Draft-Final

ENVIRONMENTAL ASSESSMENT
DECENTRALIZATION OF LINE C
AREA A HEATING SYSTEM
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

88th CIVIL ENGINEER GROUP

February 2017

88TH AIR BASE WING

FOR PUBLIC REVIEW

Draft Final
Environmental Assessment
Decentralization of Line C – Area A Heating System
Wright-Patterson Air Force Base, Ohio

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Wright-Patterson Air Force Base
88th Civil Engineer Group
Installation Management Division

February 2017

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FINDING OF NO SIGNIFICANT IMPACT
DECENTRALIZATION OF LINE C – AREA A HEATING SYSTEM
WRIGHT-PATTERSON AIR FORCE BASE, OHIO
February 2017

Pursuant to the Council on Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA), 40 Code of Federal Regulations (CFR) 1500 - 1508, Department of Defense Directive (DoDD) 6050.1 and Air Force regulation 32 CFR Part 989, the 88th Civil Engineer Group (CEG), Installation Management Division prepared an Environmental Assessment (EA) to replace the Line C heating distribution system that serves 20 facilities in Area A at Wright-Patterson Air Force Base (WPAFB, the Base), Ohio. This EA is incorporated by reference into this finding per 40 CFR 1508.13.

Purpose and Need

The Air Force (AF) proposes to repair the degraded and failing high temperature hot water (HTHW) heating distribution system by replacing it with local heating systems of natural gas-fired decentralized boilers. The purpose of the Proposed Action is to provide heat to 20 facilities in Area A from a reliable, efficient, and economical heating system during the winter months.

The Line C distribution system has exceeded its useful lifespan, is over 35 years old, and has deteriorated beyond economical repair. In order for occupants in affected facilities to conduct their missions effectively, the current failing HTHW lines must be removed from service and new decentralized boilers installed to provide reliable heat in the winter.

Description of Proposed Action (Preferred Alternative)

The Proposed Action involves replacing HTHW Line C with local heating systems of natural gas-fired decentralized boilers serving 20 facilities in Area A and consists of five individual projects, as follows:

- Project 1 – Three facilities
- Project 2 – Six facilities
- Project 3 – One facility
- Project 4 – Two facilities
- Project 5 – Eight facilities

Boiler installations would involve minor retrofit plans that would vary for each of the 20 facilities but would involve the following general construction activity elements:

- Modifying an existing utility room or constructing a new building attachment to house the new boiler and all associated boiler system equipment. Modification may include new concrete floors, reinforced support substructures, or surface coatings, as needed.

- Severing and capping piping connections to the existing HTHW/steam distribution system, and abandoning in-place unused portions.

- Utilizing the existing building heating system to the fullest extent possible; modifications would be limited to connections required for the new system.

- Utilizing the existing water and sewage system to handle the additional loading required by the new condensate system of the new boiler.

- Limiting outdoor soil disturbances to the construction of any new building attachments and foundations, and installation of any new piping connections.

- Restoring any exposed outdoor surfaces by reseeding back to a green space, if applicable.

- Conducting environmental surveys for hazardous substances, including but not limited to: asbestos-containing material (ACM), lead-based paint (LBP), mercury-containing lamps, polychlorinated biphenyl (PCB)-containing light ballasts, and radioactive materials, prior to building modification. These materials would be handled in accordance with WPAFB guidelines.

No-Action Alternative

Under the No Action Alternative, the HTHW Line C heating system would not be replaced. Without replacement, additional leaks and failures of Line C would force buildings that house vital AF missions to operate without heat for increasingly frequent extended periods of time. Base Civil Engineering would be unable to provide heat to the missions in the 20 facilities, negatively impacting mission readiness. The continued use of substandard, deteriorated steam and condensate lines would result in inefficient operation and high maintenance and utility costs.

Line C is expected to fail every heating season until the replacement project is executed. Each failure is expected to result in the following: 3 to 14 calendar days to repair; 175 to 350 personnel hours (including overtime) to make emergency repairs to the distribution line and facility repairs from freezing temperatures; up to $500,000 for temporary boilers and temporary aboveground surface pipes procured. In addition, Line C HTHW distribution system from the central heating system to these areas of Area A would continue to operate inefficiently due to the failing infrastructure in this area costing the Base nearly $1.4 million annually in energy costs.

The No Action Alternative does not satisfy the purpose and need to provide a reliable, efficient, and economical heating system for 20 Area A facilities resulting in:

- Continued central heating distribution system operation and maintenance costs
- Higher future maintenance expenditures and utility costs
- Continued energy inefficiencies
- Impacts to affected facilities due to disruption in service

Alternatives Considered but Eliminated from Further Study

Through the review of repairing Line C with natural gas-fired boiler options, WPAFB determined the Proposed Action is the only reasonable alternative that meets mission requirements and selection standards. Specifically, no alternative options were identified that could meet selection standards or mission requirements. Other alternatives considered but eliminated from consideration included the following:

- *Construction of a Central Heating Plant* – facilities relying on the HTHW Line C heating distribution system would be serviced by a central heating plant; this alternative was eliminated because it did not meet the standard for compatibility with missions (i.e., one of the facilities requires specialized dual fuel [natural gas and number 2 fuel oil] high pressure boilers).

