality	• No increases in air emissions; therefore, no impact to air quality	• No significant impact • Temporary increases in air emissions during construction below significance threshold for criteria pollutants • Annual air emissions from facility operation and staff vehicle commuting below significance threshold for criteria pollutants • No direct or indirect significant impacts on the local/regional air quality	• No significant impact • Temporary increases in air emissions during construction below significance threshold for criteria pollutants • Annual air emissions from facility operation and staff vehicle commuting below significance threshold for criteria pollutants • No direct or indirect significant impacts on the local/regional air quality
Noise	• No construction or operation of a new facility; therefore, no impact from increases in noise	• No significant impact • Temporary construction noise • No significant impacts to ambient noise levels are anticipated from operations of the facility	• No significant impact • Temporary construction noise • No significant impacts to ambient noise levels are anticipated from operations of the facility
Infrastructure and Utilities	• No impact; no increase in demand on infrastructure and utilities from construction and operation of a new facility	• Significant impact • Demand for natural gas, electricity, telecommunication would not exceed existing capacities • Increase in solid waste met by adequate capacity at Laurel Ridge Landfill • Significant impact to potable water capacity and wastewater treatment capacity • Significant impact to natural gas infrastructure • Direct impact to natural gas owner from closure of gas well and relocation of gas pipeline • Cumulative impacts to wastewater treatment capacity	• No significant impact • Demand for water, natural gas, electricity, and telecommunication would not exceed existing capacities • Increase in solid waste met by adequate capacity at Laurel Ridge Landfill • Direct impact to natural gas owners and lessors from closure of gas wells and compressor station and abandonment and/or relocation of gas pipelines • Cumulative impacts to wastewater infrastructure

Table ES-2. Summary of Environmental Consequences of No Action Alternative, Alternative 1 – Payne Gap, and Modified Alternative 2 – Roxana

Resource Area	No Action Alternative	Alternative 1 – Payne Gap	Modified Alternative 2 – Roxana (Evaluated in this 2017 Draft Supplemental RFEIS)
Cultural Resources	• No construction or operation of a new facility; therefore, no impact to cultural resources	• No significant impact • No adverse effect on cultural resources listed or eligible for listing on the National Register of Historic Places	• No significant impact • No adverse effect on cultural resources listed or eligible for listing on the National Register of Historic Places
Water Resources	• No construction or operation of a new facility; therefore, no impact to water resources	• Less than significant impact with planned mitigation measures • 0.97 hectares (2.40 acres) of wetland impacts • 10,512 linear feet of stream impacts • Permitting and mitigation reduce wetland and stream impacts to less than significant • No significant impacts to surface water quality or groundwater • No impact to floodplains	• Less than significant impact with planned mitigation measures • 0.98 hectares (2.44 acres) of wetland impacts • 5,610 linear feet of stream impacts • Permitting and mitigation reduce wetland and stream impacts to less than significant • No significant impacts to surface water quality or groundwater • No impact to floodplains
Biological Resources	• No construction or operation of a new facility; therefore, no impact to biological resources	• Less than significant impact • 88 hectares (218 acres) of forest clearing • Less than significant impact to wildlife habitat • Less than significant impact to avian and small mammal species from non-lethal/lethal fence • Impacts Indiana and northern long-eared bat summer habitat and potential winter hibernacula considered suitable for use by Indiana, northern long-eared, or gray bat • Additional studies of summer and winter habitat and a biological assessment would be required to further assess impacts and potential mitigation	• Less than significant impact • 49 hectares (121 acres) of forest clearing • Less than significant impact to wildlife habitat • Less than significant impact to avian and small mammal species from non-lethal/lethal fence • Impacts to Indiana and northern long-eared bat summer habitat and winter hibernaculum considered suitable for use by Indiana, northern long-eared, or gray bat • Mitigation and conservation measures would be implemented; USFWS Biological Opinion pending, and will be included in the Final Supplemental RFEIS

Table ES-2. Summary of Environmental Consequences of No Action Alternative, Alternative 1 – Payne Gap, and Modified Alternative 2 – Roxana			
Resource Area	**No Action Alternative**	**Alternative 1 – Payne Gap**	**Modified Alternative 2 – Roxana (Evaluated in this 2017 Draft Supplemental RFEIS)**
Hazardous Materials and Waste	• No construction or operation of a new facility; therefore, no impact to human health and safety or the environment from hazardous materials and waste	• No significant impact • Procedures would be in place for safe transport, handling, use, and disposal of hazardous substances and waste during construction and operations • No significant impact to the environment from firing range operations; Bureau Technical Design Guidelines require incorporating structures to catch lead particles, and a stormwater system to prevent contamination outside of the range itself • Facilities intended for human occupancy would be designed to prevent occupant exposures to radon above the USEPA action level	• No significant impact • Procedures would be in place for safe transport, handling, use, and disposal of hazardous substances and waste during construction and operations • Removal and disposal of contaminated soils in three identified locations on the site would be conducted in accordance with all applicable federal and state standards • No significant impact to the environment from firing range operations; Bureau Technical Design Guidelines require incorporating structures to catch lead particles, and a stormwater system to prevent contamination outside of the range itself • Facilities intended for human occupancy would be designed to prevent occupant exposures to radon above the USEPA action level

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SUMMARY OF ENVIRONMENTAL EFFECTS

This section summarizes the potential environmental effects from the alternatives evaluated in this 2017 Draft Supplemental RFEIS, the No Action Alternative and Modified Alternative 2 – Roxana.

Modified Alternative 2 – Roxana would have significant impacts to topography, geology, and soils. Under this alternative, there would be direct geologic impacts from blasting and excavation of bedrock, and direct topographic impacts from cut, fill, and grading. Development of the USP and FPC would have a direct impact on soils at the Roxana site as a result of temporary disturbance of approximately 73 hectares (181 acres) from construction activities. In addition, there would be a direct impact to soils classified as farmland of statewide importance.

Except for the existing natural gas infrastructure, there would be no significant impacts to infrastructure and utilities from development of a USP and FPC under Modified Alternative 2 – Roxana. Demand for water, natural gas, electricity, and telecommunication would not exceed existing capacities, and an increase in solid waste would be met by adequate capacity at Laurel Ridge Landfill. Modified Alternative 2 – Roxana would have an adverse impact to natural gas owners and lessors from closure of gas wells and a compressor station and an oil well, and abandonment and/or relocation of gas pipelines. The demand for treatment of wastewater is not estimated to exceed the existing permitted capacity of the Letcher County Water and Sewer District. However, the existing capacity of the Whitesburg wastewater treatment plant could potentially be exceeded by the cumulative flows from Modified Alternative 2 – Roxana and other reasonably foreseeable future projects.

Modified Alternative 2 – Roxana would have direct adverse impacts to wetlands and streams. The Bureau would obtain a permit for wetlands and stream impacts under Clean Water Act Sections 401 and 404, which would require full mitigation of impacts. The implementation of the mitigation measures would reduce the impacts to less than significant. There would be no significant impacts to surface water quality or groundwater, and no impact to floodplains.

Under Modified Alternative 2 – Roxana, the proposed USP and FPC may affect, is likely to adversely affect, the federally endangered Indiana bat, federally threatened northern long-eared, and federally endangered gray bat. The Bureau is formally consulting with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act. The USFWS will issue a Biological Opinion specifying reasonable and prudent measures to minimize take to federally listed species and non-discretionary terms and conditions to implement these measures. The conclusions resulting from consultation with the USFWS will be included in the Final Supplemental RFEIS. There would be less than significant impacts to vegetation and wildlife and wildlife habitat under Modified Alternative 2 – Roxana.

Modified Alternative 2 – Roxana would have no significant impacts to land use, air quality, or cultural resources. In addition, Modified Alternative 2 – Roxana would have no significant impacts to sensitive noise receptors from construction noise, and no significant impacts are anticipated from firearms training noise because the nearest residences are located well outside of the area predicted for peak noise and the peak noise levels would be considered compatible for residential land use.

Under the No Action Alternative, the proposed USP, FPC, and ancillary facilities would not be constructed and no impacts to the natural or built environment would occur. The No Action Alternative would not have environmental impacts, but would not meet the purpose and need for the proposed action.

This alternative is not feasible, but was included in this 2017 Draft Supplemental RFEIS to provide a baseline for analysis of the proposed action.

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ACRONYMS AND ABBREVIATIONS

AMSL	above mean sea level
APE	Area of Potential Effects
BMPs	best management practices
Bureau	Federal Bureau of Prisons
CAA	Clean Air Act
CCR(s)	Consumer Confidence Report(s)
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibels
dBP	Peak decibels
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FPC	Federal Prison Camp
FPPA	Farmland Protection Policy Act
GHGs	greenhouse gases
HAP(s)	hazardous air pollutant(s)
HUC	Hydrologic Unit Code
KAR	Kentucky Administrative Regulations
KDEP	Kentucky Department for Environmental Protection
KGS	Kentucky Geological Survey
LCWSD	Letcher County Water and Sewer District
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
N_2O	nitrogen oxide
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
O_3	ozone
OSHA	Occupational Safety and Health Administration
$PM_{2.5}$	particulate matter with a diameter of 2.5 microns or less
PM_{10}	particulate matter with a diameter less than 10 microns
ppb	parts per billion
ppm	parts per million
RFEIS	Revised Final Environmental Impact Statement
SARNAM	Small Arms Range Noise Assessment Model
SHPO	State Historic Preservation Officer
SO_2	sulphur dioxide
TCPs	Traditional Cultural Properties
TMDL	Total Maximum Daily Load
TPY	tons per year
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USP	U.S. Penitentiary
VOC	volatile organic compound
WWTP	wastewater treatment plant
yd^3	cubic yards
µg/m3	micrograms per cubic meter
µS	microsiemens

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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 document to supplement the *Revised Final Environmental Impact Statement for Proposed United States Penitentiary and Federal Prison Camp Letcher County, Kentucky*, dated March 2016 and published on April 1, 2016. The 2016 Revised Final Environmental Impact Statement (RFEIS) evaluated the potential environmental impacts of the No Action Alternative and two proposed action alternatives for the acquisition of property and construction and operation of a new United States Penitentiary (USP), Federal Prison Camp (FPC), and ancillary facilities in Letcher County. The 2016 RFEIS analyzed two potential locations: an approximately 305-hectare (753-acre) site in eastern Letcher County (Alternative 1 – Payne Gap), and an approximately 283-hectare (700-acre) site in western Letcher County (Alternative 2 – Roxana). The 2016 RFEIS identified Alternative 2 – Roxana as the preferred alternative because it best meets the project needs and, on balance, would have fewer impacts to the natural and built environment.

The Bureau was originally considering acquiring approximately 283 hectares (700 acres) at the Roxana site for this project. Following publication of the 2016 RFEIS, the Bureau removed two parcels of land at the Roxana site from acquisition consideration. The Bureau withdrew one parcel because the landowner did not want to sell their property, and withdrew another parcel after determining it was not required for the project. The resulting proposed site is approximately 231 hectares (570 acres). This reduction in site size has necessitated modifying the facilities layout evaluated for Alternative 2 – Roxana in the 2016 RFEIS. Consequently, the original site configuration of Alternative 2 – Roxana from the 2016 RFEIS is no longer a feasible alternative. The focus of this 2017 Draft Supplemental RFEIS is the evaluation of potential environmental impacts associated with the revised design of Modified Alternative 2 – Roxana adopted by the Bureau after publication of the 2016 RFEIS.

This 2017 Draft Supplemental RFEIS 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). Consistent with the guidance provided in 40 CFR 1502.9, this 2017 Draft Supplemental RFEIS addresses "substantial changes in the proposed action that are relevant to environmental concerns or if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." This 2017 Draft Supplemental RFEIS incorporates by reference, and builds upon the analyses presented in, the 2016 RFEIS, while focusing on new information about the proposed project. The 2016 RFEIS and any other documents incorporated by reference in this 2017 Draft Supplemental RFEIS are available on the project website at http://www.fbopletchercountyeis.com.

1.1 FEDERAL BUREAU OF PRISONS

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.

The Bureau accomplishes its mission through the appropriate use of community-correction, detention, and correctional facilities. 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 Bureau is proposing to construct a new USP and satellite FPC in Letcher County. A USP is a high-security facility. High-security 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. An FPC is a minimum-security facility. Minimum-security facilities are generally characterized by dormitory-style housing, a relatively low staff-to-inmate ratio, and are without fences. Also known as satellite work camps, they are typically associated with a larger institution or military base where inmates can help serve labor needs of the institution or base.

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.

1.2 PROJECT BACKGROUND

Since this project was initiated in 2008, the Bureau has studied the need for additional high-security bed space in the Mid-Atlantic Region. These numbers have been continually updated throughout this process. At the end of Fiscal Year 2016 (September 30, 2016), the Bureau inmate population totaled 192,170; this includes 156,266 inmates being housed in 122 Bureau institutions, 22,650 being housed in privately-managed secure facilities, and 13,254 being housed in other contract care. Of the 156,266 inmates housed in Bureau institutions, 19,845 were high-security male inmates housed 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 2016, the 17 USPs were rated for a total capacity of 15,165 high-security inmates. Therefore, the Bureau's high-security institutions were 31 percent overcrowded and continue to operate at above rated capacity.

The overall prisoner population is declining. However, even with a 13,553 net decrease in the total inmate population in Fiscal Year 2016, only a fraction of the net decrease was realized in the Bureau's high-security level inmate population (1,620). The current prison population in high-security male facilities (USPs) remains at overcrowding levels. As of February 28, 2017, the system-wide overcrowding level for all USPs was 26 percent.

To meet the current and projected bed space needs, the Bureau evaluates the bed space 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

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

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.

One of the regions identified by the Bureau as having an increasing need for additional high-security bed space to reduce overcrowding is the Mid-Atlantic 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. As of February 28, 2017, approximately 5,118 high-security inmates are housed within the four USPs in the Mid-Atlantic Region (**Table 1-1**). The current rated capacity for these institutions is 3,821. Therefore, the overcrowding level in the USPs in the Mid-Atlantic Region is currently 34 percent. 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.

Table 1-1. Mid-Atlantic Region USP Inmate Population as of February 28, 2017

USP	Current Inmate Population	Current Rated Capacity
Hazelton	1,330	957
Lee	1,303	960
Big Sandy	1,244	949
McCreary	1,241	955
Total	**5,118**	**3,821**

1.3 PROJECT PURPOSE AND NEED

The purpose of and need for the proposed federal correctional facility in Letcher County, Kentucky, has not changed since the issuance of the March 2016 RFEIS. The purpose of the project 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 34 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. There is a continuing need for additional high-security facilities within this region despite recent declines in other than high-security inmate population groups. 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.

1.4 THE ENVIRONMENTAL REVIEW PROCESS

1.4.1 National Environmental Policy Act

The environmental review process is conducted in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, which requires consideration of environmental issues in federal agency planning and decision-making. The Bureau is the decision-maker with regard to this proposed action. Regulations for federal agency implementation of NEPA were established by the President's CEQ.

Consistent with the CEQ's guidance for a supplemental environmental document, which is contained in 40 CFR 1502.9, the purpose of this document is to supplement the impact analyses contained in the 2016 RFEIS in light of current circumstances and information. This 2017 Draft Supplemental RFEIS evaluates potential environmental impacts relative to the substantial changes to Alternative 2 – Roxana that have occurred since the issuance of the 2016 RFEIS. By supplementing the 2016 RFEIS, this document advances NEPA's purpose of informing Bureau decision-makers and the general public about the environmental effects of the government's proposed action.

1.4.2 Scope of the Analysis

According to CEQ regulations for implementing NEPA, NEPA documents should "concentrate on the issues that are truly significant to the action in question" [40 CFR 1500.1(b)]. Agencies preparing an Environmental Impact Statement (EIS) should discuss impacts "in proportion to their significance" [40 CFR 1502.2(b)] and should "reduce excessive paperwork by discussing only briefly issues other than significant ones" [40 CFR 1500.4(c)]. Applying these guidelines to this 2017 Draft Supplemental RFEIS, the baseline data and impact analyses focus on eight environmental resource areas, each of which was previously analyzed and discussed in the 2016 RFEIS, but have been updated in this document to address potential changes in analyses or impacts as a result of the proposed modifications to the Bureau's preferred alternative, Modified Alternative 2 – Roxana. The eight resource areas (and the respective sections of the 2016 RFEIS in which each was discussed) include: land use and zoning (Sections 3.1 and 5.1); topography, geology, and soils (Sections 3.2 and 5.2); air quality (Sections 3.6 and 5.6); noise (Sections 3.7 and 5.7); infrastructure and utilities (Sections 3.8 and 5.8); cultural resources (Sections 3.9 and 5.9); water resources (surface water, wetlands, groundwater, and floodplains) (Sections 3.10 and 5.10); and biological resources (vegetation, wildlife, and threatened and endangered species) (Sections 3.11 and 5.11).

The affected environment description for each relevant resource area in this 2017 Draft Supplemental RFEIS incorporates new or updated information and analyses that have been developed as a result of the modifications of the preferred Alternative 2 – Roxana since the 2016 RFEIS. Specifically, an additional geotechnical study and additional environmental studies of archaeological resources, wetlands, and endangered species were conducted as a consequence of modifying the layout of the facilities at the Roxana site.

For certain environmental resource areas, the Bureau determined there is no significant new information relevant to environmental concerns and no appreciable changes to potential impacts as a result of the modifications to the Roxana site size and facilities layout under Modified Alternative 2 – Roxana. These resource areas include: socioeconomics and environmental justice, community facilities and services,

transportation and traffic, and hazardous materials and waste. A summary of the impacts as discussed in the 2016 RFEIS for these resource areas is provided in **Table 1-2**. Information in the 2016 RFEIS on these resource areas continues to be relevant and unchanged. As previously noted, the 2016 RFEIS, including the respective material regarding these four resource areas, is incorporated herein by reference. For a detailed description of those environmental conditions that have not changed appreciably since the issuance of the RFEIS on April 1, 2016, the reader is referred to the appropriate sections in the 2016 RFEIS (identified in **Table 1-2**).

Table 1-2. Resource Areas with No Appreciable Change in Potential Impacts

Resource (2016 RFEIS Sections)	Summary of Potential Impacts Addressed in 2016 RFEIS Under Alternative 2 – Roxana
Socioeconomics and Environmental Justice (Sections 3.3 and 5.3)	• Minor offset in projected 2020 population decrease • Minor beneficial employment and income impacts • No disproportionately high or adverse human health or environmental effects on minority populations and low-income populations • No environmental health risks or safety risks that may disproportionately affect children
Community Facilities and Services (Sections 3.4 and 5.4)	• Less than significant impacts to state and local law enforcement agencies • No significant impacts to fire and emergency services • No significant impacts to health care services • No significant impacts to school services; sufficient capacity in Letcher County School District to accommodate school age children of Bureau employees
Transportation and Traffic (Sections 3.5 and 5.5)	• No significant impacts to traffic associated with construction activities; low traffic volumes on roadways have sufficient capacity to accommodate a temporary increase in truck traffic • No significant impacts to level of service of KY 588 are anticipated from traffic associated with operations of the federal correctional facility • Significant impacts to roadways; truck traffic could exceed maximum weight limits of bridges near the site and lane widths and pavement capacity of KY 588 • The Bureau would require improvements to roadway infrastructure such as bond roads where vehicle weight limitations may be exceeded and repair any surface damage to roads to avoid or reduce impacts to a less than significant level
Hazardous Materials and Waste (Sections 3.12 and 5.12)	• No significant impacts to public health and safety or the environment from hazardous materials and waste; procedures would be in place for safe transport, handling, use, and disposal of hazardous substances and waste during construction and operations • No significant impact to human health or the environment from removal of soils contaminated by petroleum in three identified locations on the site; removal and disposal of contaminated soils would be conducted in accordance with all applicable federal and state standards • No significant impact to the environment from firing range operations; Bureau Technical Design Guidelines require incorporating safety baffles, berms, and backstops to contain bullets; impoundments, traps, and other structures to catch lead particles; and stormwater systems that gather runoff and allow infiltration within the range bermed area to prevent contamination outside of the range itself • No significant impact to human health from exposure to radon as facilities intended for human occupancy would be designed to prevent occupant exposures to radon above the U.S. Environmental Protection Agency action level

As discussed above, changes were made to the 2017 Draft Supplemental RFEIS to describe the modifications to the preferred Alternative 2 – Roxana as well as to update the affected environment and impacts analyses for certain environmental resource areas where changes have occurred since the RFEIS was published in March 2016. This 2017 Draft Supplemental RFEIS incorporates by reference those sections of the 2016 RFEIS in which there are no substantial changes or no new information relevant to environmental concerns. **Table 1-3** identifies the sections of the 2016 RFEIS that have been changed or updated in this 2017 Draft Supplemental RFEIS, and the sections of the 2016 RFEIS in which information remains unchanged and is incorporated by reference.