- *Installation of a Geothermal Heating System* – geothermal heat pumps would be installed at an individual facility or group of facilities. Line C facilities are located over a sole-source aquifer and numerous geothermal wells would need to be installed in the aquifer. This alternative was eliminated because it did not meet the standard for operational feasibility.

- *Repair of Line C HTHW Distribution Line* – the Line C HTHW distribution system would be repaired and not replaced. The HTHW being distributed from the central heating plant to Line C facilities would

continue to operate inefficiently due to the failing infrastructure, costing the Base nearly $1.4 million annually in energy costs. The cost to repair the Line C pipe distribution network in its entirety was estimated to be $25 to $30 million; therefore, due to continued inefficiency and cost, this alternative was eliminated from full evaluation.

Identification of Preferred Alternative

The AF identified the Proposed Action as the preferred alternative. The Proposed Action involves replacing HTHW Line C with local heating systems of natural gas-fired decentralized boilers serving 20 facilities in Area A.

Environmental Consequences

Noise (EA Section 3.2): The Proposed Action would have minor short-term impacts on ambient noise generated from construction-related activities. Impacts would be minor because these activities would be carried out during normal working hours, would be short in duration, located in different locations throughout Area A, and not all construction activities would occur simultaneously. There would be no long-term adverse impacts to noise as a result of the Proposed Action. The No Action Alternative would have no impact to noise over current conditions.

Air Quality (EA Section 3.3): The Proposed Action would result in minor short-term adverse impact from particulate matter and engine exhaust emissions generated during construction-related activities. Impacts would be minor because emissions would be short in duration and are negligible with respect to overall emissions expected for the region. There would be no long-term impact to air quality as a result of the Proposed Action. The No Action Alternative would have no impact to air quality over current conditions.

Water Resources (EA Section 3.4): The Proposed Action would result in no short- or long-term adverse impacts to surface water, groundwater, or floodplains because the facilities are not located in a floodplain and possible build-outs would implement best management practices (BMPs) for erosion and sedimentation controls. The Proposed Action would result in minor short-term and temporary impacts to the water supply due to disruption during construction but would result in positive long-term impacts due to the potential decrease in water consumption due to energy efficiency. The Miami Conservancy District (MCD) was consulted regarding the Proposed Action. The MCD responded indicating the project is located within the Huffman Retarding Basin and is subject to restrictions set forth by the MCD in Greene County Deed Book 129, Page 146 on December 16, 1922. In addition, the MCD indicated the proposed project would not adversely affect the retarding basin. The No Action Alternative would have no impact on water resources.

Biological Resources (EA Section 3.5): The Proposed Action would result in minor short-term impact to existing vegetation if retrofitting includes build-outs versus interior renovation, or trenching in conjunction with gas line replacement. Construction activities would take place on previously disturbed areas with no naturally-occurring vegetation. The Proposed Action would have negligible short-term impact on wildlife and threatened and endangered species as the buildings proposed for decentralization are not located in areas that provide suitable habitat and the current land use would not change. The proposed retrofitting activities would primarily be interior, and would not be in close enough proximity to any threatened or endangered species to generate noise-related effects from proposed construction activities. However, if trees are identified for cutting within the project areas, each individual tree would be surveyed to determine and ensure the tree(s) are not considered Indiana bat roosting habitat. In addition, no tree clearing would occur outside the open cutting season of October 1 through March 31. The project sites are not located near any wetlands and therefore would have no short- or long-term impact to wetlands. The Proposed Action would have no long-term impact on vegetation, wildlife, threatened or endangered species, or wetlands. The No Action Alternative would have no impact on biological resources. The U.S. Fish and Wildlife Service (USFWS) and the Ohio Department of Natural Resources (ODNR) were consulted regarding the Proposed Action. The USFWS responded indicating that due to the project, type, size, and location, they do not anticipate adverse effects to federally endangered, threatened, proposed, or candidate species. The ODNR responded indicating the Natural Heritage Database has the following records at or within a one mile radius of the project area:

- Midland sedge, state threatened
- Upland sandpiper, state endangered
- Sedge wren, state species of concern
- Beer's noctuid, state endangered
- Dayton Aviation Heritage Park, National Park Service

The ODNR also responded indicating that the Division of Wildlife (DOW) had the following comments:

- *Streams, Wetlands, Other Water Resources* – impacts should be avoided/minimized to the fullest possible and BMPs should be utilized to minimize erosion/sedimentation
- *Indiana Bat* – one or more records for the presence of this species has been established in the vicinity of the project area; if suitable habitat occurs within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31; if no tree removal is proposed, this project is not likely to impact this species
- *Clubshell, Rayed Bean, Snuffbox, Black Sandshell, Fawnsfoot (mussels)* – due to location and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact these species
- *Tonguetied Minnow* –the DOW recommends no in-water work in perennial streams from April 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat; if no in-water work is proposed in a perennial stream, this project is not likely to impact this species
- *Spotted Turtle* – due to the location, type of habitat at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species
- *Kirtland's Snake* – due to the location , the type of habitat at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species
- *Eastern Massasauga* – due to the location, the type of habitat at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species
- *Upland Sandpiper* – if dry grasslands will be impacted, construction should be avoided during this species' nesting period of April 15 to July 31; if this type of habitat will not be impacted, this project is not likely to impact this species
- *Northern Harrier* – if suitable habitat (marshes, grassland) will be impacted, construction should be avoided in this habitat during the species' nesting period of May 15 to August 1; if this habitat will not be impacted, this project is not likely to impact this species

Earth Resources (EA Section 3.6): The Proposed Action would have minor short-term impacts to existing soils during retrofitting of buildings if retrofitting includes build-outs versus interior renovation. Impacts would be minimized by implementing BMPs for erosion and sedimentation controls. No long-term adverse impacts would be expected because disturbed vegetation would be re-established upon completion of construction activities. The No Action Alternative would have no impact on earth resources over current conditions.

Hazardous Materials/Waste (EA Section 3.7): The Proposed Action would have negligible short-term impacts as environmental surveys (i.e., asbestos-containing materials and lead-based paint) would be performed prior to construction activities and hazardous materials/waste would be removed in accordance with WPAFB procedures. In particular, if abandoned sewer lines are encountered in the vicinity of Central Heating Plant 2, the WPAFB Environmental Branch would be contacted to evaluate the lines for the potential presence of elemental mercury. Hazardous materials/waste used during construction activities would not be expected to increase over existing conditions. No long-term impact would be expected to hazardous materials/waste as a result of the Proposed Action. The Proposed Action would also have no short- or long-term adverse impact on Environmental Restoration Program (ERP) sites as there are no ERP sites located in the vicinity of the project sites and no construction would occur beyond the existing footprint of the buildings. The No Action Alternative would have no impact to hazardous materials/waste.

Cultural Resources (EA Section 3.8): The Proposed Action would have no short- or long-term adverse impacts on cultural resources. Although five of the 20 facilities included as part of the Proposed Action are National Register of Historic Places (NRHP)-eligible buildings, none of these buildings would be demolished. The No Action Alternative would have no impact to cultural resources. The State Historic Preservation Office (SHPO) and six Native American Tribes (Cherokee Nation, Keweenaw Bay Indian Community, Sac and Fox of the Mississippi in Iowa, Saginaw Chippewa Indian Tribe, Seneca Cayuga Nation in Oklahoma, Seneca Nation of Indians) were consulted regarding the Proposed Action. The Seneca Nation of Indians responded indicating they have no issues with the proposed heating system project. There were no responses received from the other five tribes. The SHPO responded indicating sufficient information was submitted in support of WPAFB's contention that none of the alterations proposed would negatively affect any significant features that contribute to the facilities' eligibility and that there should be no effects to any potential archaeological resources since the project areas have been disturbed by grading and construction activities. Therefore, the SHPO stated the project would have no adverse effect on historic properties and that no further coordination was necessary.

Infrastructure/Utilities (EA Section 3.9): The Proposed Action would have negligible short-term adverse impact from increased traffic during construction activities of the buildings retrofitting and/or build-outs. Negligible short-term adverse impacts to underground utilities would also be expected because these assets would be located and marked prior to digging. Short-term positive and beneficial impact to utilities would result as inefficient usage would cease upon decentralization of the heating system. The Proposed Action would result in positive long-term impacts due to savings in utility costs. The No Action Alternative would result in minor short- and long-term adverse impact to utilities as operation and maintenance costs would continue to incur with the current Line C central heating system.

Safety and Occupational Health (EA Section 3.10): The Proposed Action would result in potential minor short-term impact to workers during construction activities. Impacts would be minimized by adherence to health and safety regulations and standards. No long-term adverse impacts are expected as a result of the Proposed Action. The No Action Alternative would have no short- or long-term impacts to safety or occupational health.

Socioeconomics (EA Section 3.11): The Proposed Action would result in negligible short-term impacts on the local workforce and beneficial short- and long-term impacts on the local economy from revenue generated by construction activities and savings in operation and maintenance costs. The No Action Alternative would have no impact on socioeconomics.

Cumulative Impacts (EA Section 4.0): When added to past, present, and reasonably foreseeable actions, the activities under the Proposed Action would have no significant adverse cumulative impacts on any resource. The No Action Alternative would also have no significant adverse cumulative impacts on any resource.

Agency Consultation

In accordance with NEPA, 42 U.S.C. §4321 et seq. (1969), informal consultation was solicited with applicable agencies to seek input on the likelihood of environmental or other impacts resulting from the development of the Proposed Action. A summary of the outcome of consultation efforts with pertinent agencies is included as Appendix A of the EA.

Public Notice

A public notice was posted in the *Dayton Daily News* and the *Fairborn Daily Herald* on XX, 2017. The 30-day comment period was held from XX, 2017 until XX, 2017. Comments received during the public comment period will be included in Appendix A of the EA.