Table 1-3. Information from 2016 RFEIS Changed or Incorporated by Reference, by Section

2016 RFEIS Section Number and Title	Summary of Changes Made	Location of Updated Information in 2017 Draft Supplemental RFEIS
Executive Summary		
Executive Summary	Entire section has been updated with changes made in the 2017 Draft Supplemental RFEIS sections	Executive Summary
1.0 – Purpose and Need for the Proposed Action		
1.0 Purpose and Need for the Proposed Action	The introduction to this chapter has been updated to cover the purpose of this 2017 Draft Supplemental RFEIS	1.0 Purpose and Need for the Proposed Action
1.1 Background	Information remains unchanged	1.1 Federal Bureau of Prisons
1.2 Security Levels	Information remains unchanged, but has been summarized and re-formatted in the 2017 Draft Supplemental RFEIS	1.1 Federal Bureau of Prisons
1.3 Existing Federal Prison Population	Federal inmate population figures have been updated with Fiscal Year 2016 data	1.2 Project Background
1.4 Federal Bureau of Prisons Mid-Atlantic Region	Inmate population figures for the Mid-Atlantic Region have been updated with data as of December 31, 2016	1.2 Project Background
1.5 Purpose and Need	One sentence about the continuing need for additional high-security facilities within the Mid-Atlantic Region despite recent declines in other than high-security inmate population groups has been added; the rest of the purpose and need statement remains unchanged.	1.3 Project Purpose and Need
1.6 Proposed Action	Information on site lighting and duration of project construction has been updated; the rest of the Proposed Action description remains unchanged	2.1 Proposed Action
1.7.1 National Environmental Policy Act	Section has been revised to describe the purpose of a supplemental environmental document	1.4.1 National Environmental Policy Act
1.7.2 Related Environmental Documents	Section has been removed; it remains unchanged and is incorporated by reference	Not applicable (N/a)
1.7.3 Agency Coordination	Section has been updated to expand upon current and future agency coordination	1.4.3 Agency Coordination

Table 1-3. Information from 2016 RFEIS Changed or Incorporated by Reference, by Section		
2016 RFEIS Section Number and Title	**Summary of Changes Made**	**Location of Updated Information in 2017 Draft Supplemental RFEIS**
1.7.4 Public Involvement	Information on public involvement up through 2016 has been summarized and new information about the public involvement process for the 2017 Draft Supplemental RFEIS has been added	1.4.4 Public Involvement in this EIS Process
2.0 – Alternatives		
2.1 No Action Alternative	Information remains unchanged	2.2.3.1 No Action Alternative
2.2 Alternative Locations-Nationwide	Information remains unchanged and is incorporated by reference	N/a
2.3 Alternatives Development	Information remains unchanged and has been summarized in the 2017 Draft Supplemental RFEIS	2.2.1 Development of Alternatives within Geographic Area of Interest
2.4 Alternative 1 – Payne Gap	Information remains unchanged and is incorporated by reference	2.2.2.1 Alternative 1 – Payne Gap summarizes this build alternative
2.5 Alternative 2 – Roxana	The build alternative evaluated in this 2017 Draft Supplemental RFEIS has been updated to include the modifications to the site size and facilities layout	2.2.2.2 Alternative 2 – Roxana summarizes this build alternative as initially proposed and discussed in the 2016 RFEIS; 2.2.3.2 Modified Alternative 2 – Roxana describes the Modified Alternative 2 – Roxana evaluated in this 2017 Draft Supplemental RFEIS
2.6 Preferred Alternative	Section has been revised, and defines Modified Alternative 2 – Roxana as the preferred alternative of the 2017 Draft Supplemental RFEIS	2.3 Preferred Alternative
3.0 – Definition of Resource		
3.1 Land Use and Zoning	Information remains unchanged and has been summarized in the 2017 Draft Supplemental RFEIS	3.1 Land Use and Zoning
3.2 Topography, Geology, and Soils	Information remains unchanged and has been summarized in the 2017 Draft Supplemental RFEIS	3.2 Topography, Geology, and Soils
3.3 Socioeconomics and Environmental Justice	Information remains unchanged and is incorporated by reference	N/a
3.4 Community Facilities and Services	Information remains unchanged and is incorporated by reference	N/a
3.5 Transportation and Traffic	Information remains unchanged and is incorporated by reference	N/a
3.6 Air Quality	Information remains unchanged and has been summarized in the 2017 Draft Supplemental RFEIS	3.3 Air Quality
3.7 Noise	Information remains unchanged and has been summarized in the 2017 Draft Supplemental RFEIS	3.4 Noise
3.8 Infrastructure and Utilities	Information remains unchanged and has been summarized in the 2017 Draft Supplemental RFEIS	3.5 Infrastructure and Utilities

Table 1-3. Information from 2016 RFEIS Changed or Incorporated by Reference, by Section		
2016 RFEIS Section Number and Title	**Summary of Changes Made**	**Location of Updated Information in 2017 Draft Supplemental RFEIS**
3.9 Cultural Resources	Information remains unchanged and has been summarized in the 2017 Draft Supplemental RFEIS	3.6 Cultural Resources
3.10 Water Resources	Information remains unchanged and has been summarized in the 2017 Draft Supplemental RFEIS	3.7 Water Resources
3.11 Biological Resources	Information remains unchanged and has been summarized in the 2017 Draft Supplemental RFEIS	3.8 Biological Resources
3.12 Hazardous Materials and Waste	Information remains unchanged and is incorporated by reference	N/a
3.13 Cumulative Impact Analysis	Information remains unchanged	6.0 Cumulative Impacts
3.14 Assessing Significance	Information remains unchanged	3.0 Affected Environment and Environmental Consequences and 6.0 Cumulative Impacts
4.0 Alternative 1 – Payne Gap		
4.1 Land Use and Zoning	Information remains unchanged and is incorporated by reference	N/a
4.2 Topography, Geology, and Soils	Information remains unchanged and is incorporated by reference	N/a
4.3 Socioeconomics and Environmental Justice	Information remains unchanged and is incorporated by reference	N/a
4.4 Community Facilities and Services	Information remains unchanged and is incorporated by reference	N/a
4.5 Transportation and Traffic	Information remains unchanged and is incorporated by reference	N/a
4.6 Air Quality	Information remains unchanged and is incorporated by reference	N/a
4.7 Noise	Information remains unchanged and is incorporated by reference	N/a
4.8 Infrastructure and Utilities	Information remains unchanged and is incorporated by reference	N/a
4.9 Cultural Resources	Information remains unchanged and is incorporated by reference	N/a
4.10 Water Resources	Information remains unchanged and is incorporated by reference	N/a
4.11 Biological Resources	Information remains unchanged and is incorporated by reference	N/a
4.12 Hazardous Materials and Waste	Information remains unchanged and is incorporated by reference	N/a
5.0 Alternative 2 – Roxana		
5.1 Land Use and Zoning	Sections have been supplemented with discussion and analysis on potential indirect impacts to adjacent land uses; added three additional minimization measures	3.1 Land Use and Zoning

Table 1-3. Information from 2016 RFEIS Changed or Incorporated by Reference, by Section

2016 RFEIS Section Number and Title	Summary of Changes Made	Location of Updated Information in 2017 Draft Supplemental RFEIS
5.2 Topography, Geology, and Soils	Additional discussion of Roxana site topography and geology has been added; updated excavation and fill quantities incorporated into impact analysis; discussion of impacts to soils classified as farmland of statewide importance has been added; additional detail of surface water and stormwater control plans added under Mitigation	3.2 Topography, Geology, and Soils
5.3 Socioeconomics and Environmental Justice	Information remains unchanged and is incorporated by reference	N/a
5.4 Community Facilities and Services	Information remains unchanged and is incorporated by reference	N/a
5.5 Transportation and Traffic	Information remains unchanged and is incorporated by reference	N/a
5.6 Air Quality	Discussion and analysis revised to include updated air emissions calculations, which account for changes in earthwork quantities for the modified facilities layout	3.3 Air Quality
5.7 Noise	Sections have been supplemented with discussion and analysis of airborne construction-related noise, blasting noise and vibrations, and peak noise levels from firing range operations; added an additional minimization measure	3.4 Noise
5.8 Infrastructure and Utilities	Updated the discussion and analysis of potable water, wastewater, and natural gas	3.5 Infrastructure and Utilities
5.9 Cultural Resources	Sections updated with results of additional archaeological survey	3.6 Cultural Resources
5.10 Water Resources	Sections 3.7.1.2 and 3.7.2.2, Wetlands, have been updated with the results of supplemental delineation of wetlands and streams	3.7 Water Resources
5.11 Biological Resources	Sections 3.8.1.3 and 3.8.2.3, Threatened and Endangered Species, have been updated with results of additional bat habitat assessment and Biological Assessment and additional discussion and analysis of state listed species; impacts to vegetation (Section 3.8.2.1, Vegetation) have been updated for areas to be cleared for construction of the modified site facilities layout; Section 3.8.4, Mitigation will be updated pending consultation with the U.S. Fish and Wildlife Service (USFWS)	3.8 Biological Resources
5.12 Hazardous Materials and Waste	Information remains unchanged and is incorporated by reference	N/a

Table 1-3. Information from 2016 RFEIS Changed or Incorporated by Reference, by Section		
2016 RFEIS Section Number and Title	**Summary of Changes Made**	**Location of Updated Information in 2017 Draft Supplemental RFEIS**
6.0 Relationship Between Short-Term Use of the Environment and the Maintenance and Enhancement of Long-Term Productivity	Section updated for Modified Alternative 2 – Roxana	4.0 Relationship Between Short-Term Use of the Environment and the Maintenance and Enhancement of Long-Term Productivity
7.0 Irreversible and Irretrievable Commitments of Resources	Section updated for Modified Alternative 2 – Roxana	5.0 Irreversible and Irretrievable Commitments of Resources
8.0 Cumulative Impacts	Entire section has been revised and updated to describe potential cumulative impacts of Modified Alternative 2 – Roxana in conjunction with other actions to the resources described in this 2017 Draft Supplemental RFEIS	6.0 Cumulative Impacts
9.0 References	Contains the references cited in this 2017 Draft Supplemental RFEIS	7.0 References
10.0 List of Preparers	Updated to list those primarily responsible for preparing the 2017 Draft Supplemental RFEIS	8.0 List of Preparers
11.0 Distribution List	The 2016 RFEIS distribution list has been updated to include a few additional interested parties	9.0 Distribution List
Appendix A Agency Coordination	National Historic Preservation Act (NHPA) correspondence has been moved to a new appendix (Appendix E); USFWS Endangered Species Act correspondence had been moved to a new appendix (Appendix H)	Appendix E NHPA Correspondence; Appendix H USFWS Endangered Species Act Consultation
Appendix B Excavation and Grading Calculations	Information remains unchanged and is incorporated by reference	N/a
Appendix C Air Emissions Calculations	Contains the updated air emissions calculations for the Modified Alternative 2 – Roxana	Appendix C Air Emissions Calculations
Appendix D Enhanced Utility Report	Information remains unchanged; final report included in an appendix to the 2017 Draft Supplemental RFEIS for background information related to Section 3.5 Infrastructure and Utilities	Appendix D Enhanced Utility Report
Appendix E-1 Responses to Comments on Draft EIS	Information remains unchanged and is incorporated by reference	N/a
Appendix E-2 Comments on Final EIS	Information remains unchanged and is incorporated by reference	N/a
Appendix F Traffic Impact Study	Information remains unchanged and report is incorporated by reference	N/a
Appendix G Environmental Site Assessments	Information remains unchanged and reports are incorporated by reference	N/a

Table 1-3. Information from 2016 RFEIS Changed or Incorporated by Reference, by Section		
2016 RFEIS Section Number and Title	**Summary of Changes Made**	**Location of Updated Information in 2017 Draft Supplemental RFEIS**
Appendix H Investigation of Rock Rubble Material, Roxana Site	Information remains unchanged; final report included in an appendix to the 2017 Draft Supplemental RFEIS for background information related to Sections 3.7.1.1 and 3.7.2.1, Surface Water	Appendix F Investigation of Rock Rubble Material, Roxana Site

1.4.3 Agency Coordination

In addition to NEPA, other laws, regulations, permits and licenses may be applicable to the proposed action. During the development of this 2017 Draft Supplemental RFEIS, the Bureau conducted the following interagency coordination:

- Formal consultation with the U.S. Fish and Wildlife Service (USFWS) regarding the occurrence of threatened and endangered species in compliance with Section 7 of the Endangered Species Act (ESA)
- Coordination with the U.S. Army Corps of Engineers (USACE) regarding the presence/absence of waters of the U.S., which are protected under Section 404 of the Clean Water Act (CWA)
- Consultation with the Kentucky Heritage Council regarding cultural resource findings of effect in compliance with Section 106 of the National Historic Preservation Act (NHPA)

If the Bureau decides to implement the proposed action, acquisition of other permits and compliance under other regulations may also be required prior to construction, including, but not limited to, the following:

- Air quality permit issued by the Kentucky Department for Environmental Protection (KDEP) for air emission sources in compliance with 401 Kentucky Administrative Regulations (KAR) 52:040
- CWA Section 404 permit issued by the USACE for the filling of wetlands
- Section 401 Water Quality Certification issued by KDEP for the USACE Section 404 permit (CWA)
- Kentucky Pollutant Discharge Elimination System permit issued by KDEP to manage stormwater runoff during construction to minimize water pollutant discharges (CWA)
- Development and implementation of a Groundwater Protection Plan in compliance with 401 KAR 5:037

1.4.4 Public Involvement in this EIS Process

The Bureau has and will continue to provide opportunities for the public to provide input about the proposed project. Several opportunities for formal public comment have been provided throughout the EIS process. **Table 1-4** summarizes these opportunities.

The Bureau published its Notice of Intent to prepare a Supplemental RFEIS in the *Federal Register* on November 18, 2016. The notice was also published in the *Lexington Herald-Leader* on November 18, 2016, and the *Mountain Eagle* on November 23, 2016. There was no formal scoping meeting held for this 2017 Draft Supplemental RFEIS; however, the Bureau has considered any comments received in the environmental impacts analysis of this 2017 Draft Supplemental RFEIS, including comments received

during the 30-day review period on the March 2016 RFEIS. Appendix I, *Comments on 2016 Revised Final EIS* includes all comments received on the March 2016 RFEIS during the 30-day review period.

The issuance of this 2017 Draft Supplemental RFEIS begins a 45-day public comment period, during which a public meeting will be held in the community of Whitesburg. There will also be a 30-day public review period following release of the Final Supplemental RFEIS and before the Record of Decision is signed and published. All comments submitted during the public comment period for this 2017 Draft Supplemental RFEIS, as well as the Bureau's responses to the comments, will be incorporated into the Final Supplemental RFEIS.

Table 1-4. Summary of EIS Public Involvement, 2013–2016

EIS Phase	Formal Comment Period	Number of Comments	Description
Scoping	30-day scoping period: July 26–August 26, 2013	• 320 individual comments	Scoping meeting was held in Whitesburg on August 13, 2013; 453 people attended. Comments were received from individuals, businesses, and organizations. Local officials and representatives of state and federal agencies participated in a scoping field view with the Bureau on August 13, 2013.
Draft EIS	45-day public comment period: February 13–March 30, 2015	• 1,169 individual comments • 3 petitions in support of the project (1,001 signatures) • 1 petition in support of the project at the Roxana site (155 signatures)	Public meeting was held in Whitesburg on March 15, 2015; 350 people attended. Comment letters, forms, and emails were received from individuals, elected officials, federal and state agencies, businesses, and organizations
Final EIS	30-day review period: July 31–August 31, 2015	• 16 individual comments • 1 online petition in opposition to the project (625 signatures)	Comment letters and emails were received from individuals, federal and state agencies, and organizations
Revised Final EIS	30-day review period: April 1–May 2, 2016	• 1,078 individual comments • 2 online petitions in opposition to the project (1,007 signatures)	Comment letters and emails were received from individuals, organizations, a federal agency, and an educational institution

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The proposed action is the acquisition of property and the construction and operation of a federal correctional facility in Letcher County, Kentucky. The Bureau proposes to acquire up to 324 hectares (800 acres) 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 Road and Parking

The Bureau has standard design layouts for its correctional facilities. The standard features incorporated into the design of the federal correctional facility in Letcher County include: a single road for controlled access, a parking lot located near the public entrance of both the USP and the FPC for use by employees and visitors, one- to four-story structures, multipurpose activity spaces, and buffer areas around the facility to provide visual and physical setbacks from the site boundaries.

The outdoor firing range would be used by Bureau staff on an annual and monthly basis. Annual small arms training for employees, along with annual qualification/recertification for firearms instructors would last approximately six weeks. Monthly firearms training for special operations response teams would last one day.

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 3.7 meters (12 feet) high. The site lighting would consist of 30 meter (100 foot) 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 combination of high pressure sodium and metal halide lights or light-emitting diode (LED) 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 four to five years.

2.2 ALTERNATIVES DEVELOPMENT

CEQ's guidelines for implementing the procedural provisions of NEPA establish a number of policies for federal agencies, including "…using the NEPA process to identify and assess reasonable alternatives to proposed actions 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 exploration and objective evaluation of all reasonable alternatives (40 CFR 1502.14[a]), including those not within the jurisdiction of the lead agency (40 CFR 1502.14[c]). Reasonable alternatives must meet the stated purpose of and need for the proposed action and must be feasible.

The Bureau conducted an analysis of alternatives for implementing the proposed action in accordance with these guidelines. Several alternative sites for the proposed federal correctional facility were evaluated for their potential to meet the project purpose and need, and then screened using a set of criteria established by the Bureau (**Table 2-1**). The following sections summarize the alternatives that were evaluated and the resulting proposed action alternative carried forward for analysis in this 2017 Draft Supplemental RFEIS. A detailed discussion of the alternatives development process is included in Sections 2.2 and 2.3 of the March 2016 RFEIS.

Table 2-1. General Criteria Used by the Bureau for Screening Potential Development Sites

Criterion	Description
Size	The site should have sufficient land area (121 to 142 hectares minimum [300 to 350 acres]) to accommodate the institution and ancillary facilities, provide a buffer zone between the facility and neighboring properties, and allow for future expansion
Topography	The potential 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)
Environmental Compatibility	Sites should avoid significant environmental resources (i.e., floodplains, wetlands, threatened and endangered species, cultural and historic resources, etc.)
Land Use Compatibility	Sites should avoid potential incompatible land use conflicts
Infrastructure and Community Services	Emergency services, including police and fire protection, and utilities should be able to provide services to the prospective sites
Transportation	Site should be served by well-maintained state and county roadways to ensure safe commutes for employees, service vehicles, and visitors
Local Support	Support of key elected officials, community leaders, the public and owners of the sites

2.2.1 Development of Alternatives within the Geographic Area of Interest

The Bureau has a priority need for additional facilities within the 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 bed space 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 a site reconnaissance study of four sites that had been offered to the Bureau by members of the community. The purpose of the site reconnaissance study was to collect preliminary data on the sites and determine their suitability for development based on site conditions, infrastructure and utilities, and environmental resources. The four sites included: Meadow Branch, Payne Gap, Roxana, and Van/Fields. Based on the 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 these four sites should be studied in more detail in a feasibility study to identify if there would be constraints associated with the development of the sites.

In 2012, the Bureau completed a feasibility study that assessed cultural resources, wetlands, geologic conditions, and utilities. The feasibility study also included the production of aerial and topographic mapping, and a boundary survey. The feasibility study evaluated the benefits, challenges, and potential risks associated with development of each site. During the initial phases of the feasibility study, the Meadow Branch site was removed from further consideration due to changes with the offeror that removed the site from 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 identified and 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 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.

2.2.2 Alternatives Evaluated in the 2016 RFEIS

The 2016 RFEIS evaluated the No Action Alternative and two build alternative sites: Alternative 1 – Payne Gap and Alternative 2 – Roxana (**Figure 2-1**). Both build alternatives are summarized below. The 2016 RFEIS identified Alternative 2 – Roxana as the preferred alternative because it best meets the project needs and would have fewer impacts to the human environment (refer to Table ES-1 and Section 2.6 in the 2016 RFEIS for a summary of impacts of the two build alternatives). Therefore, Alternative 1 – Payne Gap is eliminated from further evaluation in this 2017 Draft Supplemental RFEIS. Consistent with CEQ regulations, a full discussion and evaluation of Alternative 1 – Payne Gap is not repeated in this document, but is contained in the 2016 RFEIS (Section 2.4 and Chapter 4.0), which is incorporated herein by reference.

2.2.2.1 Alternative 1 – Payne Gap

Under Alternative 1, the Bureau would have acquired approximately 305 hectares (753 acres) of land located in eastern Letcher County at Payne Gap, along the Kentucky and Virginia border (**Figure 2-1**). Located approximately 7 miles northeast of Whitesburg, the proposed site is situated on a gently sloped to steeply sloped upland land form above the Kentucky River at its confluence with the Laurel Fork. The site

is largely covered with secondary growth forests. The original topography of portions of the site has been altered by past surface and deep mining and associated mining activities such as spoil piles, roads, and fill piles. In contrast to the preferred Roxana site where only surface mining has been confirmed to have occurred, mining permit applications indicate a combination of surface and underground mining operations occurred within the proposed Payne Gap project site between 1950 and 1990. No active mining is occurring on-site.

The Bureau proposed developing the north half of the Payne Gap site with the USP, FPC, and ancillary buildings, and accessing the site from U.S. Route 119 (**Figure 2-2**). The site would have required forest clearing and clearing mined area and extensive excavation and fill material to level and prepare the site for construction (**Table 2-2**). All excavated materials that would have included soil, rock, and mine spoil would have been used for on-site structural fill or placed as spoil fill. The excavated materials would have been compacted to create structural fill for the building pads or filled into the valleys adjacent to the northwest, west, and southeast of the proposed USP location. Due to the steep terrain, large amounts of material would have been moved and placed as spoil fill in order to prepare a level site for construction.

Table 2-2. Estimated Earthwork Quantities for Alternative 1 – Payne Gap

Construction 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	3 hectares (7 acres)
Clear Forest Area	85 hectares (211 acres)

2.2.2.2 Alternative 2 – Roxana

Under Alternative 2, as initially proposed and discussed in the 2016 RFEIS, the Bureau would have acquired approximately 283 hectares (700 acres) of land at Roxana, an unincorporated community located 7.5 miles west of Whitesburg (**Figure 2-1**). The proposed 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 proposed constructing the FPC in the north portion of the Roxana site and the USP and ancillary buildings in the central portion of the site (**Figure 2-3**). The proposed facilities layout included an access road extending along the east side of the facilities from KY 588. Preparation of the site for construction would have required forest clearing and clearing mined area as well as rock excavation so that excavated materials would have included soil, mine spoil, and rock (**Table 2-3**). Due to space limitations at the site and to closely balance the cut and fill, all excavated materials would have been used on site to create structural fill for the building pads or transported to the valleys adjacent to the northwest and southwest of the proposed USP location and compacted as structural fill.