Finding of No Significant Impact (FONSI)

The Proposed Action involves replacing the HTHW Line C with local heating systems of natural gas-fired decentralized boilers in 20 Area A facilities. Under the No Action Alternative, the Line C heating system would not be replaced and a reliable, efficient, and economical heating system for 20 Area A facilities would not be

provided, resulting in continued operation and maintenance costs, higher future maintenance expenditures and utility costs, continued energy inefficiencies, and disruption in service. An environmental impact statement is not required for this action. This analysis fulfills the requirements of NEPA, the President's Council on Environmental Quality, and 32 CFR 989.

_____ Date: _____

DAVID A. PERKINS, P.E.
Director, 88th Civil Engineer Group

COVER SHEET

ENVIRONMENTAL ASSESSMENT
DECENTRALIZATION OF LINE C – AREA A HEATING SYSTEM
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

Responsible Agency: 88th Civil Engineer Group (88 CEG), Wright-Patterson Air Force Base, Ohio

Affected Location: WPAFB, Ohio

Proposed Action: Decentralize the Line C heating system in Area A at WPAFB.

Report Designation: Draft Final Environmental Assessment (EA)

Written comments and inquiries regarding this document should be directed to 88 Air Base Wing (ABW)/Public Affairs, 5135 Pearson Road, Building 10, Room 252, WPAFB, Ohio, 45433, 88abw.pa@us.af.mil.

Abstract: The Air Force is proposing to replace the failing high temperature hot water Line C with local heating systems of natural gas-fired decentralized boilers that services a total of 20 buildings in Area A at WPAFB. The analysis in the EA considers the Proposed Action (Preferred Alternative) and the No Action Alternative, and will aid in determining whether a Finding of No Significant Impact can be prepared or whether an Environmental Impact Statement is needed. This EA was made available to the public on XX, 2017, for a 30-day review period.

Table of Contents

Table of Contents (continued)

List of Tables

List of Figures

List of Appendices

List of Acronyms

3D	3D International
ABW	Air Base Wing
ACAM	Air Conformity Applicability Model
ACM	Asbestos-Containing Material
AF	Air Force
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFPD	Air Force Policy Directive
AGL	Above Ground Level
AHU	Air Handling Unit
AICUZ	Air Installation Compatible Use Zone
AIM	Architectural and Industrial Maintenance
APE	Area of Potential Effect
APZ	Accident Potential Zone
AQCR	Air Quality Control Region
AST	Aboveground Storage Tank
ATFP	Anti-Terrorism/Force Protection
AW	Air Wing
BASH	Bird/Wildlife Aircraft Strike Hazard
BHE	BHE Environmental, Inc.
BLS	Bureau of Land Statistics
BMP	Best Management Practice
BMP/LTM	Basewide Monitoring Program/Long Term Monitoring
BTU	British Thermal Unit
CAA	Clean Air Act
CEG	Civil Engineer Group
CEIEC	Compliance Section of the Environmental Branch in the Installation Management Division
CEIEA	Environmental Assets Section of the Environmental Branch in the Installation Management Division
CENMP	Civil Engineer Project Management Branch
CEOER	Requirements and Optimization Branch
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CHP2	Central Heating Plant 2
CO	Carbon Monoxide
CO_2e	Carbon Dioxide Equivalents
CWA	Clean Water Act
CZ	Clear Zone
DB	Decibel
DBA	A-weighted Sound Level Measurement
DDC	Direct Digital Control
DLSME	Defense Land Systems and Miscellaneous Equipment
DNL	Day-night Average A-weighted Sound Level
DoD	Department of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIFS	Economic Impact Forecast System
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESQD	Explosive Safety Quantity Distance
ESZ	Explosive Safety Zone
°F	Degrees Fahrenheit
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FT	Feet
FY	Fiscal Year
GHG	Greenhouse Gas
GPM	Gallons Per Minute
GSGS	Ground-Source Geothermal System
GWOU	Groundwater Operable Unit
GWP	Global Warming Potential
HQ	Headquarters
HTHW	High Temperature Hot Water
HUD	U.S. Department of Health and Urban Development
ICRMP	Integrated Cultural Resources Management Plan
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
LBP	Lead-based Paint
LF	Landfill
LTM	Long-term Monitoring
LTHW	Low Temperature Hot Water
$\mu g/m^3$	Micrograms Per Cubic Meter
MA	Metropolitan Area
MACT	Maximum Achievable Control Technology
MBtu/yr	Thousand British Thermal Units per Year
MBH	Thousand BTUs Per Hour
MCD	Miami Conservancy District
mg/m^3	Milligrams Per Cubic Meter
MSL	Mean Sea Level
MSW	Mixed Solid Waste

NAAQS	National Ambient Air Quality Standards
NAVD	North American Vertical Datum
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NH_3	Ammonia
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NO_x	Nitrogen Oxides
NO_2	Nitrogen Dioxide
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NSR	New Source Review
O_3	Ozone
O&M	Operation and Maintenance
OAC	Ohio Administrative Code
ODH	Ohio Department of Health
ODNR	Ohio Department of Natural Resources
OEPA	Ohio Environmental Protection Agency
ORC	Ohio Revised Code
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
Pb	Lead
PBR	Permit-by-rule
PCB	Polychlorinated Biphenyl
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
$PM_{2.5}$	Particulate Matter with an Aerodynamic Particle Size Less Than 2.5 Micrometers
PM_{10}	Particulate Matter with an Aerodynamic Particle Size Less Than 10 Micrometers
PPB	Parts Per Billion
PPM	Parts Per Million
PSD	Prevention of Significant Deterioration
PTI	Permit-to-install
RACM	Reasonably Available Control Measure
RAPCA	Regional Air Pollution Control Agency
RICE	Reciprocating Internal Combustion Engine
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SEL	Sound Exposure Level
sf	Square Foot
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SOP	Standard Operating Procedure
SPC	Spill Prevention Coordinator
SPCC	Spill Prevention, Control, and Countermeasures
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TPY	Tons Per Year
TSCA	Toxic Substances Control Act
UEC	Unit Environmental Coordinator
UFC	Unified Facilities Code
USAF	United States Air Force
USC	United States Code
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish & Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WPAFB	Wright-Patterson Air Force Base
WWII	World War II

1.0 Purpose and Need for Action

1.1 Introduction

The United States Air Force (AF) proposes to repair the degraded and failing high temperature hot water (HTHW) heating distribution system by replacing it with local heating systems of natural gas-fired decentralized boilers. The project involves replacing the Line C distribution system that serves 20 facilities in Area A at Wright-Patterson Air Force Base (WPAFB), Ohio. This Environmental Assessment (EA) was prepared in accordance with:

- National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code [USC] § 4321 et seq.);
- Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] §§ 1500-1508); and
- AF-implementing regulations for NEPA, the Environmental Impact Analysis Process (EIAP), (32 CFR § 989), as amended.

The NEPA, which is implemented through the CEQ, is a federal law that requires the analysis of potential environmental impacts associated with proposed federal actions prior to the action being taken. The intent of NEPA is for federal agencies to make informed decisions based on identification of potential environmental consequences and to take appropriate actions to prevent, restore, or enhance the environment. The process for implementing NEPA is outlined in 40 CFR §§ 1500-1508, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act.

To meet federal requirements outlined in both NEPA and CEQ regulations, the AF codified their formal NEPA analysis in 32 CFR Part 989, EIAP. The EIAP is the Air Force's NEPA compliance program. The CEQ regulations mandate all federal agencies to use a prescribed approach to environmental impact analysis, which includes an evaluation of the potential environmental consequences, associated with a Proposed Action and considers alternative actions.

Air Force Policy Directive (AFPD) 32-70, *Environmental Quality*, states the AF will comply with applicable federal, state, and local environmental laws and regulations, including NEPA. If significant impacts are expected under NEPA, the AF would decide whether to conduct mitigation to reduce impacts below the level of significance, prepare an Environmental Impact Statement (EIS), or abandon the Proposed Action. This EA will be used to guide the AF in implementing the Proposed Action in a manner consistent with AF standards for environmental stewardship should the Proposed Action be approved.

This EA is organized into seven sections, plus appendices. **Section 1** of the EA provides historical and background information, the project location, and the purpose of and need for the Proposed Action. **Section 2** contains a description of the Proposed Action and the No Action Alternative. **Section 3** describes the existing conditions of the potentially affected environment and identifies the environmental

consequences of implementing all reasonable alternatives. **Section 4** describes cumulative effects. **Section 5** provides the names of those who prepared the EA. **Section 6** lists persons and agencies consulted and coordinated. **Section 7** lists the references used in the preparation of this document. **Appendices A** and **B** include agency coordination and air quality calculations, respectively.

1.2 Purpose of the Action

The purpose of the Proposed Action is to provide heat to 20 facilities in Area A from a reliable, efficient, and economical heating system during the winter months. Without the repairs, additional leaks and failures of Line C will force buildings that house vital AF missions to operate without heat for increasingly frequent extended periods of time.

1.3 Need for the Action

The Line C distribution system has exceeded its useful lifespan, is over 35 years old, and has deteriorated beyond economical repair. Line C has failed eight times since 2011 and, due to the high temperature of the hot water in the system (450 degrees Fahrenheit [°F], requires several days for the line to dissipate heat to a temperature cool enough for repairs to begin. This has resulted in AF missions being without heat for extended periods of time. For example, a week long heat loss outage to several Area A facilities forced government employees home and on-Base visitors sent to local hotels at the government's expense. Additionally, with the inefficiencies of Line C, annual energy losses are estimated at approximately 271,845 thousand British thermal units per year (MBtu/yr). In order for occupants in affected facilities to conduct their missions effectively and efficiently, the current failing HTHW lines must be removed from service and new decentralized boilers installed to provide reliable heat in the winter (AF 2015).

1.4 Decision to be Made

This EA presents the AF proposal to replace HTHW Line C facilities with local heating systems of natural gas-fired decentralized boilers. The decision to replace Line C would enable Base Civil Engineering to readily provide heat to the facilities that serve vital Area A missions. The decision to replace Line C would also maximize energy savings and significantly reduce operational and maintenance costs compared with those of the current failing system.

If the analyses presented in the EA indicate that implementation of the Proposed Action would not result in significant environmental impacts, a Finding of No Significant Impact (FONSI) would be prepared. A FONSI briefly presents reasons why a Proposed Action would not have a significant effect on the human environment and why an EIS is unnecessary. If significant environmental issues would result that cannot be mitigated to insignificance, an EIS would be required, or the Proposed Action would be abandoned and no action would be taken.