Table 2-3. Estimated Earthwork Quantities for Alternative 2 – Roxana

Construction 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	33 hectares (81 acres)
Clear Forest Area	44 hectares (110 acres)

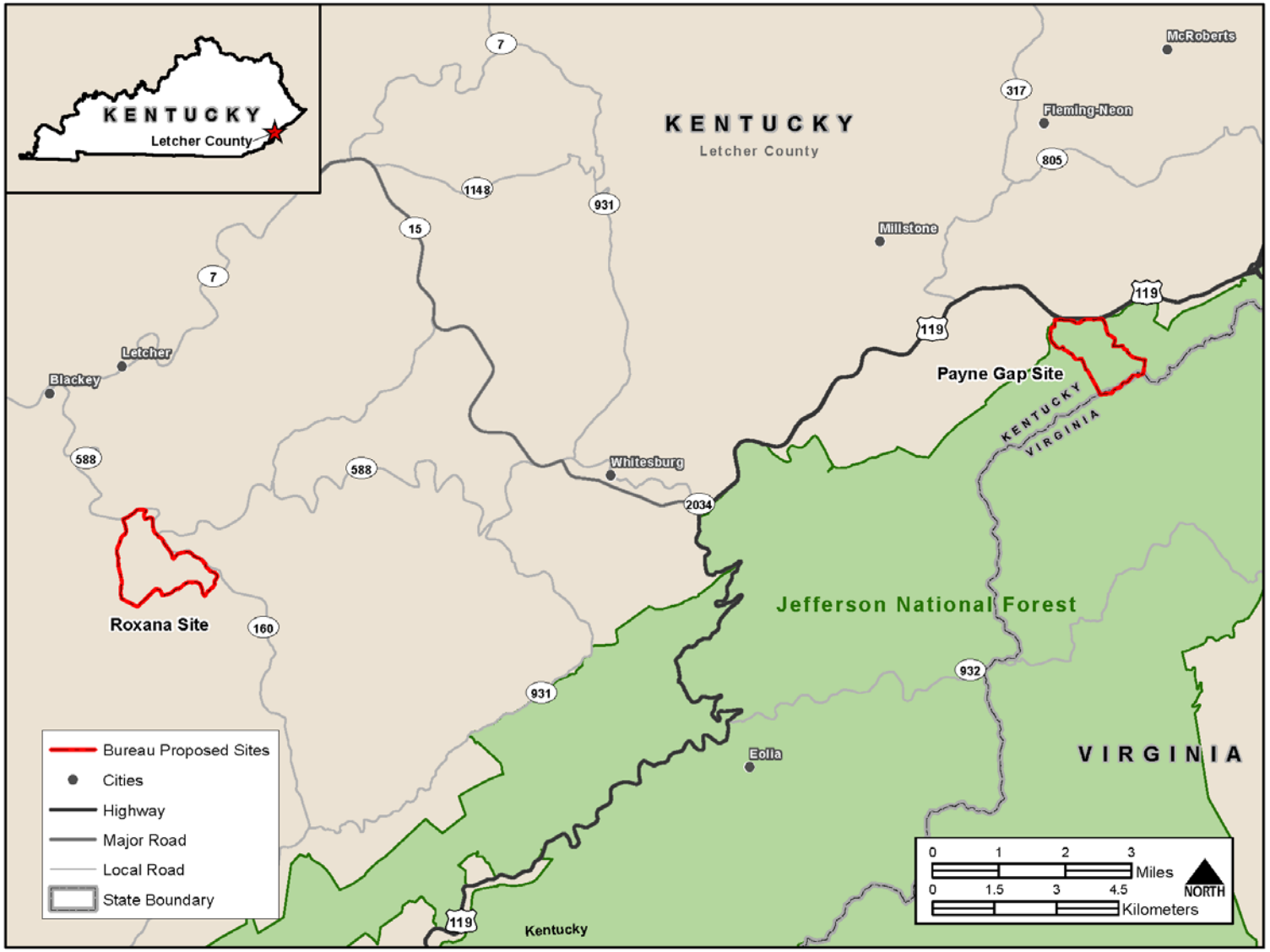

Figure 2-1. Build Alternatives Evaluated in 2016 RFEIS

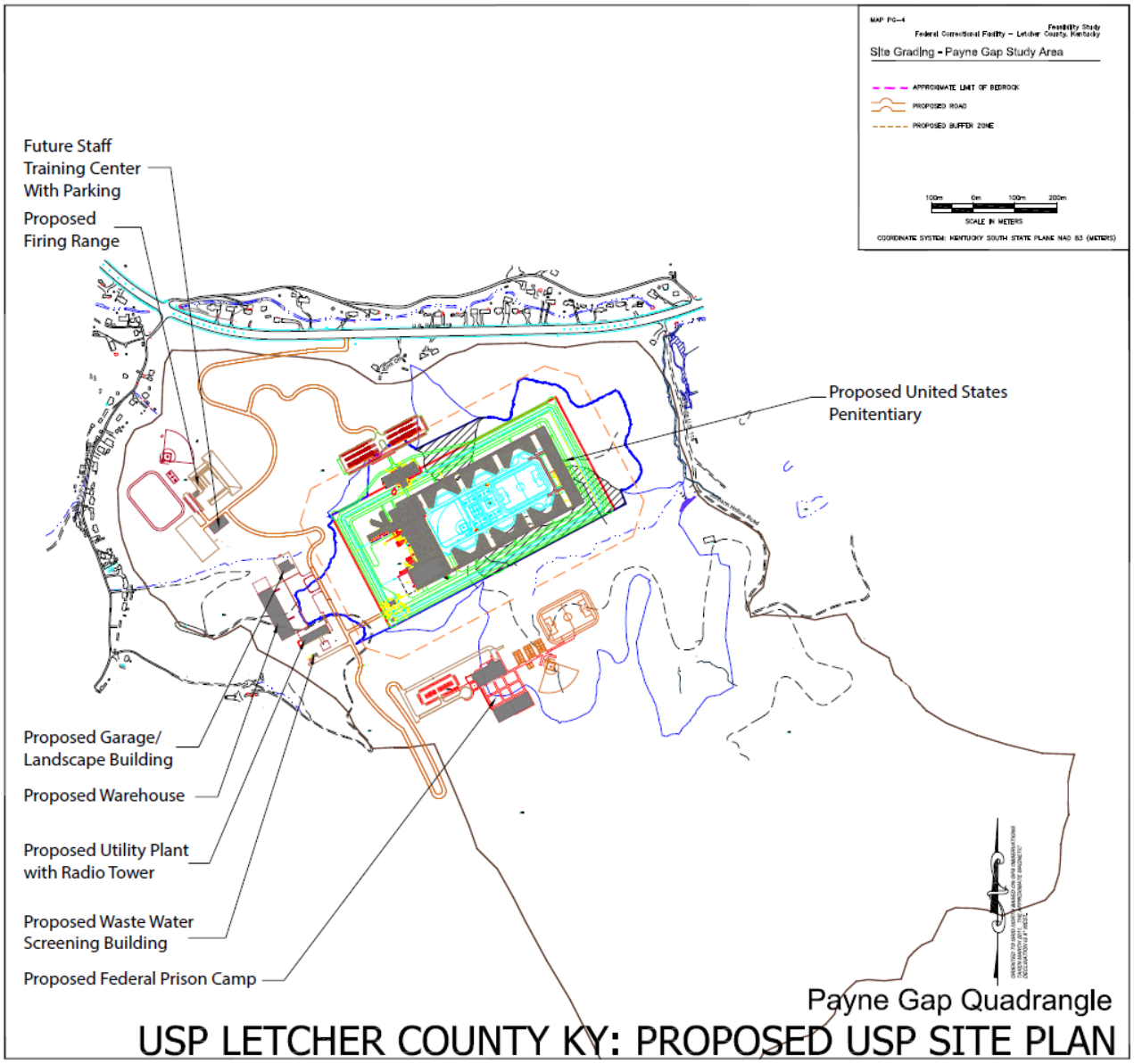

Figure 2-2. Conceptual Layout for Alternative 1 – Payne Gap, 2016 RFEIS

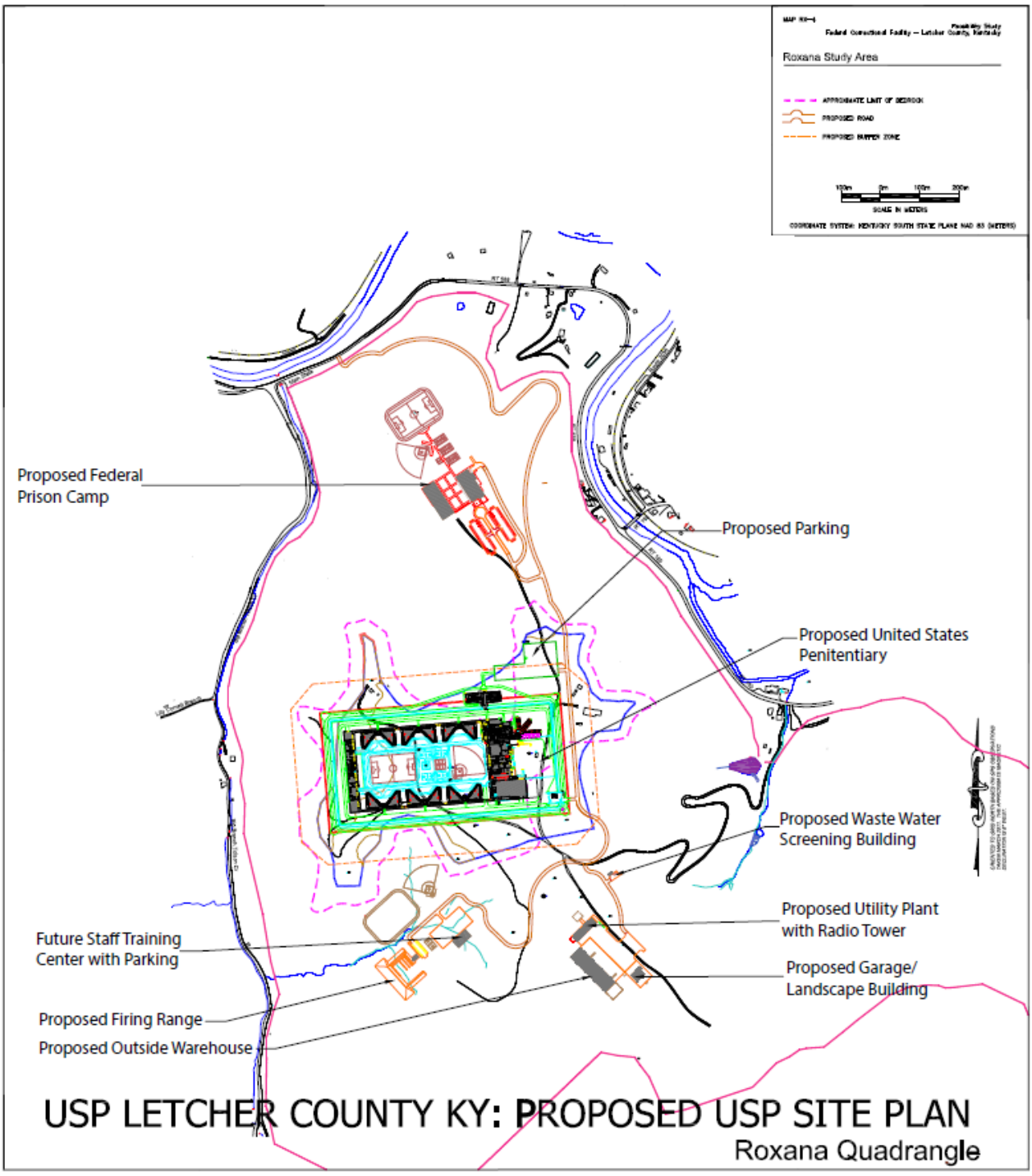

Figure 2-3. Conceptual Layout for Alternative 2 – Roxana, 2016 RFEIS

2.2.3 Alternatives Evaluated in this Supplemental RFEIS

The alternatives evaluated in this 2017 Draft Supplemental RFEIS include the No Action Alternative and Modified Alternative 2 – Roxana. Under Modified Alternative 2 – Roxana evaluated in this 2017 Draft Supplemental RFEIS, the Bureau removed from acquisition consideration two parcels of land that were part of the proposed Roxana site evaluated in the 2016 RFEIS, and as a consequence, made changes to the layout of the proposed new correctional facilities. Modified Alternative 2 – Roxana is the preferred alternative of this 2017 Draft Supplemental RFEIS.

2.2.3.1 No Action Alternative

The option of the Bureau taking no action to develop the proposed USP and FPC in Letcher County or other locations is considered in the 2017 Draft Supplemental RFEIS. Under the No Action Alternative, the Bureau would not acquire property or construct and operate a new USP or FPC. The No Action Alternative would not fulfill the project purpose and need to provide additional high-security facilities within the Mid-Atlantic Region to reduce the demonstrated overcrowding. Existing USPs in this region 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 therefore, is not considered a viable alternative. The No Action Alternative is discussed in this 2017 Draft Supplemental RFEIS because it serves as a baseline against which to compare the current and future environmental conditions with or without the development of the USP and FPC.

2.2.3.2 Modified Alternative 2 – Roxana

The major differences of the Modified Alternative 2 – Roxana evaluated in this 2017 Draft Supplemental RFEIS as compared with the Alternative 2 – Roxana evaluated in the 2016 RFEIS include the site size, the locations of the FPC and access road, and the amounts of excavation and fill required for construction. Under Modified Alternative 2 – Roxana, the Bureau would acquire approximately 231 hectares (570 acres) of land at Roxana (**Figure 2-4**). The size of the proposed Roxana site was reduced by approximately 53 hectares (130 acres) because one property was not available for sale and the Bureau determined another property was not required for the project. The Bureau conducted a number of detailed studies at the Roxana site and determined this smaller site size would still be a viable alternative for constructing and operating a USP, FPC, and ancillary facilities as described in Section 2.1, *Proposed Action*. In the modified facilities layout under this alternative compared with the 2016 alternative, the FPC would be situated closer to the USP and the access road would extend from KY 588 along the west side of the FPC rather than the east side (**Figure 2-5**).

Preparation of the site for construction would require forest clearing and clearing mined area, and extensive excavation of lesser amounts of rock, including some mine spoil (**Table 2-4**). All excavated mine spoil and rock would be used on-site for structural fill. The excavated soil and rock would be compacted to create a structural fill for the building foundations or transported to the valleys adjacent to the northwest of the proposed FPC location and southwest of the proposed USP location and compacted as structural fill. The modified site layout would necessitate approximately 5 more hectares (11 acres) of forest to be cleared compared with the 2016 alternative; however, the amount of excavation and structural fill to prepare the site for construction would be reduced (**Table 2-4**).

Table 2-4. Estimated Earthwork Quantities for Modified Alternative 2 – Roxana		
Construction Activity	**Earthwork Quantity**	
	Modified Alternative 2 – Roxana	**2016 Alternative 2 – Roxana**
Spoil Excavation	8,612,966 yd^3	9,204,340 yd^3
Rock Excavation	729,716 yd^3	953,246 yd^3
Structural Fill	8,742,310 yd^3	9,402,582 yd^3
Clear Mined Area	24 hectares (60 acres)	33 hectares (81 acres)
Clear Forest Area	49 hectares (121 acres)	44 hectares (110 acres)

Note: yd^3 = cubic yards.

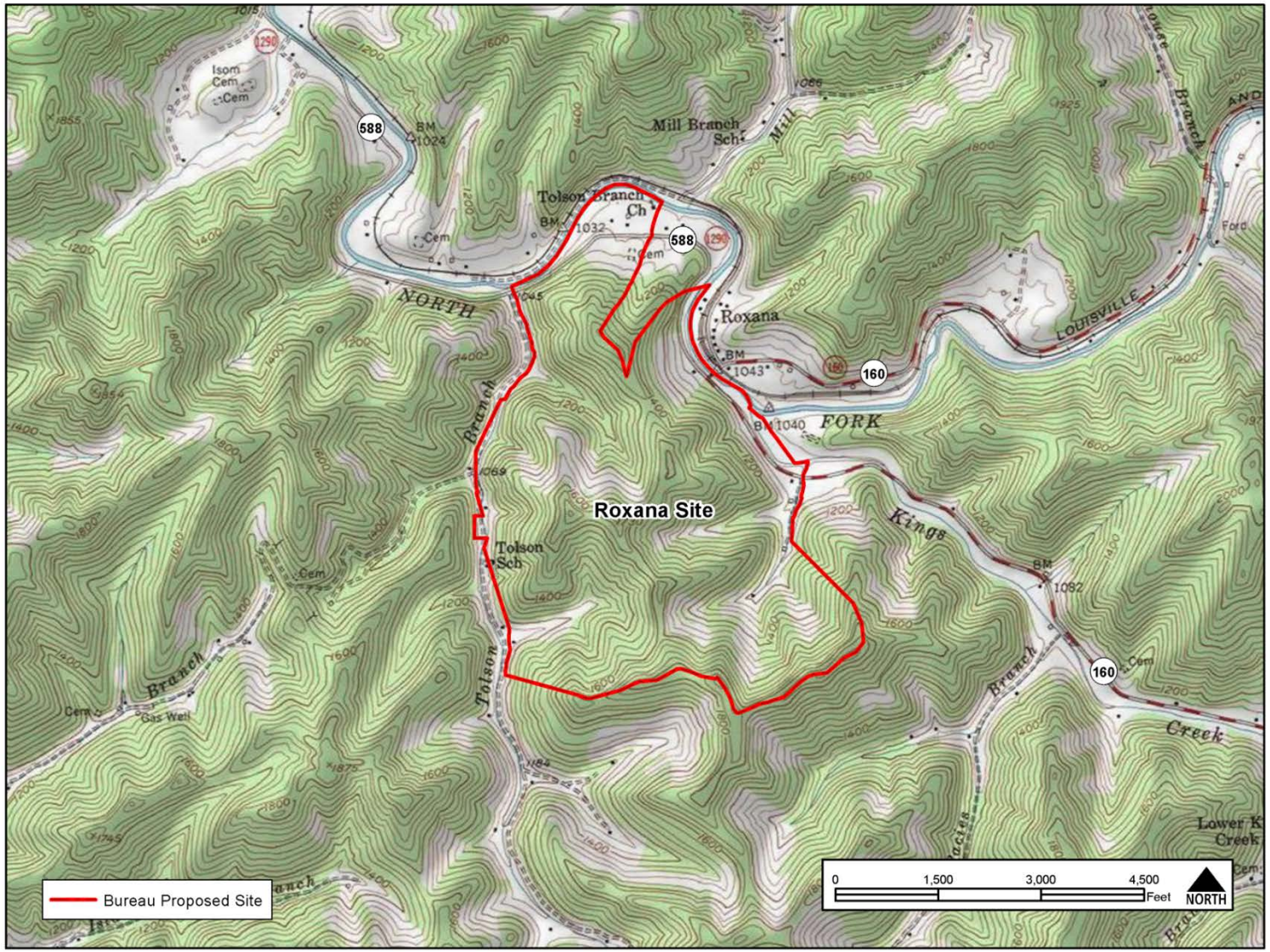

Figure 2-4. Boundary of Reduced Site for Modified Alternative 2 – Roxana

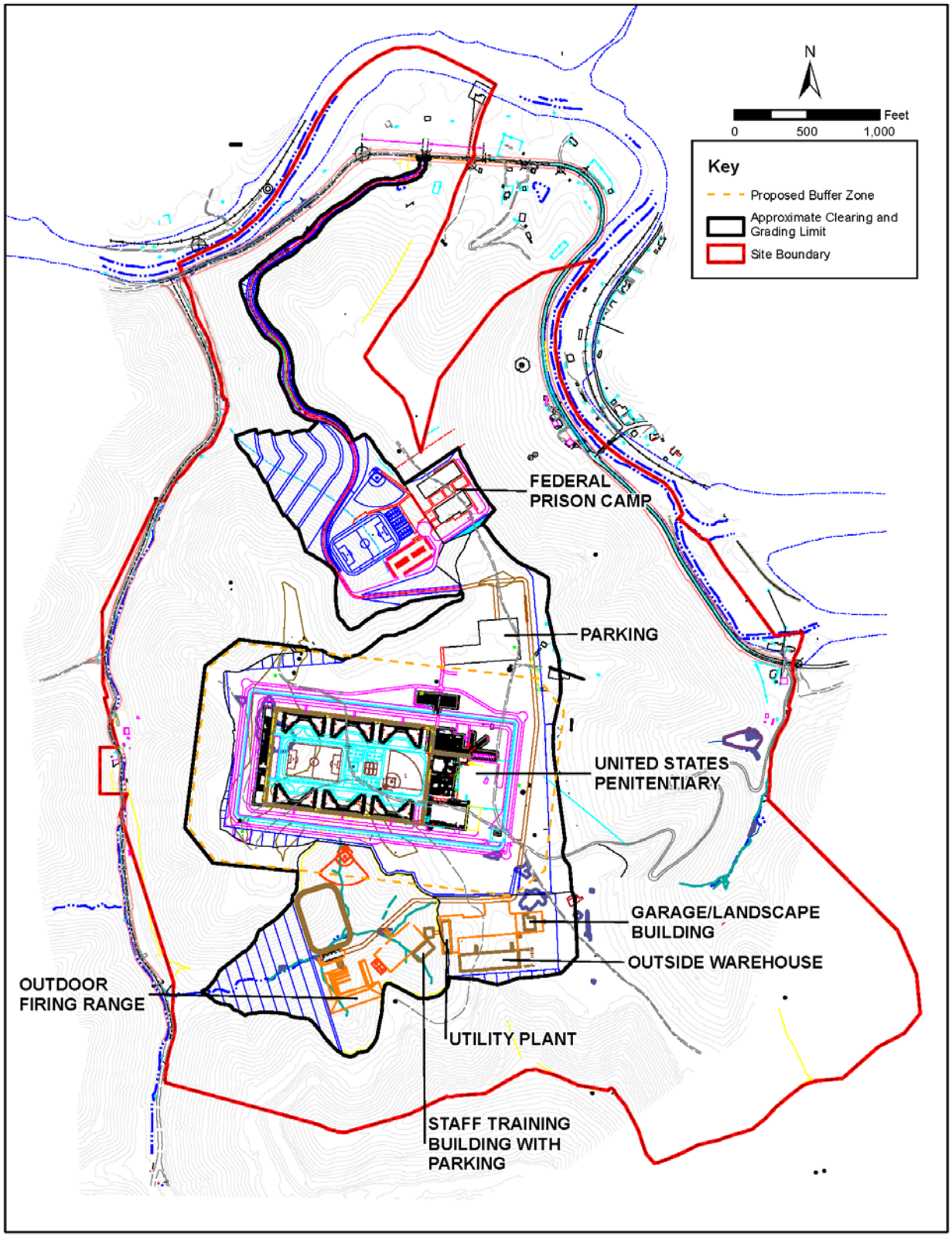

Figure 2-5. Conceptual Layout of Modified Alternative 2 – Roxana

2.3 PREFERRED ALTERNATIVE

Modified Alternative 2 – Roxana is the preferred alternative because it best meets the purpose of the proposed action by providing an additional high-security penitentiary and an associated prison camp to increase capacity for current inmate populations in the Mid-Atlantic Region. Modified Alternative 2 – Roxana satisfies the continuing need for additional high-security facilities within this region, despite recent declines in other than high-security inmate population groups, to reduce the demonstrated overcrowding that compromises the mission of the Bureau.

In addition, Modified Alternative 2 – Roxana is the preferred alternative because it would, on balance, have fewer impacts to the human environment as compared with Alternative 1 – Payne Gap evaluated in the 2016 RFEIS. Although both build alternatives would have direct adverse impacts to topography, geology, and soils, much greater site preparation work would be required at the Payne Gap site. Except for the potential impact to the natural gas infrastructure, Modified Alternative 2 – Roxana would have less than significant impacts to infrastructure and utilities, while Alternative 1 – Payne Gap would have significant impacts to potable water capacity, wastewater treatment capacity, and natural gas infrastructure. Under Modified Alternative 2 – Roxana, impacts to streams and forest would be less than those under Alternative 1 – Payne Gap. Development of the proposed action at the Payne Gap site would impact approximately 40 more hectares (100 more acres) of summer habitat of federally listed bat species when compared with the Roxana site. **Table 2-5** provides a comparison of these and other potential environmental effects from the No Action Alternative, Alternative 1 – Payne Gap, and Modified Alternative 2 – Roxana.

Table 2-5. Summary of Environmental Consequences of No Action Alternative, Alternative 1 – Payne Gap, and Modified Alternative 2 – Roxana			
Resource Area	**No Action Alternative**	**Alternative 1 – Payne Gap (Evaluated in 2016 RFEIS)**	**Modified Alternative 2 – Roxana (Evaluated in this 2017 Draft Supplemental RFEIS)**
Land Use and Zoning	• No compatibility issues; therefore, no impact on land use	• No significant impact • Changes in land use from forested/reclaimed mining to government institution not incompatible from regulatory perspective • Compatibility issues with adjacent properties minimized by forested buffer that would separate USP/FPC facilities from adjacent land uses	• No significant impact • Changes in land use from forested/reclaimed mining/residential to government institution not incompatible from regulatory perspective • Compatibility issues with adjacent properties minimized by forested buffer that would separate USP/FPC facilities from adjacent land uses • A 125-foot buffer maintained between FPC construction and Whitaker property
Topography, Geology, and Soils	• No impact to topography, geology, or soils	• Significant impact • Direct topographical changes from cut (10.9 million cubic yards) and fill (13.8 million cubic yards) and grading • Direct impact to geology from blasting and excavation of bedrock • Soil disturbance of approximately 88 hectares (218 acres) • No impact to prime farmland soils	• Significant impact • Direct topographical changes from cut (9.3 million cubic yards) and fill (8.7 million cubic yards) and grading • Direct impact to geology from blasting and excavation of bedrock • Soil disturbance of approximately 73 hectares (181 acres) • Impact to 5 hectares (12.3 acres) of soils classified as farmland of statewide importance • No significant impact to prime farmland soils

Table 2-5. Summary of Environmental Consequences of No Action Alternative, Alternative 1 – Payne Gap, and Modified Alternative 2 – Roxana			
Resource Area	**No Action Alternative**	**Alternative 1 – Payne Gap (Evaluated in 2016 RFEIS)**	**Modified Alternative 2 – Roxana (Evaluated in this 2017 Draft Supplemental RFEIS)**
Socioeconomics and Environmental Justice	• No impact; no beneficial socioeconomic impacts	• No significant impact • Minor offset in projected 2020 population decrease • Minor beneficial employment and income impacts • No disproportionately high or adverse human health or environmental effects on minority populations and low-income populations • No environmental health risks or safety risks that may disproportionately affect children	• No significant impact • Minor offset in projected 2020 population decrease • Minor beneficial employment and income impacts • No disproportionately high or adverse human health or environmental effects on minority populations and low-income populations • No environmental health risks or safety risks that may disproportionately affect children
Community Facilities and Services	• No impact; no increase in demand on community facilities and services from operation of a new facility	• No significant impacts to state and local law enforcement agencies, fire and emergency services, health care services, or to school services	• Less than significant impacts to state and local law enforcement agencies • No significant impacts to fire and emergency services, health care services, or school services
Transportation and Traffic	• No increases in traffic from construction and operation of a new facility; therefore, no impact to transportation and traffic	• No significant impact • No significant impacts to traffic associated with construction activities • Less than significant impacts to level of service of U.S. Route 119 are anticipated from traffic associated with operations of the facility • No significant impacts to roadways • Minor roadway improvement (addition of left turn lane on U.S. Route 119) would be implemented	• Less than significant impact with planned mitigation measures • No significant impacts to traffic associated with construction activities • No significant impacts to level of service of KY 588 are anticipated from traffic associated with operations of the facility • Significant impacts to roadways from truck traffic • Planned improvements to roadway infrastructure reduce impacts to less than significant

Table 2-5. Summary of Environmental Consequences of No Action Alternative, Alternative 1 – Payne Gap, and Modified Alternative 2 – Roxana			
Resource Area	**No Action Alternative**	**Alternative 1 – Payne Gap (Evaluated in 2016 RFEIS)**	**Modified Alternative 2 – Roxana (Evaluated in this 2017 Draft Supplemental RFEIS)**
Air Quality	• No increases in air emissions; therefore, no impact to air quality	• No significant impact • Temporary increases in air emissions during construction below significance threshold for criteria pollutants • Annual air emissions from facility operation and staff vehicle commuting below significance threshold for criteria pollutants • No direct or indirect significant impacts on the local/regional air quality	• No significant impact • Temporary increases in air emissions during construction below significance threshold for criteria pollutants • Annual air emissions from facility operation and staff vehicle commuting below significance threshold for criteria pollutants • No direct or indirect significant impacts on the local/regional air quality
Noise	• No construction or operation of a new facility; therefore, no impact from increases in noise	• No significant impact • Temporary construction noise • No significant impacts to ambient noise levels are anticipated from operations of the facility	• No significant impact • Temporary construction noise • No significant impacts to ambient noise levels are anticipated from operations of the facility
Infrastructure and Utilities	• No impact; no increase in demand on infrastructure and utilities from construction and operation of a new facility	• Significant impact • Demand for natural gas, electricity, telecommunication would not exceed existing capacities • Increase in solid waste met by adequate capacity at Laurel Ridge Landfill • Significant impact to potable water capacity and wastewater treatment capacity • Significant impact to natural gas infrastructure • Direct impact to natural gas owner from closure of gas well and relocation of gas pipeline • Cumulative impacts to wastewater treatment capacity	• No significant impact • Demand for water, natural gas, electricity, and telecommunication would not exceed existing capacities • Increase in solid waste met by adequate capacity at Laurel Ridge Landfill • Direct impact to natural gas owners and lessors from closure of gas wells and compressor station and abandonment and/or relocation of gas pipelines • Cumulative impacts to wastewater infrastructure

Table 2-5. Summary of Environmental Consequences of No Action Alternative, Alternative 1 – Payne Gap, and Modified Alternative 2 – Roxana

Resource Area	No Action Alternative	Alternative 1 – Payne Gap (Evaluated in 2016 RFEIS)	Modified Alternative 2 – Roxana (Evaluated in this 2017 Draft Supplemental RFEIS)
Cultural Resources	• No construction or operation of a new facility; therefore, no impact to cultural resources	• No significant impact • No adverse effect on cultural resources listed or eligible for listing on the National Register of Historic Places	• No significant impact • No adverse effect on cultural resources listed or eligible for listing on the National Register of Historic Places
Water Resources	• No construction or operation of a new facility; therefore, no impact to water resources	• Less than significant impact with planned mitigation measures • 0.97 hectares (2.40 acres) of wetland impacts • 10,512 linear feet of stream impacts • Permitting and mitigation reduce wetland and stream impacts to less than significant • No significant impacts to surface water quality or groundwater • No impact to floodplains	• Less than significant impact with planned mitigation measures • 0.98 hectares (2.44 acres) of wetland impacts • 5,610 linear feet of stream impacts • Permitting and mitigation reduce wetland and stream impacts to less than significant • No significant impacts to surface water quality or groundwater • No impact to floodplains
Biological Resources	• No construction or operation of a new facility; therefore, no impact to biological resources	• Less than significant impact • 88 hectares (218 acres) of forest clearing • Less than significant impact to wildlife habitat • Less than significant impact to avian and small mammal species from non-lethal/lethal fence • Impacts Indiana and northern long-eared bat summer habitat and potential winter hibernacula considered suitable for use by Indiana, northern long-eared, or gray bat • Additional studies of summer and winter habitat and a biological assessment would be required to further assess impacts and potential mitigation	• Less than significant impact • 49 hectares (121 acres) of forest clearing • Less than significant impact to wildlife habitat • Less than significant impact to avian and small mammal species from non-lethal/lethal fence • Impacts to Indiana and northern long-eared bat summer habitat and winter hibernaculum considered suitable for use by Indiana, northern long-eared, or gray bat • Mitigation and conservation measures would be implemented; USFWS Biological Opinion pending, and will be included in the Final Supplemental RFEIS

Table 2-5. Summary of Environmental Consequences of No Action Alternative, Alternative 1 – Payne Gap, and Modified Alternative 2 – Roxana			
Resource Area	**No Action Alternative**	**Alternative 1 – Payne Gap (Evaluated in 2016 RFEIS)**	**Modified Alternative 2 – Roxana (Evaluated in this 2017 Draft Supplemental RFEIS)**
Hazardous Materials and Waste	• No construction or operation of a new facility; therefore, no impact to human health and safety or the environment from hazardous materials and waste	• No significant impact • Procedures would be in place for safe transport, handling, use, and disposal of hazardous substances and waste during construction and operations • No significant impact to the environment from firing range operations; Bureau Technical Design Guidelines require incorporating structures to catch lead particles, and a stormwater system to prevent contamination outside of the range itself • Facilities intended for human occupancy would be designed to prevent occupant exposures to radon above the USEPA action level	• No significant impact • Procedures would be in place for safe transport, handling, use, and disposal of hazardous substances and waste during construction and operations • Removal and disposal of contaminated soils in three identified locations on the site would be conducted in accordance with all applicable federal and state standards • No significant impact to the environment from firing range operations; Bureau Technical Design Guidelines require incorporating structures to catch lead particles, and a stormwater system to prevent contamination outside of the range itself • Facilities intended for human occupancy would be designed to prevent occupant exposures to radon above the USEPA action level

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3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Chapter 3 presents the affected environment and the environmental consequences of the Bureau's proposed action to acquire land and develop a USP and satellite FPC and ancillary facilities in Letcher County, Kentucky. The affected environment sections describe currently existing conditions of potentially affected resources and provide additional information relevant to understanding potential effects from the Modified Alternative 2 – Roxana. The environmental consequences analysis evaluates the potential direct and indirect effects on each resource area for Modified Alternative 2 – Roxana and the No Action Alternative. Cumulative impacts are analyzed in Chapter 6. The impact analysis is based on and incorporates the analyses presented in the 2016 RFEIS. However, the analyses have been updated to account for any environmental changes brought about by the proposed changes to the site size and facilities layout under Modified Alternative 2 – Roxana.

After the environmental consequences section for each affected resource is a description of mitigation measures the Bureau would implement to reduce or minimize the potential environmental consequences of construction and operation of the USP and FPC. If the Bureau decides to implement Modified Alternative 2 – Roxana, then these mitigation measures will also be discussed in the Record of Decision.

3.1 LAND USE AND ZONING

Land use often refers to human modification of land for residential or economic purposes. Examples of some typical categories of land use include agriculture (includes livestock production), forest, residential, commercial, industrial, transportation, utilities, mining, and recreation. Land uses are frequently regulated by management plans, land use policies or 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 allows for the protection of specially designated or environmentally sensitive uses.

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 temporary and long-term impacts to land use would occur from construction and operation of the USP and FPC.

3.1.1 Affected Environment

Land use associated with the proposed Modified Alternative 2 – Roxana 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, a bluegrass music pavilion, and a small model airplane airstrip. Land use surrounding the site is also primarily forested, with approximately 10 adjacent residential properties. There are also several state parks, nature preserves, and a national natural landmark within the vicinity of the Roxana site. They include Lilley Cornett Woods (2.1 kilometers [1.3 miles] from site), Bad Branch State Nature Preserve (13.1 kilometers [8.1 miles] from site), Kingdom Come State Park (10.1 kilometers [6.3 miles] from site), and Hensley-Pine Mountain Wildlife Management Area (7.9 kilometers [4.9 miles] from site).

Closest to the Roxana site is Lilley Cornett Woods, one of six National Natural Landmark sites located within Kentucky (U.S. Department of the Interior 2016). Owned by the Commonwealth of Kentucky and managed by Eastern Kentucky University, Lilley Cornett Woods serves as an ecological research station. Eastern Kentucky University describes Lilley Cornett Woods as 224 hectares (554 acres) of mixed mesophytic forest with 102 hectares (252 acres) of old growth forest (Eastern Kentucky University 2016).

Coal mining once occurred throughout the area, but currently there are only five active coal mining operations located between 1.6 and 9.7 kilometers (1 and 6 miles) of 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 3-1**.

3.1.2 Environmental Consequences

3.1.2.1 Construction

Changes to land use on the 231-hectare (570-acre) modified Roxana site would occur from construction of a USP and FPC. Approximately 49 hectares (121 acres) of the site would be converted from a primarily forested, as well as, reclaimed mining and residential, to a government institution consisting of several facilities, parking lots, and roads. Additionally, the bluegrass music pavilion and model airplane strip would be removed. The oil and gas wells would be plugged and abandoned. These impacts are further discussed in Section 3.5, *Infrastructure and Utilities*.

Impacts to land use adjacent to the Roxana site, which is primarily forested with some residential, would occur from temporary increases in noise levels during the four- to five-year construction period. An evaluation of projected construction noise levels is presented in Section 3.4, *Noise*. Measures that would be taken to minimize noise impacts during construction are addressed in Section 3.4.4, *Mitigation*. One specific mitigation measure would limit construction activities to daytime weekday hours to the extent feasible to minimize impacts to surrounding areas and along the routes of construction vehicle travel.

A forested buffer area would remain around the USP and FPC, separating the federal correctional facility from the adjacent properties. East of the project area, the buffer distance between the USP and FPC facilities and adjacent properties would range from approximately 38 to 671 meters (125 to 2,200 feet). South of the project area, the buffer distance would vary from approximately 152 to 244 meters (500 to 800 feet). West of the project area, the buffer distance would be approximately 183 to 457 meters (600 to 1,500 feet). North of the project area, the buffer distance would be approximately 38 to 91 meters (125 to 300 feet). The forested buffer area would be compatible with the adjacent land uses. The land area impacted by past mining activities would be reused as a government facility. 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; changes in land use would not be considered significant.

3.1.2.2 Operations

Generally, there would be no direct 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.

Given the revised site layout with relocation of the access road and other facilities, light emission impacts to adjacent land use could occur from exterior security lighting. Exterior lights would consist of 30-meter (100-foot) high mast lighting poles placed along the security perimeter road around the correctional

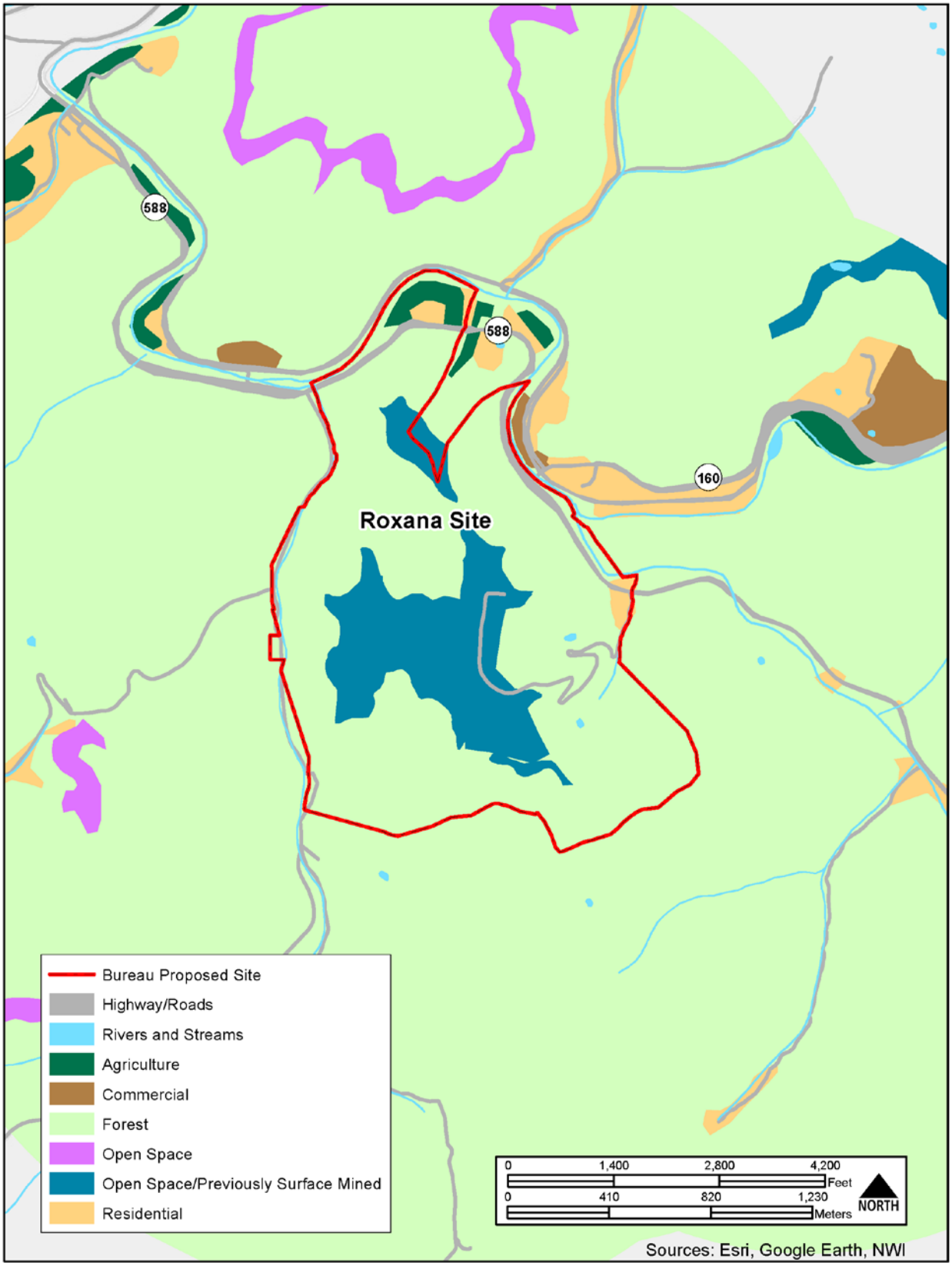

Figure 3-1. Roxana Land Use

facility, in the parking lot, and around the buildings. Most of the lights would be inside of the forested buffer area. Some light emissions from lighting located along the access road could impact residential areas near the northeast portion of the site. Exterior lighting would include hooded fixtures to direct light down and minimize adverse off-site impacts of lighting. As a result, potential land use impacts to adjacent residential properties from light emissions are not anticipated to be significant. Furthermore, potential land use impacts to the nearest nature preserve, Lilley Cornett Woods, from light emissions is not anticipated to be significant, due to the 2.1 kilometer (1.3 mile) distance from the Roxana site, intervening topography, and use of hooded light fixtures that would direct light down.

Noise impacts to adjacent land uses would occur from firearms recertification for one day each month. Noise impacts are analyzed in more detail in Section 3.4, *Noise*. The predicted peak noise contours from the use of small arms at the proposed outdoor firing range are shown in **Figure 3-2**. Noise contours delineate an area that would experience noise, as measured in decibels, at a distance from the source of the noise. Peak noise represents the highest noise level during a single firing event. **Table 3-1** provides small arms peak noise levels and compatibility with noise-sensitive land uses.

Table 3-1. Small Arms Peak Noise and Compatible Land Use

Small Arms Peak Noise (dBP)*	Compatibility with Noise-Sensitive Land Uses
<87	Compatible
87 to 104	Normally Incompatible
>104	Incompatible

Notes: Single event peak level exceeded by 15 percent of events. *dBP = peak decibels.
Source: Department of the Army 2007.

There would be no incompatible land use within the 87 peak decibels (dBP) noise contour. Land uses within the contour are open space, forested land, and previously mined area that is now open space. The small residential area located on the land within the 87 to 104 dBP contour zone would be converted to institutional facilities and the Bureau has no plans to reuse the buildings as residences. Because the firing range would typically be used on an annual basis for six weeks and on a monthly basis for one day, during daylight hours, and there are no incompatible land uses within the 87 dBP noise levels, noise impacts to adjacent land use would not be considered significant. Also, noise levels generated by firing range activity have been estimated to be less than 70 dBP at the nearest nature preserve in the vicinity of the proposed site, Lilley Cornett Woods. Potential land use impacts to Lilley Cornett Woods from noise is not anticipated to be significant because peak noise levels of less than 70 dBP would likely not be perceptible and would only occur six weeks annually and one day per month when the firing range is active.

3.1.3 No Action Alternative

Under the No Action Alternative, the USP and FPC would not be constructed; therefore, no impacts to land use would occur.