1.5 Cooperating Agency and Intergovernmental Coordination/Consultations

The NEPA requirements help ensure environmental information is made available to the public during the decision-making process and prior to an action's implementation. The Intergovernmental Coordination Act and Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, requires federal agencies to cooperate with and consider territorial and local views when implementing a federal proposal.

As mandated by 40 CFR 1501.4(b), "The agency shall involve environmental agencies, applicants, and the public, to the extent possible, in preparing assessments required by Section 1508.9(a)(1)", WPAFB is undertaking this EA, and public involvement is required as part of the analysis process. For this EA, public involvement includes notifying local, state, and federal agencies, elected officials, and the public about the Proposed Action and alternatives; soliciting agency and public comments and issues with the EA analysis, and ultimately informing the public of AF conclusions and findings.

1.5.1 Cooperating Agency

No cooperating agencies were identified for the Proposed Action described in this EA.

1.5.2 Interagency and Intergovernmental Coordination and Consultations

In compliance with NEPA, WPAFB notified relevant stakeholders about the Proposed Action and alternatives. Intergovernmental consultation was conducted with the following agencies: Miami Conservancy District (MCD), Ohio Department of Natural Resources (ODNR), U.S. Fish and Wildlife Service (USFWS), State Historic Preservation Office (SHPO), and Native American Tribes. The notification process provides these stakeholders with the opportunity to cooperate with WPAFB and provide comments regarding the Proposed Action. Coordination with these agencies is presented in **Appendix A** of the EA.

A Notice of Availability (NOA) for the Draft EA and FONSI will be published in the *Dayton Daily News*, the *Fairborn Daily Herald*, and the Base paper, *Skywrighter*, initiating a 30-day public review period. The Draft EA and FONSI will be made available in the Greene County Public Library, Fairborn Branch. During this time, public comments may be received. The NOA and comments received will be included in **Appendix A**.

2.0 Description of the Proposed Action and Alternatives

The Base is located in the southwest portion of the state of Ohio in Greene and Montgomery counties, approximately 10 miles east of the city of Dayton. The Base encompasses 8,145 acres and is classified as non-industrial with mixed development. The Base is subdivided into two areas: Areas A and B; Area A consists primarily of administrative offices and contains an active airfield and Area B is located across State Route 444 to the southwest of Area A and consists primarily of research and development and educational functions.

The WPAFB operates centralized steam heat and HTHW systems that utilize natural gas-fired boilers and recently converted coal-to-natural gas-fired boilers that serve both areas (Area A and Area B) of the Base. The Area A centralized heating systems serve distribution lines A, C, and D. The existing Line C provides HTHW to 20 facilities where it is transformed by local low pressure steam converters, high pressure steam converters, or low temperature hot water heat exchangers to make useful heat or hot water depending upon the system design.

2.1 Proposed Action (Preferred Alternative)

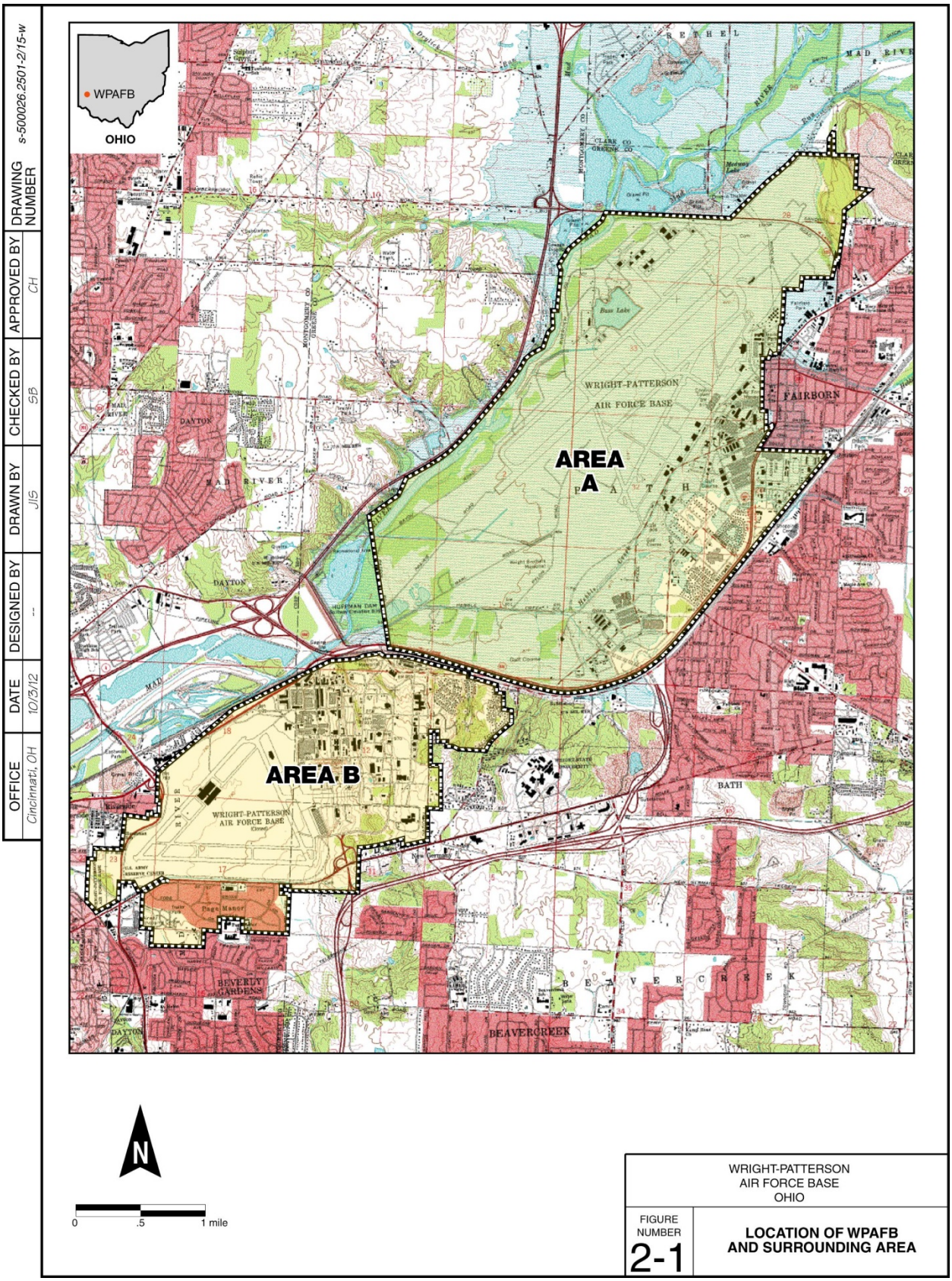
The Proposed Action involves replacing HTHW Line C with local heating systems of natural gas-fired decentralized boilers serving 20 facilities associated with vital missions in Area A. **Figure 2-1** shows Area A and **Figure 2-2** shows the location of the 20 facilities.