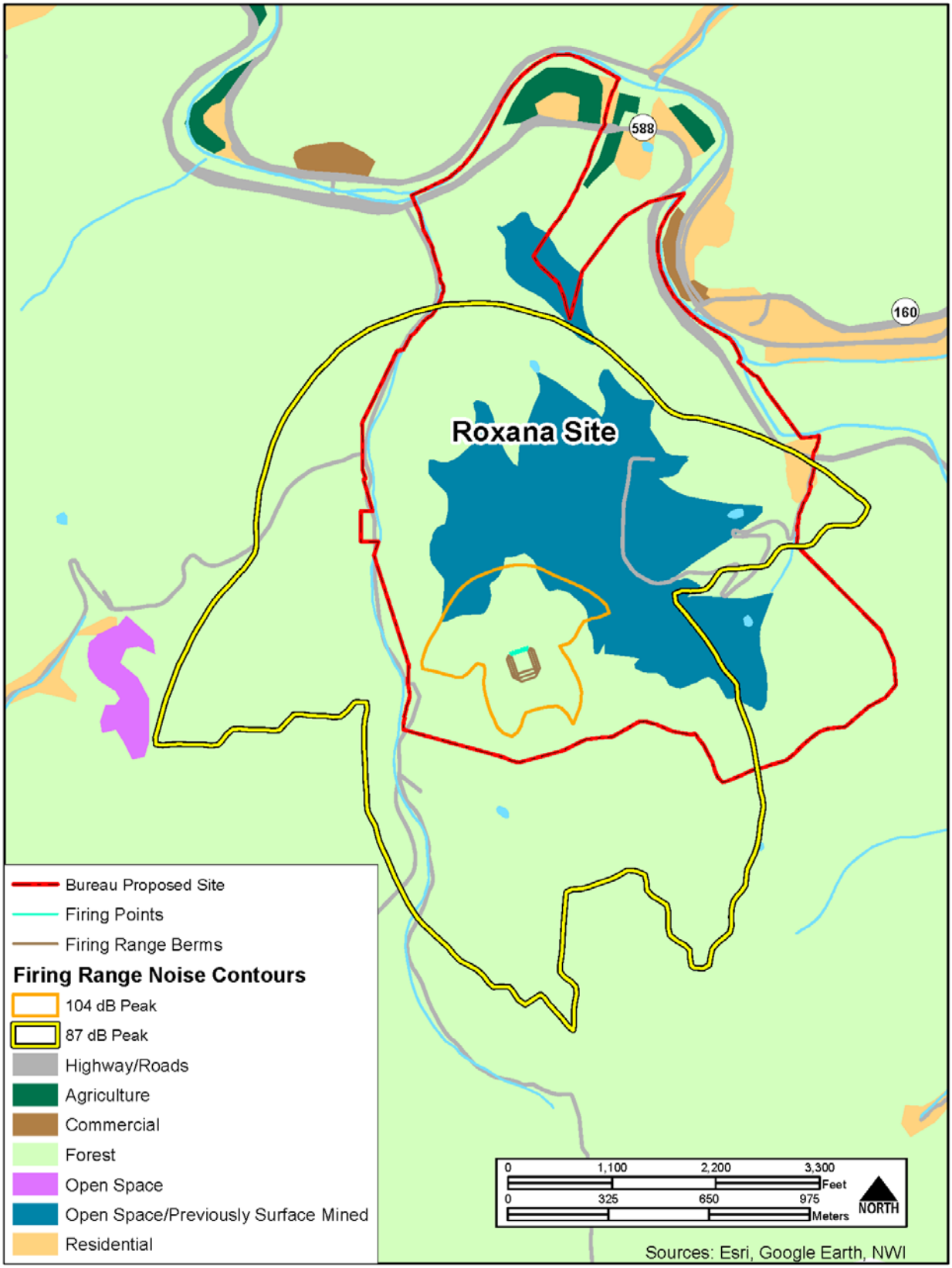

Figure 3-2. Proposed Noise Contours and Existing Land Use for Roxana

3.1.4 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
- maintain a 125-foot buffer between FPC construction activities and Whitaker property
- maintain a 100-foot buffer between access road construction activities and the Frazier Cemetery
- use hooded light fixtures to minimize adverse off-site impacts of lighting

3.2 TOPOGRAPHY, GEOLOGY, AND SOILS

Topography describes the surface features of the land and includes elevation, slope, and other general surface features. Geologic resources include the bedrock material underlying the land area. 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 defines 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. 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.

The analysis considers the potential impacts to topography and soils from the revised facilities layout under Modified Alternative 2 – Roxana. The impact analysis for geologic resources takes into consideration the changes in the quantities of excavation and fills material for the modified Roxana alternative and information from an additional geotechnical study that was prepared to document additional baseline site conditions and develop revised geotechnical and earthwork plans of the modified facilities layout for the Roxana site (Cardno 2016a).

3.2.1 Affected Environment

The topography at the Roxana site has been significantly impacted by mountaintop removal coal mining. The site is characterized as a wide, gently sloping to flat ridgetop plateau created by surface mine overburden removal and valley filling. The plateau lies in the central portion of the site at an elevation of approximately 465 meters (1,526 feet) above mean sea level (AMSL). To the west, north, and east of the plateau, the mountain slopes drop moderately to steeply to stream valleys situated at elevations of approximately 310 to 330 meters (1,000 to 1,100 feet) AMSL. The plateau created by the surface mining has not been incorporated into the U.S. Geological Survey 7.5′ Roxana topographic quadrangle map; however, the highest point and lowest points of the site remain unchanged. The highest elevation is located in the southern portion of the site at an elevation of approximately 549 meters (1,801 feet) AMSL.

The lowest elevation is approximately 315 meters (1,033 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 geology underlying the Roxana site is primarily the Hyden Formation. The geological rock of the Hyden and Pikeville Formations consists of sandstone, siltstone, claystone, and coal. The Roxana site is also underlain by the Four Corners Formation, which is composed of sandstone, siltstone, claystone, coal, and limestone (Kentucky Geological Survey [KGS] 2013). The surface mining had been conducted in the Fireclay and Fireclay Rider coal seams. Geotechnical studies conducted at the site indicate the mine overburden material was placed on previously surfaced mined areas with little to no compaction, and is highly variable in gradation, depth, and consistency (Cardno 2016a; Marshall Miller and Associates 2012) (refer to Appendix A, *Additional Geotechnical Study* for more detailed information).

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) (Natural Resources Conservation Service [NRCS] 2016).

The Roxana site contains a small area of soils classified as farmland of statewide importance (NRCS 2016). 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.

3.2.2 Environmental Consequences

3.2.2.1 Construction

Development of the site would require significant excavation (cut) and fill activities to build the access road and create a level pad for construction of the facilities. A ¼:1 cut slope and a 2:1 fill slope were used in the estimate of cut and fill quantities (Cardno 2016a). As identified in **Table 2-4,** *Estimated Earthwork Quantities for Modified Alternative 2 – Roxana*, excavation activities would include 6,585,085 cubic meters (8,612,966 cubic yards) of spoil material and 557,908 cubic meters (729,716 cubic yards) of rock. For the revised facilities layout under Modified Alternative 2 – Roxana, the building foundations of the USP, prison camp buildings, and utility plant would be founded on or in bedrock. Removal of bedrock would require blasting. The excavated soil, rock, and spoil material, including mine spoil, would be compacted to create a structural fill for the facilities in the training center area, the FPC parking lot and recreational facilities, the USP parking lot and portions of the fence, and the road on the east side of the USP. In addition, excavated material would be transported to the valleys adjacent to the northwest of the proposed FPC location and southwest of the proposed USP location and compacted as structural fill to promote free drainage of subsurface water. The amount of structural fill is estimated to be 6,683,976 cubic meters (8,742,310 cubic yards) (**Table 2-4**). All excavated materials would be used on-site for structural fill. The USP area would be graded to an approximate elevation of 445 meters (1,460 feet), the FPC to an approximate elevation of 421 meters (1,381 feet), and the utility plant and training center areas

to an approximate elevation of 447 meters (1,467 feet). At these elevations, the building foundations would be reliably supported on bedrock or structural fill with bearing capacities that would limit total and differential settlement to less than 2.5 centimeters (1 inch) (Cardno 2016a).

Impacts resulting from the cut and fill activities would include loss of productive soil, erosion, destabilization of slopes, and altered site drainage. 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 (1,526 to 1,460 feet) in the USP area and at the maximum fill from 370 meters to 447 meters (1,214 to 1,467 feet) in the staff training center area. Therefore, the maximum cut (excavation) at the Roxana site would be approximately 20 meters (66 feet) and the maximum fill would be approximately 75 meters (246 feet). These geologic and topographic impacts are considered significant.

Development of the USP and FPC would have a direct impact on soils at the Roxana site as a result of temporary disturbance from construction activities. Existing structures, relict foundations, utilities and drainage structures, and some road surfaces within the building area would be removed. No importation of soils or off-site disposal of soils is anticipated. Soil would be either excavated or used as backfill, or landscape material for the construction of the federal correctional facility.

The area of soils to be disturbed would total approximately 73 hectares (181 acres) under Modified Alternative 2 – Roxana. Implementation of Modified Alternative 2 – Roxana would directly impact approximately 5.0 hectares (12.3 acres) of soils classified as farmland of statewide importance. To determine if implementation of Modified Alternative 2 – Roxana would impact prime farmland under the FPPA, a Farmland Conversion Impact Rating Form (AD1006) was completed and submitted to the Natural Resources Conservation Service (NRCS) for evaluation. A copy of the completed form is included in Appendix B, *Farmland Conversion Impact Rating Form and Correspondence*. NRCS completed the land evaluation portion of the form, scoring the relative value of the soils to be converted at the Roxana site at 4 out of 100. The Bureau completed the site assessment portion of the form, resulting in a score of 53 out of 160. Therefore, the Roxana site had a total score of 57. Scores below 160 do not require further review under the FPPA. As a result, the Bureau has determined that the proposed conversion is consistent with the FPPA. Modified Alternative 2 – Roxana would not have significant impacts on prime farmland.

3.2.2.2 Operations

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

3.2.3 No Action Alternative

Under the No Action Alternative, the USP and FPC would not be constructed; therefore, there would be no impact on topography, geology, or soils.

3.2.4 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 best management practices (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. In addition, construction-period and permanent surface water and stormwater control plans would be implemented to manage runoff. These plans would include surface water drainage controls in the structural fill areas to reduce the risk of settlement in these areas. 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.

3.3 AIR QUALITY

Air quality is defined by ambient air concentrations of specific pollutants determined by the U.S. 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 (SO_2), nitrogen dioxide (NO_2), ozone (O_3), suspended particulate matter less than or equal to 10 microns in diameter (PM_{10}), 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 3-2**.

Table 3-2. 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 µg/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 µg/m^3	Same as Primary
$PM_{2.5}$	Annual (arithmetic average) 24-hr	12.0 µg/m^3 35 µg/m^3	15.0 µg/m^3 Same as Primary
O_3	8-hr	0.070 ppm	Same as Primary
SO_2	1-hour 3-hour	75 ppb -	- 0.5 ppm

Notes*: *ppb = parts per billion; ppm = parts per million; µg/m3 = micrograms per cubic meter.
Source*: *USEPA 2016a.

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. Unlike the criteria pollutants, there are no NAAQS for HAPs. The primary control methodologies instituted by federal regulation for mobile source HAPs involve technological improvements for reducing their content in fuel and altering engine operating characteristics to reduce the volume of pollutants generated during combustion. 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, HAP emissions are not considered further in this analysis.

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*.

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.

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

3.3.1 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 of Modified Alternative 2 – Roxana are addressed in the following sections. The air emissions calculations were updated to account for the changes in earthwork quantities that have been evaluated for the proposed modifications to the facilities layout. A summary of the analysis is presented below and the complete analysis is provided in Appendix C, *Air Emissions Calculations*.

3.3.2 Environmental Consequences

The results of the updated air emissions analysis show that construction and operational emissions under Modified Alternative 2 – Roxana would remain well below the significance thresholds and would not have a significant impact on the local or regional air quality.

3.3.2.1 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, foundation work, and operation of equipment on bare soil. **Table 3-3** presents

estimates for the primary construction activities that would utilize heavy duty diesel equipment for development of the modified site layout at the Roxana site.

Table 3-3. Construction Emission Estimates for Modified Alternative 2 – Roxana

Year[1]	VOC[2] Tons	CO Tons	NO_x[2] Tons	SO_2 Tons	PM_{10} Tons	$PM_{2.5}$ Tons
1	3.48	14.06	43.62	0.95	158.82	18.16
2	3.48	14.06	43.62	0.95	158.82	18.16
3	3.48	14.06	43.62	0.95	158.82	18.16

Notes: 1. Estimates assume heavy equipment operations would conclude by the end of the third year of construction.
2. VOC = volatile organic compound; NOx = nitrogen oxides.

Fugitive dust from land disturbance activities would be the primary source of emissions during construction. 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 approximately 158.82 TPY. These emissions 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.

3.3.2.2 Operations

Table 3-4 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 3-4. Estimated Annual Operational Emissions for Modified Alternative 2 – Roxana

Source	VOC TPY	CO TPY	NO_x TPY	SO_2 TPY	PM_{10} TPY	$PM_{2.5}$ TPY
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.

3.3.3 No Action Alternative

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

3.3.4 Mitigation

Although no significant impacts on regional air quality are anticipated, BMPs would be implemented to reduce air emissions that would occur. They may include, but are not limited to:

- Periodic wetting during clearing, excavation, filling, and grading activities to minimize impacts to air quality from fugitive dust (i.e., PM_{10} emissions)
- 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

3.4 NOISE

Noise is evaluated in this section for potential impacts to nearby noise sensitive receptors, which include housing, schools, and medical facilities. Noise impacts to land use are evaluated in Section 3.1, *Land Use and Zoning*. Noise impacts to biological resources are evaluated in Section 3.8, *Biological Resources*.

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 of decibels (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 metrics are therefore adjusted or weighted to compensate for the human lack of sensitivity to low- and high-pitched sounds. One commonly used 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 and construction equipment.

Most common noises are expressed in dBA and some examples are shown in **Figure 3-3**. Perception of some impulsive noises such as blasting and gun shots does not correspond well to A-weighting because the duration of the noise event is so short. These impulsive noises are expressed as peak noise (dBP). The noise metric Peak Noise PK15(met) is defined as the maximum instantaneous sound level for each unique sound source; i.e., one gun shot. Because weather affects noise propagation and noise levels can vary, PK(15) or dBP levels are those noise levels that are likely to be exceeded only 15 percent of the time (i.e., 85 percent certainty that sound will be within this range).

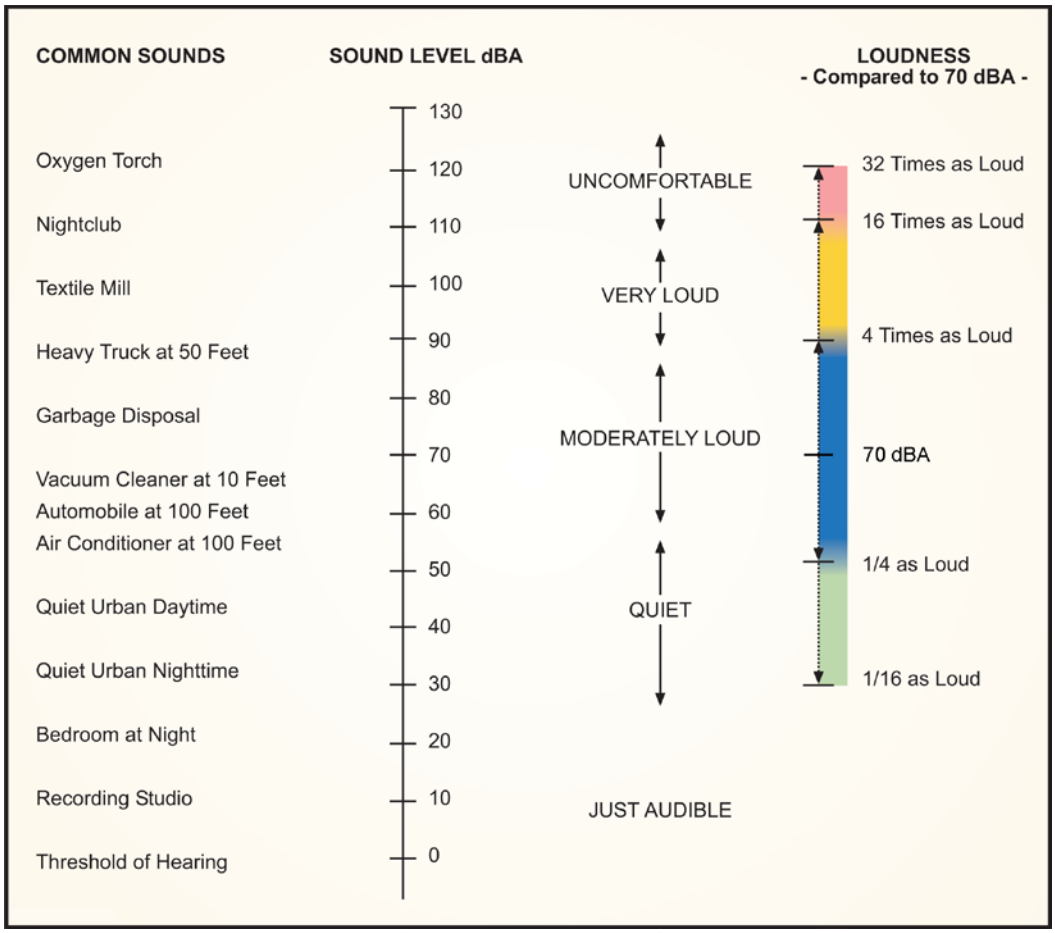

Figure 3-3. Loudness and Noise Levels for Common Sounds

Sound levels that vary over time are expressed in average noise levels that use energy averaging to quantify the overall noise exposure over the specified time period. Day-Night Average Sound Level (DNL) is an average over at least 24 hours and is considered the standard metric by nearly all agencies including the Department of Defense, USEPA, and the Federal Aviation Administration (FAA), for determining noise based upon community annoyance level. DNL applies a night time penalty of 10 dB between the hours of 10:00 p.m. and 7:00 a.m. to account for the fact that night time noise events have a greater annoyance factor than day events. Equivalent noise levels are also average sound levels but are averaged over specified times usually one-hour or eight-hours and expressed as one-hour or eight-hour equivalent noise levels.

3.4.1 Affected Environment

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 3-5**.

Table 3-5. Sound Levels Estimated by Population Density		
Description	**Population Density (people per square mile)**	**Sound Level (dB DNL)**
Rural (undeveloped)	20	35
Rural (partially developed)	60	40
Quiet suburban	60	45
Normal suburban	600	50
Urban	2,000	55
Noisy urban	6,000	60
Very noisy urban	20,000	65

Note: DNL is Day-Night Average Sound Level, which is the energy-averaged sound level over a 24-hour period with a 10-dB penalty applied to nighttime levels.
Source: USEPA 1982.

The Roxana site is located in a partially developed rural area with coal mines and railroad tracks in the area. Estimated ambient noise levels for rural partially developed areas is 40 dB DNL (USEPA 1982). Areas of the site located immediately adjacent to KY 588 and KY 160 currently experience noise from traffic traveling through the area and truck and rail traffic servicing the nearby mines.

3.4.2 Environmental Consequences

Implementation of Modified Alternative 2 – Roxana would result in changes in ambient noise levels as compared to the existing conditions described in Section 3.4.1, *Affected Environment* because of construction activities, operation of facilities, firearms training at the outdoor firing range, and occupational noise exposure. Noise impacts to sensitive receptors are evaluated in this section. The closest sensitive receptors are initially evaluated and if the resulting impacts are less than significant, then all other receptors farther away would be less than significant as well. On the other hand, if significant impacts are determined, then the analyses are expanded to encompass and report all receptors determined to have a significant impact.

3.4.2.1 Construction

Construction activities under Modified Alternative 2 – Roxana would result in temporary increases in noise levels for the duration of construction, which overall is anticipated to occur over a period of four to five years.

Modified Alternative 2 – Roxana would generate varied levels of noise depending upon the activities taking place during the construction phases of the USP and FPC. Phases of construction that would generate noise generally include site preparation, excavation, foundation placement, construction of buildings, infrastructure, and facilities, and exterior/interior finish and cleanup. Noise impacts during these phases would be a function of the noise generated by construction equipment, the equipment location, and the timing and duration of the noise-generating activities. Normally, the order of construction activities follows these steps, but on large projects such as this one, there would be overlap of construction phases. Site preparations would be characterized as clearing and grubbing of vegetation, development of construction access and laydown areas, and access roads. Excavation includes blasting, excavation, and cut and fill of rock material to prepare the laying of foundations. Foundation work also includes placing the final layers of base material and construction forms, and pouring the foundations. This also includes any conduit and utility placement in areas planned for concrete. Facility improvements for buildings, facilities, and infrastructure would follow foundations and generally takes the longest time to complete. Finally, putting on the exterior and interiors finishes make up the final step. Of all these

construction phases, site preparation and earth moving typically would be the noisiest activity, with land clearing and excavations, pile driving, foundation and capping. 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 3-6** lists construction related noise emissions, which can range from 74 to 101 dBA when measured 15 meters (50 feet) from the respective piece of equipment. The Federal Highway Administration's Road Construction Noise Model uses these noise emissions to predict noise levels at various sources generated by multiple pieces of construction equipment.

Table 3-6. Airborne Construction Related Noise Emissions

Equipment Description	Actual Measured L_{max} (dBA) at 15 meters (50 feet)
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.

Types of construction equipment expected primarily would be pile-drivers, graders, dozers, and excavators, but nearly each type of equipment listed would be used at some point during the construction process.

Two locations for construction noise were selected for investigation: the nearest residential area located in Roxana near the intersection of KY 588 and KY 160 and the nearest nature preserve area, Lilley Cornet Woods. The residential area is located approximately 335 meters (1,100 feet) from the closest residence to the approximate center of the FPC. Lilley Cornet Woods is located about 2.1 kilometers (1.3 miles) from the Roxana site. Assuming 20 pieces of construction equipment, including impact pile-driving and blasting activities, eight-hour equivalent noise levels were determined to be 69 dBA at the residential area near Roxana and 54 dBA at Lilley Cornet Woods. As illustrated in **Figure 3-3**, the nearest residences would experience noise levels similar or slightly louder than a vacuum cleaner at 10 feet, and noise exposure at Lilley Cornet Woods would be about equivalent to light automobile traffic (2 to 3 cars) at 100 feet. During other phases after the site preparation and excavation phases, noise would still be generated but at approximately 59 dBA because the loudest equipment such as blasting and impact pile-driving would be complete and less noisy equipment would be used.

Due to the terrain of the site, blasting would be required to break up bedrock during site preparation. Based on preliminary engineering calculations, the duration of blasting activities would likely be completed in 45 to 75 days for each of the three areas where blasting would occur: utility plant, FPC, and access road. It is anticipated that noise from a blasting event would occur only a few times a day. Prior to the start of blasting activities, a blasting plan would be prepared to document the types of explosives and size of charges in each area of rock removal, types of blasting mats, sequence of blasting operations, and procedures to prevent damage to adjacent properties. Blasting mats would be utilized to suppress dust, noise, and fly rock. As discussed for average noise, blasting is included in the average calculations, but since the noise generated during a blast lasts a very short time, peak noise levels are more approximate measurements for this type of noise. In accordance with Kentucky regulations governing blasting (805 KAR 4:160), the proposed blasting activities would comply with the following limit: 129 dBP for the nearest inhabited structure. Various techniques used for quarry and mining operations to suppress blast noise would be used to ensure noise levels remain within this maximum level.

Vibration

Vibrations are movement of the ground or air caused by blasting, pile-driving, or other forces causing the earth to move. These vibrational motions are measured in terms of peak particle velocity. For blasting operations, these vibrations would be dependent upon the amount of rock to be moved during a blast and the resulting quantity of explosives necessary to achieve that goal. **Table 3-7** shows various vibration effects and criteria expressed in terms of peak particle velocities (millimeters per second; inches per second). Continuous operations would be persistent pile-driving, where transient operations would be due to blasting activities. At this time, the exact amount of rock and amount of explosives per blast has not yet been engineered, but the design can accommodate these criteria to prevent damage and limit personal annoyance.

Table 3-7. Vibration Effects of Continuous and Transient Construction Operations					
Vibration Amplitude (Peak Particle Velocity)				**Human Reaction (Continuous and Transient)**	**Effect on Buildings**
Continuous		**Transient**			
mm/s	**in/sec**	**mm/s**	**in/sec**		
0.15–0.30	0.006–0.019	0.90	0.035	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	6.10	0.24	Vibrations readily perceptible	Recommended upper amplitude of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	22.8	0.9	Amplitude at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20			Vibrations annoying to people in buildings (this agrees with the amplitudes established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10–15	0.4–0.6	50.8	2.0	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater amplitude than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage.

***Note**: mm/s = millimeters per second; in/sec = inches per second*
***Source**:* California Department of Transportation 2013

Transient vibration impacts to buildings vary upon the type and structural integrity of buildings, but according to the Swiss Association of Standardization Vibration Damage Criteria, transient vibration limits are a little more than double the continuous vibration limits (California Department of Transportation 2013).

In conclusion, short-term noise disturbance would occur during construction. At the nearest residences, noise would be approximately 69 dBA and at Lilley Cornet Woods it would be 54 dBA. Noise impacts at the nearest residents would not be considered significant because the highest noise levels would be short-term during blasting and pile driving phases of the project, and implementation of noise attenuation measures described below in Section 3.4.4, *Mitigation* would reduce potential disturbance from noise. Once the major portions of the earthwork using blasting and pile driving concludes, noise levels would settle to about 59 dBA and would be considered compatible for residential areas. Noise at Lilley Cornet Woods would also be reduced after the loudest construction noise ceases, and the noise level would be considered compatible for any land use and would not be significant. Therefore, implementation of Modified Alternative 2 – Roxana would have no significant impacts to sensitive noise receptors from construction noise. As stated earlier, please refer to Section 3.1, *Land Use* and Section 3.8, *Biological Resources*, for noise impacts to those resources.

3.4.2.2 Operations

The operation of the proposed USP and FPC, once construction is completed, is not expected to significantly increase ambient noise levels because the noise sources for the facilities would be heating and air conditioning systems. The distances to the nearest receptors would be too far for facility operations to be perceived by any receptors. No significant impacts to sensitive noise receptors are anticipated from operational noise.

3.4.2.3 Firearms Training at Proposed Outdoor Firing Range

It is anticipated that approximately 300 Bureau staff would use the proposed outdoor firing range (**Figure 2-5**) to meet their firearms training requirements. Firearms training would involve the firing of small arms weapons, including handgun, shotgun, and rifle. The firing range would typically be used six weeks annually and once a month during daylight hours. It is estimated that annual training conducted over a six-week period would involve firing approximately 30,000 rounds 9-mm pistol, 10,500 rounds 12-gauge shotgun, and 11,500 rounds 5.56-mm rifle. It is estimated that monthly training occurring on one day would involve firing approximately 5,000 rounds 9-mm pistol, 400 rounds 12-gauge shotgun, 400 rounds .308 caliber rifle, and 2,000 rounds 5.56-mm rifle.

Weapon-related impulsive noise is often represented as peak noise measured in dBP. The military noise model, Small Arms Range Noise Assessment Model (SARNAM), was used to predict peak noise levels from the proposed firing range. This model does not take into account the topography, which may provide some noise attenuation. However, the noise model assumes 5-meter berms on the left and right of firing lanes and a 8-meter high backstop berm. **Table 3-8** provides small arms peak noise levels and compatibility with noise-sensitive land uses. Although peak noise levels are not directly comparable to the DNL average noise levels discussed in Section 3.4.1, *Affected Environment*, peak noise best represents noise levels from small arms firing.

Table 3-8. Small Arms Peak Noise and Compatible Land Use

Small Arms Peak Noise (dBP)*	Compatibility with Noise-Sensitive Land Uses
<87	Compatible
87 to 104	Normally Incompatible
>104	Incompatible

Note: *Single event peak level exceeded by 15 percent of events. dBP = Peak Noise levels in decibels.
Source: Department of the Army 2007.

The SARNAM-predicted peak noise contours for the firearms recertification at the firing range are shown in **Figure 3-4**. There are no noise sensitive receptors within the 104 dBP or the 87 dBP noise contours. Therefore, no significant impacts to sensitive noise receptors are anticipated from firearms training noise because the nearest residences are located well outside the 87 dBP noise contour and considered compatible for residential land use.

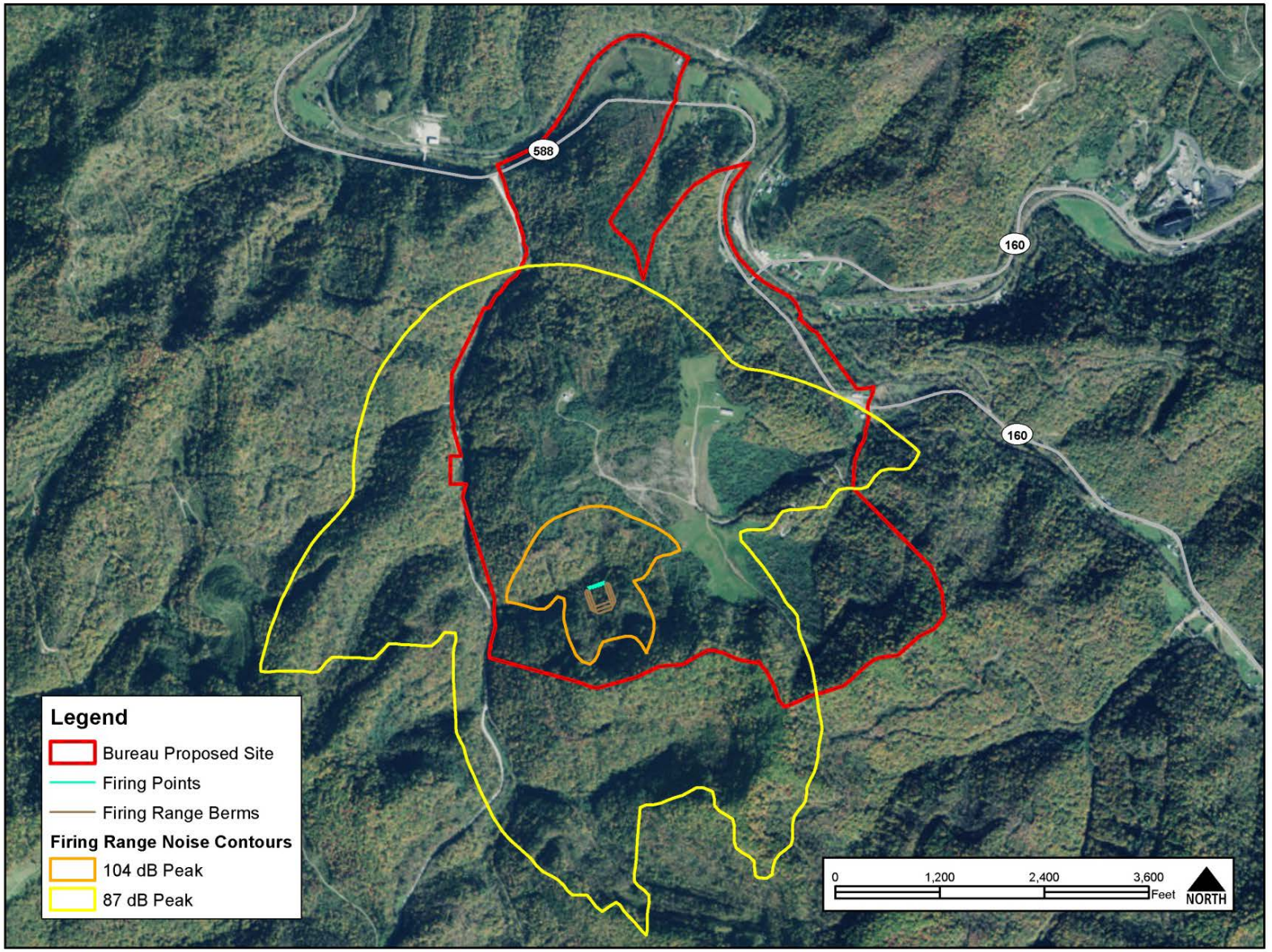

Figure 3-4. Peak Noise Contours for Outdoor Firing Range

3.4.2.4 Occupational Noise Exposure

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 3-9**). 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 3-9. 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).

All USP, FPC, and contracted employees and inmates in a working duty would be required to adhere to these limits or be provided with hearing protection devices in locations where noise levels exceed these limits. As a result, there would be no significant occupational noise impacts.

3.4.3 No Action Alternative

Under the No Action Alternative, the USP and FPC would not be constructed in Letcher County and associated operational activities would not occur. Therefore, the No Action Alternative would have no noise impacts.

3.4.4 Mitigation

A variety of measures would be taken to minimize the impact to noise receptors during construction and operation activities, such as blasting to break up bedrock, operation of pile driving equipment, and small arms firing, including but not limited to:

- Using noise bellows systems on pile driving equipment to provide further noise attenuation
- Scheduling the louder construction activities for less intrusive times (mid-morning to mid-afternoon)
- Limit construction activities to daytime hours to the extent feasible to minimize impacts to surrounding areas and along the routes of construction vehicle travel
- Implement blasting plan and inform local community on dates when blasting activities would occur

3.5 INFRASTRUCTURE AND UTILITIES

3.5.1 Affected Environment

3.5.1.1 Potable Water

The Letcher County Water and Sewer District (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 four reporting years of 2012, 2013, 2014, and 2015. The LCWSD CCR for 2012 indicated two violations of turbidity levels for water provided to LCWSD by Knott County (LCWSD 2012). The LCWSD discussed the violation for the Knott County turbidity exceedance in its CCR; however, it received a violation in 2013 for failing to mail a required public notice to its customers (LCWSD 2013). LCWSD also had an issue in 2014 for failing to submit reports to the drinking water database on time (LCWSC 2014). In 2015, LCWSD had a violation for exceeding the standard level of haloacetic acid (HAA), a byproduct of chlorine disinfection (LCWSD 2015). The Knott County Water and Sewer District CCR for 2012 indicates their system exceeded the turbidity standard on two occasions, as mentioned above (Knott County Water and Sewer District 2012). 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 (Knott County Water and Sewer District 2013). In 2014 and 2015, the Knott County Water and Sewer District had no violations (LCWSD 2014; Knott County Water and Sewer District 2015).

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 2015). 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).

3.5.1.2 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 3-5**). The LCWSD does not currently have plans to extend the sanitary sewer service to the property boundary of the Roxana site (Cardno 2014a). Instead of installing more sanitary sewer lines, the LCWSD is planning to construct a new wastewater treatment plant in Roxana to extend its service to surrounding communities (Lewis 2017). The LCWSD has a permitted capacity of 600,000 gallons per day and currently treats approximately 300,000 gallons per day (Nesbitt 2015).

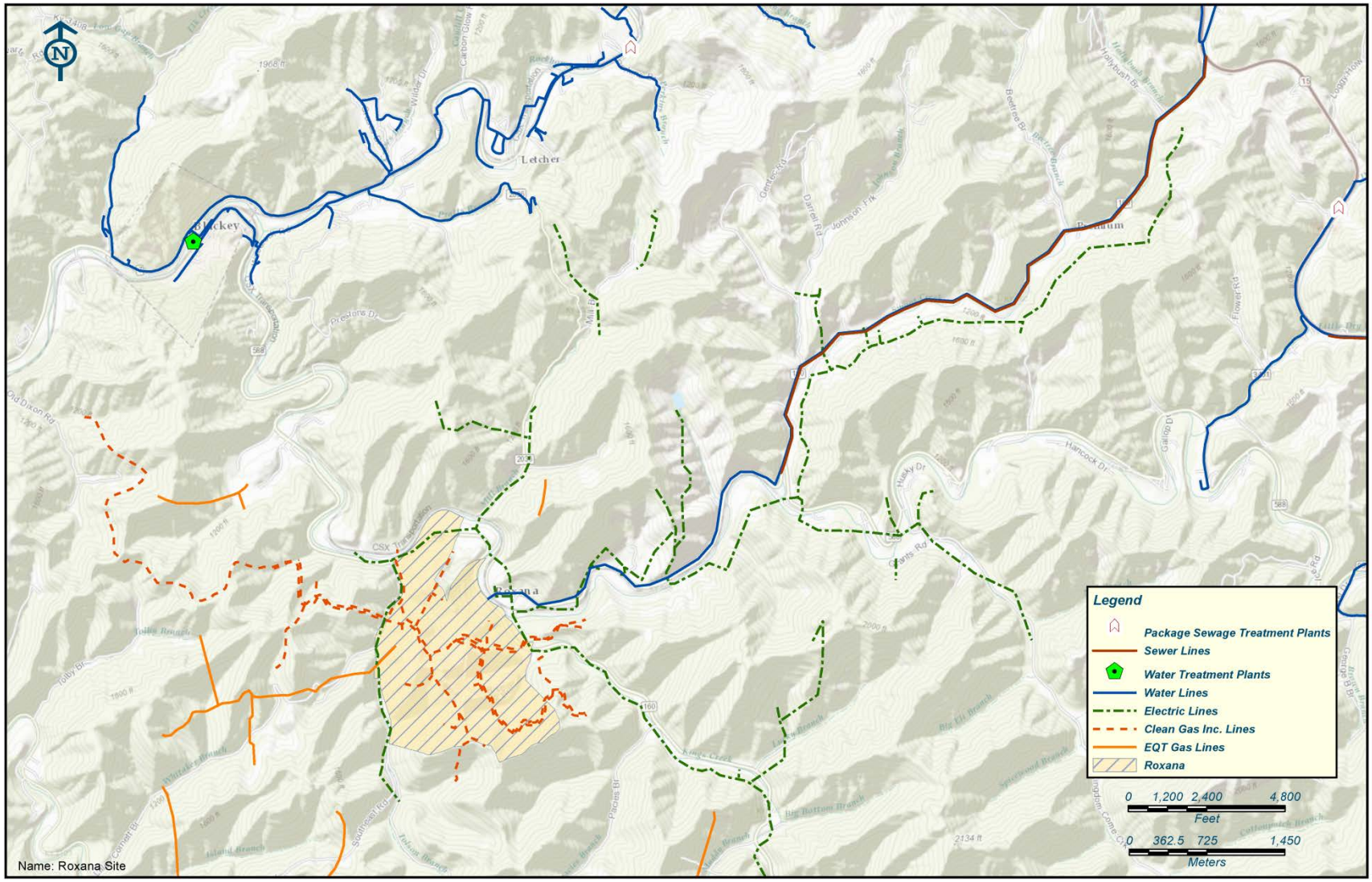

Figure 3-5. Roxana Existing Utilities

3.5.1.3 Natural Gas

The Roxana site contains multiple (10) gas wells and transmission lines, a natural gas compressor station, and an oil well. There are multiple owners and lessors (Cardno 2016b). Gas transmission lines and two gas wells are also adjacent to the Roxana site.

3.5.1.4 Electricity

American Electric Power lines extend along KY 160 and Big Branch-Tolson Creek Road in the vicinity of the Roxana site (**Figure 3-5**) and has sufficient capacity to supply power to the Roxana site (Cardno 2014a).

3.5.1.5 Telecommunications

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

3.5.1.6 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.

3.5.2 Environmental Consequences

The utility usage estimated in the following sections is based on providing utilities to similar types and sizes of Bureau facilities (Cardno 2014a; see Appendix D, *Enhanced Utility Report*). The Bureau incorporates energy savings in its design to reduce energy and water consumption. Therefore, actual usage could be considerably less based on energy efficient considerations that would be evaluated by the Bureau during design. All utility use would be metered and the Bureau would be invoiced based on actual usage.

If there are multiple suppliers of a commodity, the Bureau would competitively solicit for service.

3.5.2.1 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 the Knott County Water and Sewer District (2015) indicates no violations of drinking water standards. Therefore, implementation of Modified Alternative 2 – Roxana would have no significant impacts related to water quality. The LCWSD has not exceeded the standard level of HAA since the publication of the 2015 CCR (Lewis 2017).

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 (Lewis 2015). 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 significant impacts to the water supply under Modified Alternative 2 – Roxana.

3.5.2.2 Wastewater

Implementation of the proposed action under Modified Alternative 2 – Roxana 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. The LCWSD is planning to expand its service area by constructing a wastewater treatment plant in Roxana. The new wastewater treatment plant would add additional capacity, and could service the new federal correctional facility (Bowman 2017). Therefore, no significant impacts to wastewater would occur under Modified Alternative 2 – Roxana.

3.5.2.3 Natural Gas

Implementation of the proposed action under Modified Alternative 2 – Roxana may require the closure and plugging of up to 12 gas wells (10 on-site and 2 adjacent) and an oil well, and closure or relocation of associated pipelines and compressor station that are located within or adjacent to the Roxana site. It would take approximately six months to close these wells. Closure of the gas wells would result in significant impacts to the owners and lessors 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. There is sufficient natural gas available and, therefore, the use of natural gas at the USP and FPC would not significantly impact natural gas availability.

3.5.2.4 Electricity

The existing infrastructure has ample capacity to provide electrical power to the federal correctional facility. The electrical provider would extend overhead lines to a predetermined handoff point to the secure perimeter of the facility, and the Bureau would extend the service on-site to the needed facilities. There would be no charge to extend the overhead lines to the handoff point (Cardno 2014a). As there are no issues with capacity, no significant impacts to electrical capacity would occur under Modified Alternative 2 – Roxana.

3.5.2.5 Telecommunications

Implementation of the proposed action under Modified Alternative 2 – Roxana would not result in significant impacts to the available capacity of the existing telecommunications infrastructure; however, in order to provide the service a new remote terminal would need to be constructed, as well as the installation of approximately 6.4 kilometers (4 miles) of fiber optic cables and 0.8 kilometer (0.5 mile) of copper cable. Construction of the terminal and cables and installation costs would be the responsibility of the Bureau (Cardno 2014a).

3.5.2.6 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 exceeding its current yearly maximum intake of solid waste; therefore, there would be no significant adverse impacts to the Laurel Ridge Landfill from implementation of Modified Alternative 2 – Roxana.

3.5.3 No Action Alternative

Under the No Action Alternative, the USP and FPC would not be constructed and associated operational activities would not occur. It is anticipated that utility usage would remain similar to existing usage. Therefore, no impacts to utilities would occur.

3.5.4 Mitigation

Mitigation for impacts to the natural gas infrastructure at the Roxana site would require the Bureau to pay the owners for the costs associated with closure, abandonment, and/or relocation of the wells and associated pipelines. All wells required to be closed on the Roxana site would be permanently closed and abandoned and the pipelines closed or 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.

3.6 CULTURAL RESOURCES

Cultural resources are defined as prehistoric and historic archaeological sites; historic buildings, structures, objects, and 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 can be categorized as archaeological resources (prehistoric and historic), architectural resources, and traditional cultural properties (TCPs).

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and as implemented by 36 CFR 800, requires federal agencies to consider the effects of their actions on cultural resources listed in or eligible for listing in the National Register of Historic Places (NRHP) (i.e., historic properties) before undertaking a project that uses federal funds or is located on federal lands. Each state or territory has a State Historic Preservation Officer (SHPO) that is responsible for administering cultural resources programs within a given jurisdiction; the Kentucky SHPO is the Kentucky Heritage Council. NHPA requires federal agencies to consult with the SHPO, Indian Tribes, representatives of local governments, and the public in a manner appropriate to the agency planning process for the planned action, and to the nature of the undertaking and its potential to cause effects on historic properties.

The following sections focus on archaeological resources. The information presented in the 2016 RFEIS concerning architectural resources and TCPs is still applicable. In summary, no architectural resources eligible for listing in the NRHP were identified as a result of previous surveys conducted for the proposed action, and no TCPs have been identified in or near the proposed Roxana site. Therefore, there would be no impacts to architectural resources or TCPs from the Modified Alternative 2 – Roxana.

3.6.1 Affected Environment

The affected environment for cultural resources is also referred to as the area of potential effects (APE). 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]). Effects to archaeological resources would be limited to the approximate 73-hectare (181-acre) area where construction (direct ground disturbance) would occur (refer to the approximate clearing and grading limit shown on **Figure 2-5**).

Mapping, aerial photos, background research, and pedestrian reconnaissance surveys conducted in August 2011 and August 2014 indicated that the Roxana site has been completely disturbed by former surface mining activities. Combined, the APE for both surveys encompassed 70 hectares (174 acres). Photo-documentation was conducted at the site; however, no subsurface testing was completed. Background research indicated that no previously identified archaeological sites are present at the proposed Roxana site. The 2011 and 2014 archaeological reconnaissance surveys did not identify any archaeological resources at the Roxana site (TEC, Inc. 2011a; Cardno 2014b). The SHPO concurred with the findings of both surveys (Kentucky Heritage Council 2012, 2014) (refer to Appendix E, *NHPA Correspondence*).

Additional archaeological survey was conducted between November 29 and December 2, 2016 at the proposed Roxana site to include those portions of the modified site layout that extend outside of the APEs of the 2011 and 2014 surveys. The survey consisted of pedestrian reconnaissance of an additional 20 hectares (50 acres). The survey did not identify any archaeological sites; however, a cemetery located approximately 30.5 meters (100 feet) east of the proposed access road in the northern part of the APE was photo-documented. No further work was recommended for the Roxana site (Cardno 2017).