2.2 Selection Standards

Considering alternatives helps to avoid unnecessary impacts and allows for an analysis of reasonable ways to a purpose. To warrant detailed evaluation, an alternative must be reasonable. To be considered reasonable, an alternative must be suitable for decision making, capable of implementation, and sufficiently satisfactory with respect to meeting the purpose of and need for the action. The NEPA regulations define reasonable alternatives as economically and technically feasible, and show evidence of common sense.

The following selection standards were used to determine whether or not alternative locations were considered reasonable for the proposed HTHW Line C replacement project. In evaluating alternatives for the Proposed Action, the AF considered whether each alternative met the following standards:

- Utilizes a reliable source of heat.
- Compatible with WPAFB missions. The Proposed Action would not require extensive building modifications that would result in down time and impacts to the mission.
- Reduces operational and maintenance costs.


WPAFB
OHIO
AREA A
AREA B
WRIGHT-PATTERSON AIR FORCE BASE
FAIRBORN
DAYTON
BEAVERCREEK
BATH
BEVERLY GARDENS
N
0
.5
1 mile
OFFICE Cincinnati, OH
DATE 10/3/12
DESIGNED BY --
DRAWN BY JLS
CHECKED BY SB
APPROVED BY CH
DRAWING NUMBER s-500026.2501-2/15-w
WRIGHT-PATTERSON AIR FORCE BASE OHIO
FIGURE NUMBER 2-1
LOCATION OF WPAFB AND SURROUNDING AREA

1

Legend

HTHW = High Temperature Hot Water

N

800 400 0 800

Feet

WRIGHT-PATTERSON
AIR FORCE BASE,
OHIO

Replace HTHW Line C with Natural Gas-Fired Boilers

FIGURE NUMBER 2-2

Area A Facilities Served by Line C

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- Operates feasibly and efficiently.
- Is economical to implement and operate.
- Integrates sustainable principles into the design and/or development of build-outs consistent with EO 13693, *Planning for Federal Sustainability in the Next Decade*.

The EO 13693 was issued in March 2015. This EO revoked two previous EOs (EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* and EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*). Section 3(a)(i) of the EO, *Sustainability Goals for Agencie*s, states that the head of each agency shall, where life-cycle cost-effective, promote building energy conservation, efficiency, and management by reducing agency building energy intensity measured in British thermal units (BTUs) per gross square foot by 2.5 percent annually through the end of fiscal year (FY) 2025 relative to the baseline of the agency's building energy use in FY 2015 and taking into account agency progress to date.

2.3 Screening of Alternatives

Development of reasonable alternatives involved discussions with representatives of the 88th Civil Engineer Group (CEG) Installation Management Division, Environmental Assets Section in the Environmental Branch (88 CEG/CEIEA), the Civil Engineer Project Management Branch (88 CEG/CENMP), and the Requirements and Optimization Branch (88 CES/CEOER) to identify a Proposed Action. Several requirements were identified in order to fulfill the purpose of the Proposed Action at WPAFB.