3.6.2 Environmental Consequences

The archaeological surveys for the proposed action did not identify any archaeological sites eligible for inclusion in the NRHP in the APE for the Roxana site. Therefore, Modified Alternative 2 – Roxana would have no effect on NRHP-listed or eligible cultural resources. Furthermore, there would be no significant impacts to cultural resources. Section 106 consultation with the SHPO is ongoing, and the results of consultation will be included in the Final Supplemental RFEIS.

3.6.3 No Action Alternative

Under the No Action Alternative, the Bureau would not develop USP and FPC and would not acquire the land at the Roxana site. Therefore, no potential impacts to cultural resources would occur.

3.6.4 Mitigation

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

3.7 WATER RESOURCES

Water resources include both surface and subsurface water. For the purposes of this 2017 Draft Supplemental RFEIS, water resources include the following topics: surface water, wetlands, groundwater, and floodplains.

3.7.1 Affected Environment

3.7.1.1 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.

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 Roxana site lies in the North Fork Kentucky River Watershed (Hydrologic Unit Code [HUC] 05100201) of the Ohio Region (HUC 05), Kentucky-Licking Subregion (HUC 0510), and Kentucky River Basin (HUC 051002) (USEPA 2013). As a result of surface mining of a portion of the mountain, the hydrology of the site has been greatly disturbed. There are several ephemeral, intermittent, and perennial unnamed, small streams within the proposed project area. Additionally, an open water wetland (pond) comprising approximately 0.17 hectares (0.41 acres) is located along the eastern boundary, north of Rise Branch.

Water quality refers to the suitability of water for a particular use (i.e., potable water, irrigation) based on selected physical, chemical, and biological characteristics. For the purposes of this 2017 Draft Supplemental RFEIS, water quality is considered with the statutory requirements regarding water quality conditions. 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. 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 total maximum daily load (TMDL) for the waterbody. Impaired waters requiring a TMDL are called 303(d) listed waters (KDEP 2016).

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 2013). The closest assessed water body to the Roxana site is the North Fork of the Kentucky River, located on the opposite side of KY 588 and 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 2013).

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 kilometer [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 to 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 3.5, *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 2016c). 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 F) 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 2016c).

The subsurface sampling of the rock rubble consisted of drilling six boreholes in the areas of past surface mining. 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 2016c). 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 F, *Investigation of Rock Rubble Material, Roxana Site*.

3.7.1.2 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 are

generally associated with drainages, stream channels, and water discharge areas (natural and built) and are currently regulated by the USACE under Section 404 of the CWA as a subset of all "waters of the U.S."

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.

Site-specific wetland data was collected through on-site field work, aerial photographs, topographic maps, National Wetland Inventory (NWI) wetland maps, and NRCS 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. The USACE reviewed the delineation in the field in May 2015 and issued a preliminary jurisdictional determination for the Roxana site in February 2016. A supplemental jurisdictional delineation was completed as an addendum to the 2011 and 2014 delineations to identify potential waters of the U.S. that occur in areas within the current boundary of the Roxana site that were not previously analyzed. The USACE reviewed the supplemental delineation in the field in November 2016, and issued a preliminary jurisdictional determination, which confirms the limits of wetlands and streams identified in the supplemental delineation and the two previous delineations, in January 2017 (Appendix G, *Wetland Delineations and Jurisdictional Determinations*).

Approximately 1.3 hectares (3.1 acres) of wetlands were delineated on the Roxana site. The majority of the wetlands are located within the west side of the site and the south-central portion. In addition, several intermittent, perennial, and ephemeral streams were delineated on-site (TEC, Inc. 2011b; Cardno 2014c; Cardno 2016d). 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 includes American beech (*Fagus grandifolia*), American sycamore (*Platanus occidentalis*), eastern red cedar (*Juniperus virginiana*), red maple (*Acer rubrum*), tuliptree (*Liriodendron tulipifera*), Christmas fern (*Polystichum acrostichoides*), common jewelweed (*Impatiens capensis*), smallspike false nettle (*Boehmeria cylindrica*), spicebush (*Lindera benzoin*), Nepalese browntop (*Microstegium vimineum*), stinging nettle (*Urtica dioica*), and woolgrass (*Scirpus cyperinus*). **Table 3-10** summarizes acres by wetland type and linear feet of jurisdictional stream within the Roxana site. **Figure 3-6** depicts wetlands and streams delineated within the Roxana site.

Table 3-10. Wetlands and Streams Delineated at the Roxana Site (2011, 2014, 2016)

Feature Type	Hectares/Acres	Linear Feet
Wetlands		
Palustrine Emergent	0.39/0.97	N/A
Palustrine Scrub-Shrub	0.57/1.41	N/A
Palustrine Forested	0.30/0.73	N/A
Streams		
Jurisdictional Stream	N/A	20,868
Non-Jurisdictional Stream	N/A	182
Total	1.3/3.1	21,050

Notes: N/A = Not Applicable.

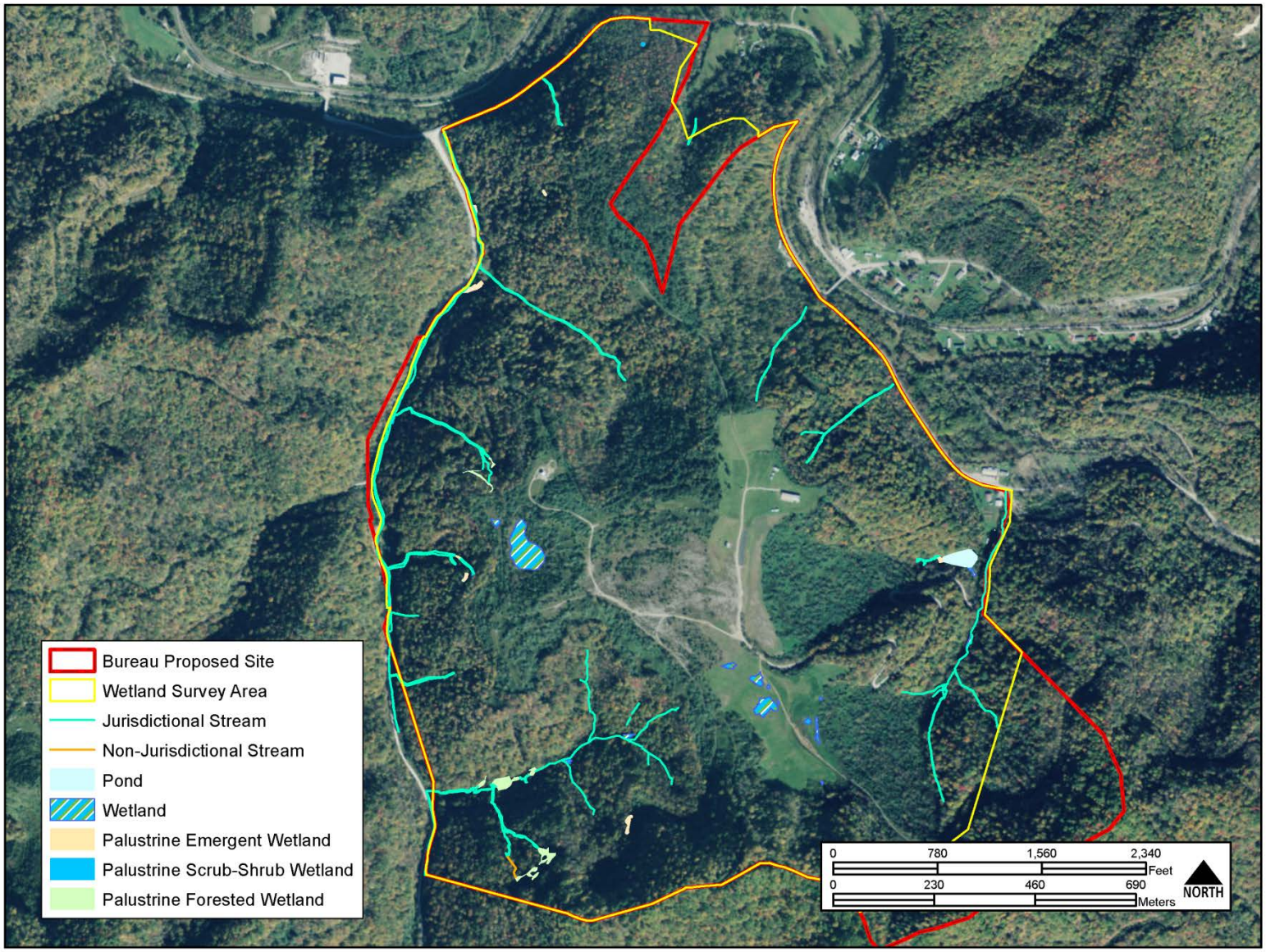

Figure 3-6. Roxana Wetlands and Streams

3.7.1.3 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.

There are no groundwater wells on the Roxana site, but there is a domestic single household well located approximately 76 meters (250 feet) north of the site at an elevation of 366 meters (1,200 feet) with a depth to water of 24 meters (80 feet) (KGS 2015). 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 2015). There are no sole source aquifers underlying the site (USEPA 2016b).

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 2015). 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 F, *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 2016c).

3.7.1.4 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. EO 11988 directs federal agencies to avoid construction in floodplains and establishes a process for analysis and public notice if development is unavoidable.

Floodplain delineation maps produced by the Federal Emergency Management Agency indicate the Roxana site is not located in a 100-year floodplain (Environmental Data Resources 2015).

3.7.2 Environmental Consequences

3.7.2.1 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 Modified Alternative 2 – Roxana (Appendix F, *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 substantially affected by the proposed modified site development activities. Therefore, under Modified Alternative 2 – Roxana, construction of the USP and FPC would not result in significant impacts to surface water quality.

3.7.2.2 Wetlands

Implementation of Modified Alternative 2 – Roxana with the revised site layout would result in permanent impacts to approximately 5,610 linear feet of stream and 0.98 hectares (2.44 acres) of wetlands (0.26 hectares [0.65 acres] of emergent wetlands, 0.57 hectares [1.40 acres] of scrub-shrub wetlands, and 0.16 hectares [0.39 acres] of forested wetlands). These impacts would be to the streams and wetlands delineated in 2011, 2014, and 2016 (**Table 3-10**) 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, and ancillary facilities. Impacts to approximately 253 linear feet of streams would be minimized by restricting grading and thinning trees (rather than clearing) within the 91-meter (300-foot) buffer area on the west side of the USP.

The Bureau would obtain a permit for streams and wetlands impacts from the USACE under CWA Sections 401 and 404, which would require full mitigation of impacts. Mitigation is discussed in Section 3.7.4. Due to the mitigation planned as part of the proposed action, the adverse impacts to streams and wetlands would be considered less than significant.

3.7.2.3 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 Modified Alternative 2 – Roxana. 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 quality. Therefore, construction and operation of the USP and FPC under Modified Alternative 2 – Roxana would have no significant impacts related to groundwater.

As discussed above under Surface Water, an investigation of the previous surface mining-related overburden on the Roxana site and water discharges at the hollow fills (Appendix F, *Investigation of Rock Rubble Material, Roxana Site*) indicates that the modified site development activities would not impact the quality of water that seeps into groundwater. Therefore, under Modified Alternative 2 – Roxana, 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 Modified Alternative 2 some or all of the gas wells on the Roxana site would be permanently closed and plugged, and associated transmission lines closed or 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.

3.7.2.4 Floodplains

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

3.7.3 No Action Alternative

Under the No Action Alternative, a USP and FPC would not be developed and no impacts to water resources would occur.

3.7.4 Mitigation

The Bureau would mitigate wetland and stream impacts under Modified Alternative 2 – Roxana by paying a fee into the in-lieu fee mitigation program managed by the Kentucky Department of Fish and Wildlife Resources. The Bureau will contact the Kentucky Department of Fish and Wildlife Resources to determine the current in-lieu fee mitigation rates at the time it prepares the Section 404 permit.

3.8 BIOLOGICAL RESOURCES

Biological resources include living, native, or naturalized plant and animal species and the habitats where they occur. For purposes of this 2017 Draft Supplemental RFEIS, 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. Threatened and endangered species include plant and animal species that are listed or proposed for listing by the USFWS under the ESA. The federal ESA provides for the conservation of threatened and endangered species of plants and animals and the habitats where they are found. 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.

3.8.1 Affected Environment

3.8.1.1 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 bush hogged or are dominated by scrub shrub vegetation (e.g., autumn olive, multiflora rose, etc.) and immature trees. 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 (*Elaeagnus umbellata*) and paradise tree (*Ailanthus altissima*). Upland vegetation includes northern red oak (*Quercus rubra*), eastern red cedar, sericea lespedeza (*Lespedeza cuneata*), paradise tree, Allegheny blackberry (*Rubus allegheniensis*), Virginia pine (*Pinus virgininana*), bluestem broomsedge (*Andropogon virginicus*), tuliptree, American beech, Virginia creeper (*Parthenocissus quinquefolia*), Ohio buckeye (*Aesculus glabra*), red maple, stinging nettle, and Christmas fern. Wetland vegetation at the Roxana site includes American sycamore, woolgrass, black willow (*Salix nigra*), spicebush, Nepalese browntop, smallspike false nettle, and cinnamon fern (*Osmunda cinnamomea*).

3.8.1.2 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 obsolete*), copperhead (*Agkistrodon contortrix*), eastern hognose snake (*Heterodon platirhinos*), and fence lizard (*Sceloporus undulates*) (Kentucky Department of Fish and Wildlife Resources 2014).

The Migratory Bird Treaty Act (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 erythropthalmus*), 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 (*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).

3.8.1.3 Threatened and Endangered Species

Table 3-11 provides federal and state listed species documented as potentially occurring in Letcher County.

Table 3-11. Potentially Occurring State and Federal Endangered and Threatened Species in Letcher County, Kentucky

Scientific Name	Common Name	Status (State/Federal)	Habitat
Liverworts			
Plagiochila caduciloba	Gorge Leafy Liverwort	E/N	Bare rock/talus/scree in mixed hardwood forest
Mosses			
Anomodon rugelii	None	T/N	Rocks and tree bases in woodlands and forests
Brachythecium populeum	Matted Feather Moss	E/N	Rocks and tree trunks in woods and hedge banks
Cirriphyllum piliferum	None	T/N	Rocks, ground, banks in mixed woodland
Dicranodontium asperulum	None	E/N	Organic soils in montane heath, gullies, and ledges
Entodon brevisetus	None	E/N	Bark of hardwood trees, logs or stumps, and rock
Neckera pennata	None	T/N	Bark of hardwood trees, logs or stumps, and rock
Oncophorus raui	None	E/N	Damp acid rocks, mostly on cliffs in the mountains
Polytrichum pallidisetum	A Hair Cap Moss	T/N	Rocks and tree trunks in mixed woods
Polytrichum strictum	None	E/N	Organic soils in coastal and montane bogs
Sphagnum quinquefarium	Five-ranked Bogmoss	E/N	Well-drained soil on banks in woodlands
Vascular Plants			
Angelica triquinata	Filmy Angelica	E/N	Hardwood forests, spruce and spruce-fir forests, shrub and grass balds, rock outcrops, and stream banks
Aralia nudicaulis	Wild Sarsaparilla	T/N	Mixed woodlands, swamps, and bogs
Baptisia tinctoria	Yellow Wild Indigo	T/N	Grassland, meadows and fields, woodlands
Botrychium matricariifolium	Matricary Grape-fern	E/N	Deep forests, forest edges, grassy meadows and roadsides
Boykinia aconitifolia	Brook Saxifrage	E/N	Forested seeps and seepage swamps, rocky stream banks, and crevices of wet cliffs
Carex aestivalis	Summer Sedge	E/N	Hardwood forests, Red Oak forests, high-elevation boulder fields and outcrops
Carex appalachica	Appalachian Sedge	T/N	Montane forests, shaded rock outcrops

Table 3-11. Potentially Occurring State and Federal Endangered and Threatened Species in Letcher County, Kentucky			
Scientific Name	**Common Name**	**Status (State/Federal)**	**Habitat**
Castanea pumila	Allegheny Chinkapin	T/N	Xeric forests and woodlands, generally in fire-maintained habitats
Cymophyllus fraserianus	Fraser's Sedge	E/N	Rich mountain woods; cove forests
Cypripedium parviflorum	Small Yellow Lady's-slipper	T/N	Bogs, mossy swamps and woods, rich mesic forested slopes.
Eupatorium steelei	Steele's Joe-pye-weed	T/N	Cove hardwood and northern hardwood forests
Hexastylis contracta	Southern Heartleaf	E/N	Deciduous forests with acidic soil
Houstonia serpyllifolia	Michaux's Bluets	E/N	Streambanks, grassy balds, moist forests, seepy rock outcrops, and moist disturbed areas
Hydrophyllum virginianum	Eastern Waterleaf	T/N	Moist or wet woods, open wet places.
Juglans cinerea	White Walnut	T/N	Mesic wooded ravines and alluvial forests
Leucothoe recurva	Red-twig Doghobble	E/N	Moist areas in mountain woods
Lilium superbum	Turk's Cap Lily	T/N	Moist meadows and woods including floodplains and coves
Listera smallii	Kidney-leaf Twayblade	T/N	Humus of damp woods and thickets
Monotropsis odorata	Sweet Pinesap	T/N	Sandstone ridgetops in woodlands
Oenothera perennis	Small Sundrops	E/N	Dry to moist open ground, open woods, fields, and meadows
Orontium aquaticum	Golden Club	T/N	Swamps and shallow water
Pogonia ophioglossoides	Rose Pogonia	E/N	Open bogs and wet marshy meadows
Sanguisorba Canadensis	Canada Burnet	E/N	Marshes, wet meadows, and damp prairies
Saxifraga michauxii	Michaux's Saxifrage	T/N	Moist or wet ledges and rocky woods in the mountains
Saxifraga micranthidifolia	Lettuce-leaf Saxifrage	E/N	Wet banks and rocks in mountain streams
Spiranthes ochroleuca	Yellow Nodding Ladies'-tresses	T/N	Damp acid soil of open woods and grassy openings
Trillium undulatum	Painted Trillium	T/N	Mesic ravine forests, upper elevation mesic hemlock forests
Terrestrial Snails			
Glyphyalinia rhoadsi	Sculpted Glyph	T/N	Mesic, often rocky woodlands
Neohelix dentifera	Big-tooth Whitelip	T/N	Upland, often rocky forest and woodlands

Table 3-11. Potentially Occurring State and Federal Endangered and Threatened Species in Letcher County, Kentucky

Scientific Name	Common Name	Status (State/Federal)	Habitat
Crustaceans			
Cambarus parvoculus	Mountain Midget Crayfish	T/N	Rocky streams
Insects			
Amphiagrion saucium	Eastern Red Damsel	E/N	Spring-fed bogs or pond margins
Calephelis borealis	Northern Metalmark	T/N	Openings within forested or wooded areas
Erora laeta	Early Hairstreak	T/N	Hardwood forests and hardwood-northern conifer mixed forests
Papaipema speciosissima	Osmunda Borer Moth	E/N	Bogs in forests and moist pinelands
Stylurus notatus	Elusive Clubtail	E/N	Large, clear rivers with moderate current
Stylurus scudderi	Zebra Clubtail	E/N	Streams and rivers with slight to moderate current
Fishes			
Chrosomus cumberlandensis	Blackside Dace	T/T	Clear streams with rocky substrates
Etheostoma spilotum	Kentucky Arrow Darter	N/T	Upland creeks and streams, generally in headwaters
Amphibians			
Cryptobranchus alleganiensis alleganiensis	Eastern Hellbender	E/N	Fast-flowing streams with abundant cover
Plethodon wehrlei	Wehrle's Salamander	E/N	Mixed deciduous and coniferous forests
Birds			
Corvus corax	Common Raven	T/N	Many, nests on cliffs
Vermivora chrysoptera	Golden-winged Warbler	T/N	Clearings, deserted mines, deciduous woodlands, old-field vegetation with dispersed shrubs and trees, and in wetlands
Mammals			
Myotis grisescens	Gray Bat	T/E	Caves with domed halls
Myotis leibii	Eastern Small-footed Myotis	T/N	Mountainous areas, in or near deciduous or evergreen forest; roosts in caves and mine tunnels
Myotis septentrionalis	Northern Long-Eared Bat	E/T	Forests, woodlots, other wooded areas; hibernate in caves and mines
Myotis sodalis	Indiana Bat	E/E	Forests, riparian areas, ponds and fields; hibernate in caves and mines
Sorex dispar blitchi	Long-tailed Shrew	E/N	Boulder piles on steep mountain slopes

Notes: E = Endangered, N = None, T = Threatened.
Sources: Kentucky State Nature Preserves Commission 2017; NatureServe 2017; USFWS 2014, 2015c, 2015d.

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) (see Appendix H, *USFWS Endangered Species Act Consultation*). Although the blackside dace occurs within Letcher County, it is not known to occur within any stream reaches within the Roxana site.

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 often have a temperature of between 5 and 9 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 2015a).

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 2015b).

The northern long-eared bat 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).

Based on coordination with the USFWS, the Roxana site is in known P1/P2 swarming habitat for the Indiana bat (USFWS 2014). A bat habitat assessment of approximately 82 hectares (203 acres) of the Roxana site was conducted in December 2014. The habitat assessment identified the presence of summer habitat for Indiana and northern long-eared bats, but no potential summer habitat for gray bats and no potential winter habitat (i.e., caves or hibernacula) for Indiana, northern long-eared, or gray bats (Copperhead Environmental Consulting 2015). The USFWS concurred with the findings of the habitat assessment (USFWS 2015e). In response to the revisions to Modified Alternative 2 –Roxana, a bat habitat assessment of an additional 122 hectares (302 acres) of the Roxana site was conducted in September 2016. This habitat assessment identified suitable summer habitat for Indiana and northern long-eared bats, and one cave-like rock shelter that is considered suitable for use as a hibernaculum (i.e., winter roosting habitat) by Indiana, northern long-eared, and/or gray bats (Copperhead Environmental Consulting 2016). The rock shelter is in the south-central portion of the project site, outside of the cut and fill limits. Based on the information provided by the bat habitat assessment, the USFWS indicated the Bureau should assume the cave-like rock shelter is being used as a winter hibernaculum (USFWS 2016a) (Appendix H, *USFWS Endangered Species Act Consultation*).

The Kentucky arrow darter was listed as threatened under the ESA in November 2016 (USFWS 2016b). 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 narrow channels that do not contain riffle and pool complexes.

There is no federally designated critical habitat on the Roxana site (USFWS 2017).

State listed species with the potential to occur in Letcher County are listed in **Table 3-11** (Kentucky State Nature Preserves Commission 2017). Based on the habitat types listed in **Table 3-11**, it is likely that a number of state listed species have the potential to occur in the Roxana site.

State listed liverworts and mosses have the potential to occur on rocks, cliffs, and tree trunks in forested and woodland habitats in the Roxana site. State listed plant species have the potential to occur in woodland and forested habitats, grasslands, and wetland habitats in the Roxana site. State listed terrestrial snails and insects have the potential to occur in woodland, forested, and aquatic habitats in the Roxana site.

Wehrle's salamander occurs in upland forests and woodlands and can be found in rock crevices, under rocks, logs, and leaves, and in caves (at lower elevations). The species requires damp logs, moss, cave crevices, and other protected sites for their eggs (NatureServe 2017). Wehrle's salamander has the potential to occur in forested and woodland habitats in the Roxana site.

Common ravens occur in a variety of habitats but are most frequently in hilly or mountainous areas, especially in the vicinity of cliffs, which are their preferred nesting sites (NatureServe 2017). Common ravens could potentially nest and/or forage on the Roxana site.

The golden-winged warbler is a Neotropical migrant that winters in Central and South America and breeds in the summer in eastern North America. This species utilizes a wide variety of plant communities, but it prefers habitat with a low to moderate canopy cover and a high density of shrubs and herb covers. Preferred breeding habitat consists of deciduous woodland, usually in dry uplands or areas of thick undergrowth in swampy areas; woodland edges with low cover; and forest openings (NatureServe 2017). Golden-winged warblers could potentially occur on the Roxana site during the summer breeding seasons (April to September).

The eastern small-footed myotis is a small bat that occurs in hilly or mountainous areas, generally in or near deciduous or coniferous forest. The species forages over ponds and streams, riparian forests, upland forests, clearings, strip mines, and ridgetops. Warm-season roosts may be primarily in cracks or crevices of rocky outcrops or talus slopes, but also have been found in buildings, bridges (e.g., in expansion joints, guardrail crevices), towers, hollow trees, spaces beneath the loose bark of trees, road cuts, rocky dams, caves, and mines. In the winter, these bats hibernate in caves and mine tunnels. Therefore, eastern small-footed myotis has the potential to occur in and utilize similar habitats as those previously described for the federally listed bat species that may occur in the Roxana site.

The long-tailed shrew is a small mammal that occurs in the central and southern Appalachian Mountains from West Virginia south to North Carolina and Tennessee. It is most commonly found in moist forested areas along mountain streams and in boulder piles and talus on steep mountain slopes (NatureServe 2017). The long-tailed shrew has the potential to occur in forested portions of the Roxana site that contain high densities of rock/boulders and/or talus slopes.

State listed animal species that are not likely to occur in the Roxana site because of a lack of habitat include Mountain midget crayfish, which occur in rocky streams with high water quality, and the eastern hellbender, which occurs in fast-flowing streams with abundant cover.

3.8.2 Environmental Consequences

3.8.2.1 Vegetation

Direct impacts to vegetation would occur under Modified Alternative 2 – Roxana, as approximately 49 hectares (121 acres) of forested area would be cleared on the site for excavation and grading activities required to prepare the site for development. The additional 24 hectares (60 acres) that would be disturbed for construction has mostly been previously cleared for mining. This previously cleared area that would be excavated currently supports grassy areas that are routinely mowed, ground cover plants that are tolerant of disturbance, and scattered shrubs, including invasive species. Upon completion of construction activities, disturbed areas that are not developed would be revegetated and maintained as grassy lawn areas. When considering vegetation removal in context of the undisturbed 157 hectares (389 acres) that would remain in the buffer area (142 hectares [350 acres] forest, 15 hectares [39 acres] grassy/shrub areas), the clearing of vegetation at the Roxana site would be less than significant.

3.8.2.2 Wildlife

Wildlife found on the Roxana site would likely be displaced during construction activities due to the loss of habitat and increases in noise. However, approximately 157 of the total 231 hectares (389 of the total 570 acres) of the site would remain undisturbed and continue to provide habitat, including breeding and foraging areas, for wildlife 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 populations that are currently present on-site.

The Bureau has conducted a prior impact assessment for the installation of non-lethal/lethal fences, especially for potential impacts to avian and small mammal species (Federal Bureau of Prisons 2009). This prior assessment found less than significant impacts; consequently, less than significant impacts are anticipated with the non-lethal/lethal fence to be installed as part of this proposed action.

3.8.2.3 Threatened and Endangered Species

In accordance with ESA Section 7, a Biological Assessment is being prepared to support formal consultation between the Bureau and the USFWS regarding the likelihood of the preferred alternative (Modified Alternative 2 – Roxana) having an adverse effect ("take") on the Indiana bat, northern long-eared bat, gray bat, or Kentucky arrow darter. Potential effects on these federally listed species and their habitat from proposed construction activities and operations, based on the analysis in the Biological Assessment (Copperhead Environmental Consulting 2017), are discussed below.

Construction of the revised facilities layout at the Roxana site would result in the permanent loss of approximately 49 hectares (121 acres) of potential Indiana and northern long-eared bat foraging and roosting habitat. No suitable gray bat summer roosting and foraging habitat was identified on the Roxana site during the bat habitat assessments (Copperhead Environmental Consulting 2015, 2016); therefore, there would be no permanent impacts to gray bat roosting or foraging habitat.

A single cave-like rock shelter considered suitable for use as a hibernaculum by Indiana, northern long-eared, and/or gray bats was identified on the Roxana site during habitat assessments (Copperhead

Environmental Consulting 2015, 2016). However, the rock shelter is outside the clearing and grading limits, and therefore, would not be removed for construction of the project. Northern long-eared and gray bats may roost in a wide area surrounding a hibernaculum during swarming periods, so the removal of trees utilized for swarming within 0.8 kilometer (0.5 mile) of the hibernaculum could reduce its suitability for hibernation for northern long-eared and gray bats. During each year of construction, blasting would not be conducted when bats are hibernating (November 15 through March 31). Outside of the hibernation period, vibration effects would potentially result in displacement from roosts near blasting sites. However, such impact would be temporary and of short duration.

Bats produce and hear ultrasonic echolocation calls in frequency ranges greater than 1,000 hertz (Hz). Proposed construction noise and airblast from blasting (2 to 200 Hz), along with gun fire at the firing range, would be at frequencies much lower than 1,000 Hz and below the frequency at which bats can hear. As a result, noise from construction and firearms would not affect Indiana, northern long-eared, or gray bats. Effects from facility lighting are anticipated to be largely concentrated in areas where trees would be cleared for construction and would no longer be suitable bat habitat. Specifically, site lighting would not be adjacent to gray bat habitat, and therefore, would have no significant impact. However, as Indiana and northern long-eared bats forage at night, light pollution from nighttime site lighting could result in reduced foraging, abandonment of roosts, and changes in insect populations. Therefore, nighttime site lighting may affect Indiana and northern long-eared bats.

The proposed action would result in the permanent loss of approximately 49 hectares (121 acres) of potential Indiana and northern long-eared bat roosting and foraging habitat. Additionally, vibrations from blasting associated with the proposed action could temporarily displace roosting Indiana and northern long-eared bats, and nighttime lighting could result in reduced foraging, abandonment of roosts, and changes in insect populations. Therefore, the proposed action may affect, and is likely to adversely affect the Indiana bat and northern long-eared bat.

The proposed action would have no permanent impact on gray bat roosting or foraging habitat, and no potential hibernacula would be impacted during construction. Removal of trees near the potential hibernaculum could potentially impact swarming habitat for gray bats. Therefore, the proposed action may affect, and is not likely to adversely affect the gray bat.

Critical habitat for the Kentucky arrow darter was designated in 2016 (USFWS 2016b). No streams in Letcher County were included in the critical habitat designation for the species. Historical and recent occurrence records for the species indicate there are no extant populations of the Kentucky arrow darter occurring within Letcher County (USFWS 2016b). Conductivity measurements taken within streams on the project site in June 2015 exceed the threshold (250 microsiemens per centimeter [µS/cm]) above which the species abundance sharply declines (USFWS 2010). Therefore, given the species does not occur within streams on or near the Roxana site, the proposed action would have no effect on the Kentucky arrow darter.

The Bureau is consulting with USFWS regarding the potential effects to these four federally protected species. The consultation process is ongoing, and the USFWS conclusions will be included in the Final Supplemental RFEIS.

State listed species that have the potential to occur in the Roxana site are presented in **Table 3-11** and described in Section 3.8.1.3, *Threatened and Endangered Species*. No state listed species have populations that are restricted to the project area or adjacent lands. Impacts from construction and

operation activities to individual state listed plants and wildlife would be similar in nature to those described in Sections 3.8.2.1, *Vegetation*, and 3.8.2.2, *Wildlife*, respectively.

Individual state listed liverworts, mosses, and vascular plants, such as white walnut, would potentially be removed during excavation and grading of 49 hectares (121 acres) of forested area under the preferred alternative. However, the majority of forested and woodland habitat on the Roxana site would not be impacted, and similar habitat and communities are abundant throughout the region.

Wildlife often respond to human disturbance, such as construction noise and visual stressors, with accelerated heart rates and metabolic function, resulting in energetic costs, impacts to behavior and fitness, and avoidance of otherwise suitable habitat (Taylor and Knight 2003). Although state listed wildlife species potentially occurring on the Roxana site would likely be displaced during construction activities, such species would be expected to return to the area and utilize available habitats with the site once construction activities are finished.

State listed terrestrial snails and insects could inadvertently be killed or harmed during grading and other construction activities; however, the majority of forested, woodland, and aquatic habitats on the Roxana site would not be impacted, and similar habitats are abundant throughout the region. Additionally, no state listed snail or insect species is known to have populations that are restricted to the project area or adjacent lands.

Individual Wehrle's salamanders could inadvertently be killed or harmed during grading and other construction activities; however, long-term, permanent impacts to populations of the species would not result because the majority of suitable habitat for the species on the site would not be impacted.

Potential common raven nesting habitat (cliffs) would not be impacted by the preferred alternative. Additionally, the common raven is a commensal predator that often benefits from resources provided by human activities. Such resources can include food (organic garbage), nesting substrates (telephone poles and structures), and foraging habitat (increase in edge habitat from development) (Boarman et al. 2006).

Golden-winged warblers could potentially utilize habitats in the Roxana site during the nesting season (April to September). This species is anticipated to avoid the area during construction and use suitable habitat elsewhere in the vicinity. Following construction, potential golden-winged warbler breeding habitat (deciduous woodland, woodland edges, and forest openings) would still be abundant within the Roxana site and surrounding lands.

Impacts to the eastern small-footed myotis would be similar in nature to those described above for federally listed bat species. Construction at the Roxana site would result in the permanent loss of approximately 49 hectares (121 acres) of potential foraging and roosting habitat. Blasting would not be conducted when bats are hibernating (November 15 through March 31). Outside of the hibernation period, vibration effects would potentially result in displacement of individual eastern small-footed myotis from roosts near blasting sites. However, such impact would be temporary and of short duration. Effects from facility lighting are anticipated to be largely concentrated in areas where trees would be cleared for construction and would no longer be suitable bat habitat. Light pollution from nighttime site lighting could result in reduced foraging, abandonment of roosts, and changes in insect populations. However, the majority of forested habitat in the Roxana site would not be impacted and would remain suitable bat foraging and roosting habitat.

Individual long-tailed shrews could inadvertently be killed or harmed during grading and other construction activities; however, long-term, permanent impacts to populations of the species would not result because the majority of suitable habitat for the species on the site would not be impacted.

Therefore, although individual state listed species have the potential to be impacted by Modified Alternative 2 – Roxana, no state listed species have populations that are restricted to the project area or adjacent lands. As such, Modified Alternative 2 – Roxana may impact individual state listed species and have slight impacts on habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to a population or species.

3.8.3 No Action Alternative

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

3.8.4 Mitigation

As indicated above, the Bureau is consulting with the USFWS regarding potential impacts to the Indiana bat, northern long-eared bat, gray bat, and Kentucky arrow darter. As required by the ESA, a Biological Assessment is being prepared to evaluate the potential effects of Modified Alternative 2 – Roxana on ESA-listed species and determine whether any such species or habitat are likely to be adversely affected by the proposed action. The USFWS will issue a Biological Opinion that will describe potential impacts to the ESA-listed species. The Biological Opinion will specify Reasonable and Prudent Measures to minimize take to ESA-listed species and non-discretionary terms and conditions to implement these measures. The Biological Opinion will also specify discretionary Conservation Recommendations that are intended to minimize or avoid adverse effects of the proposed action on ESA-listed species or critical habitat, to help implement recovery plans, or to develop information. The consultation process is ongoing. The reasonable and prudent mitigation and minimization measures and conservation recommendations specified in the USFWS Biological Opinion will be included in the Final Supplemental RFEIS in Appendix H, *USFWS Endangered Species Act Consultation*.

Specific mitigation measures that are among those that the Bureau anticipates may be implemented to eliminate or reduce potential impacts to the Indiana bat, northern long-eared bat, and gray bat are:

1) Restricting construction-related blasting from November 15 through March 31 to avoid potential adverse effects to hibernating ESA-listed bats at potential hibernacula within 0.5 mile of the project area;
2) Contributing to the Imperiled Bat Conservation Fund to help mitigate potential summer habitat impacts;
3) Using hooded lights with reflectors to conceal light sources for permanent facility lighting; and
4) Installing fencing and warning signs around the area of the single potential winter hibernaculum. (Although it is not in the area for proposed development of the modified Roxana site, the fencing and signs would prevent possible direct disturbance.)

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

CEQ regulations for implementing NEPA require EISs address the relationship between short-term use of the environment and the maintenance of long-term productivity.

Construction of the proposed facilities on the Roxana site, as modified, would last an estimated 48 to 60 months following ground-breaking. Construction would involve clearing and grubbing, blasting, excavating and filling, paving, erecting buildings and structures, and installation of fencing, lighting, and signage. There would also be temporary disruptions to traffic associated with construction vehicles and equipment utilizing area roadways. It is anticipated 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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5.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

NEPA implementing regulations also require EISs to 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.

Only a portion of the modified Roxana site (approximately one-third) would be required for the actual construction of the USP and FPC. Resources consumed as a result of the development of the federal 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. Modified Alternative 2 – Roxana 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.

Modified Alternative 2 – Roxana 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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6.0 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 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.

6.1 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 Modified Alternative 2 – Roxana on the resources identified in the 2017 Draft Supplemental RFEIS. 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 2017 Draft Supplemental RFEIS (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.

6.1.1 Gateway Regional Business Park

The Gateway Regional Business Park is approximately 262 acres (106 hectares) located approximately 12 miles east of Whitesburg at the junction of U.S. 23 and U.S. 119. 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, 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. It is anticipated that

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.

6.1.2 Letcher County Airport Project

In 2006, the Letcher County Airport Board applied to be included in the 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 8 miles from Roxana. In 2016, the airport board executed a purchase option for 600 acres (DePriest 2016). Preparation of an EIS is expected to begin in late summer or fall of 2017 (DePriest 2017). Potential impacts resulting from the project could include land use, topography, geology, and soils, 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. Both temporary and long-term impacts to air quality could occur as the result of construction and operation activities of the airport. Temporary 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.

6.1.3 Infrastructure and Utility Projects

Modified Alternative 2 – Roxana would 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. 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.

6.2 PROPOSED ACTION

Implementation of the proposed action would have potential impacts to land use, topography, geology, and soils, 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, rock, and spoil material, resulting in significant impacts on topography, geology, and soils within the Roxana site under Modified Alternative 2. These impacts would be managed through the use of appropriate BMPs to prevent erosion and sedimentation and surface water and stormwater drainage controls to manage runoff. The proposed action would also contribute to temporary increases in noise levels for the duration of construction, and increase local air emissions, as well as have an overall contribution to greenhouse gases (GHGs). Under Modified Alternative 2 – Roxana, the proposed action would have a significant impact to natural gas infrastructure. Implementation of the proposed action under Modified Alternative 2 – Roxana would have adverse impacts on streams and wetlands. The proposed action would result in impacts to vegetation and to potential summer roosting and foraging habitat for the Indiana bat and northern long-eared bat during construction of the federal correctional facility. In addition, vibration from blast noise would potentially impact a hibernaculum considered suitable for use by Indiana, northern long-eared, or gray bats.

As discussed in Section 3.3, *Air Quality*, increases in air emissions for criteria pollutants that would occur from implementation of the proposed action under Modified Alternative 2 – Roxana 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 anthropogenic 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 (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride. EO 13693, *Planning for Federal Sustainability in the Next Decade*, was enacted to address GHGs, including GHG emissions inventory, reduction, and reporting. In addition, EO 13653, *Preparing the United States for the Impacts of Climate Change*, was enacted to address the policy changes, federal programs, advanced planning, and information networks necessary to prepare the U.S. for the impacts of climate change. Emission sources evaluated in this 2017 Draft Supplemental RFEIS are associated with construction and site operations. The primary GHG emission associated with these sources is CO_2, and to a lesser extent, CH_4 and N_2O. 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 6-1 presents the GHG emissions associated with the proposed construction activities under Modified Alternative 2 – Roxana. 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 49 hectares (121 acres) 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 45 hectares (110 acres) of long-term carbon storage would be permanently lost, which is an estimated annual storage loss of 2,141 metric tons of CO_2 using the method developed by the U.S. Department of Agriculture Forest Service to calculate carbon sequestration in a forest approximately 25 years old (Smith et al. 2006).

Table 6-1. Estimated GHG Emissions from Construction Activities and Operations under Modified Alternative 2 – Roxana

Year[1]	CO_2e (metric tons per year)
1	2,891
2	2,891
3	2,891
Annual Operations	1,271

Note: 1. Estimates assume heavy equipment operations would conclude by the end of the third year of construction.

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 would occur throughout the life of the operating facility.

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.

6.3 POTENTIAL CUMULATIVE IMPACTS

6.3.1 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. Modified Alternative 2 – Roxana would likely contribute to permanent impacts to land use. However, Letcher County does not have any zoning ordinances regulating development and compatibility. Nonetheless, under Modified Alternative 2 – Roxana, land use compatibility issues with adjacent properties would be minimized through the siting of the facility and use of forested buffer areas to reduce potential incompatibility issues with surrounding residences and undeveloped areas. Implementation of Modified Alternative 2 – Roxana along with past, present, and reasonably foreseeable future projects would result in cumulative impacts to land use; however, the impacts would not be significant.

6.3.2 Topography, Geology, and Soils

Excavation and grading activities associated with the past, present, and reasonably foreseeable future projects would impact topography, geology, and soils. Modified Alternative 2 – Roxana in conjunction with these other projects would result in significant impacts to topography, geology, and soils. However, erosion and sedimentation and surface water and stormwater 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.

6.3.3 Air Quality

The past, present, and reasonably foreseeable future projects in conjunction with Modified Alternative 2 – Roxana have the potential to contribute to changes in air quality. The majority of the impacts would be temporary 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. Modified Alternative 2 – Roxana would not significantly impact local or regional air quality; therefore, in conjunction with past, present, and reasonably foreseeable future projects, Modified Alternative 2 – Roxana would not contribute to significant cumulative impacts to air quality.

6.3.4 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 Modified Alternative 2 – Roxana. Therefore, there would be potential for cumulative noise impacts in the vicinity of Roxana from construction activities and construction vehicles traveling to/from the project site. 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. No significant impacts to sensitive noise receptors are anticipated from firearms training or other operational noise. Increases in noise levels would be anticipated from aircraft operations at the Letcher County Airport; however, these impacts would be considered infrequent. Implementation of Modified Alternative 2 – Roxana along with past, present, and reasonably foreseeable future projects would not result in significant cumulative noise impacts.

6.3.5 Infrastructure and Utilities

Modified Alternative 2 – Roxana would contribute to cumulative impacts on infrastructure and utility demand. The demand for treatment of wastewater under Modified Alternative 2 would increase the Whitesburg Wastewater Treatment Plant (WWTP) to approximately 87 percent of its current design capacity; therefore, Modified Alternative 2 – Roxana 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 correctional facility. Currently, there is ample capacity to handle the flow from Modified Alternative 2 – Roxana, as wastewater flow from the proposed prison was incorporated into the design of the Whitesburg WWTP. 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). However, the LCWSD is currently pursuing an alternative option and investigating construction of a new wastewater treatment facility in Roxana. A new facility is considered a more viable option for extending service to Roxana and surrounding communities than new sanitary sewer infrastructure. The LCWSD recently submitted the project proposal to the Kentucky River Area Development District for funding (Lewis 2017; Bowman 2017). The timing of the future sewer projects and future planning for expansion of wastewater treatment capacity within the LCWSD would minimize the cumulative impacts of Modified Alternative 2 – Roxana.

6.3.6 Water Resources

Implementation of Modified Alternative 2 – Roxana 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 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.

Modified Alternative 2 – Roxana would adversely affect approximately 5,610 linear feet of streams and 0.98 hectares (2.44 acres) of wetlands. The Bureau would obtain a permit for streams and wetlands impacts from the USACE under CWA Sections 401 and 404, which would require full mitigation of impacts. 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.

6.3.7 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 49 hectares (121 acres) under Modified Alternative 2 – Roxana. 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 area. Permanent impacts to wildlife would result from the cumulative loss of habitat from construction of Modified Alternative 2 – Roxana and cumulative projects in the area. Wildlife populations

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 Modified Alternative 2 – Roxana would remain undisturbed and continue to provide habitat for wildlife found on-site. Therefore, cumulative impacts to wildlife would not be significant.

Modified Alternative 2 – Roxana has the potential to impact summer roosting and foraging habitat of the Indiana bat and northern long-eared bat and a winter hibernaculum that would be considered suitable for use by the Indiana bat, northern long-eared bat, or gray bat. The Bureau would mitigate the impacts to federally listed bats. Conservation measures would also be implemented to minimize potential indirect impacts to these bat species from site lighting. Cumulative impacts to these 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 federally listed bats would not be considered significant.

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Tyler and Linda Watts
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Neon, KY 41840

Fred Young
Neon, KY 41840

Mark Young
McRoberts, KY 41835

Mark and Deborah Young
McRoberts, KY 41835

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

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