2.4 Detailed Description of the Alternatives

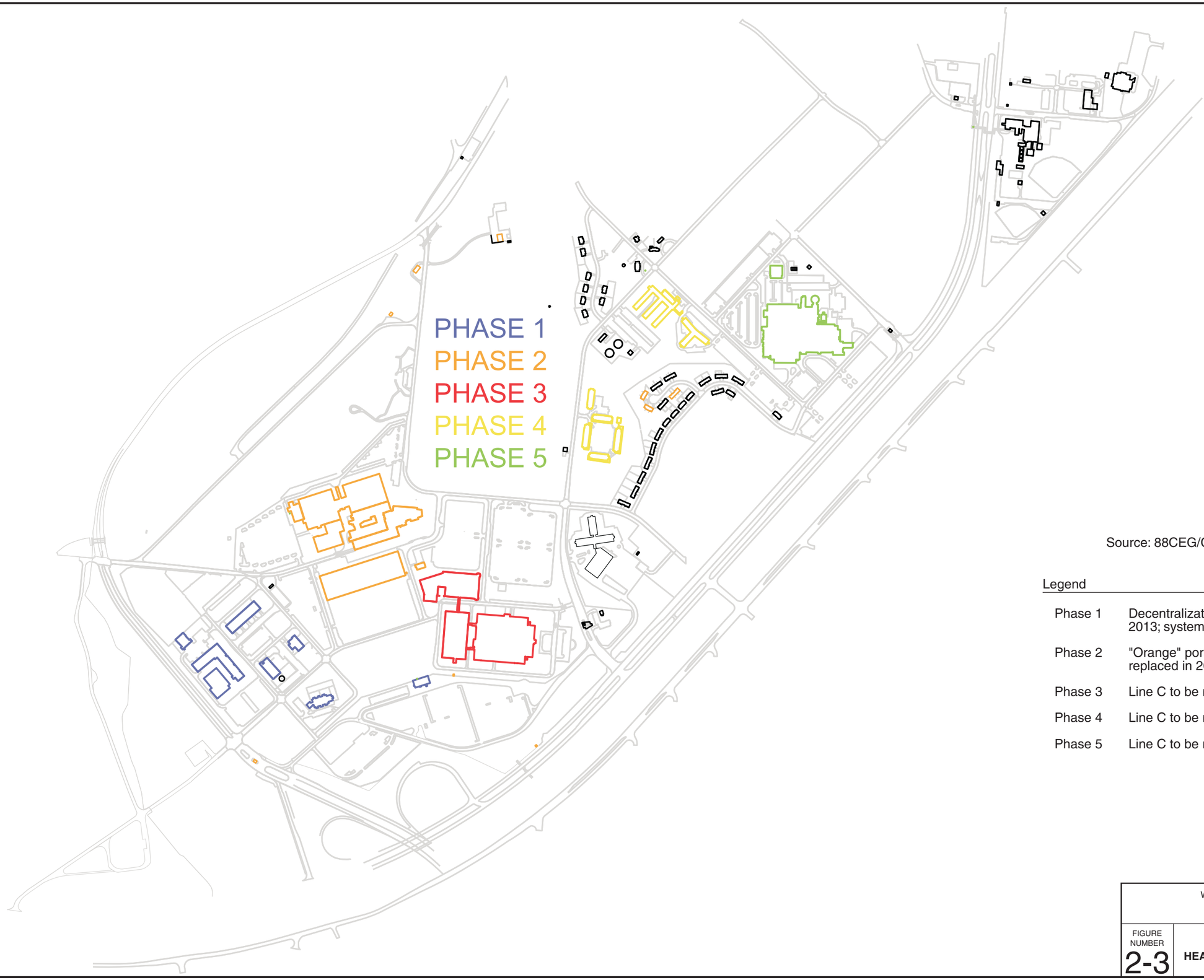
This section describes the Proposed Action and the No Action Alternative.

2.4.1 Proposed Action (Preferred Alternative)

The Proposed Action involves replacing HTHW Line C with local heating systems of natural gas-fired decentralized boilers. The Line C replacement project consists of five phases (**Figure 2-3**). Phase 1 (shown in blue) was completed in 2013 where aboveground portions of the distribution piping were removed and buried portions were abandoned in place. As part of Phase 2 (shown in orange), the distribution line was also replaced in 2013. The Proposed Action consists of remaining components of Phase 2 (orange) as well as Phases 3 (red), 4 (yellow), and 5 (green) as shown in **Figure 2-3**.

Under the Proposed Action, the HTHW Line C replacement would be accomplished through five individual projects. The projects are presented in **Table 2-1**.

OFFICE	DATE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
Cincinnati, OH	7/18/16	--	JIS	SB	CH	s-500026.0203-7/16-w



Source: 88CEG/CENMP

Legend

Phase 1	Decentralization was completed in 2013; system is connected to Line C.
Phase 2	"Orange" portion of Line C was replaced in 2013.
Phase 3	Line C to be replaced.
Phase 4	Line C to be replaced.
Phase 5	Line C to be replaced.

WRIGHT-PATTERSON
AIR FORCE BASE
OHIO

FIGURE NUMBER
2-3

LINE C
HEATING SYSTEM REPAIR PLAN

1 **Table 2-1. Individual Projects under the Proposed Action**

Project	Color-Coded Facilities	General Description of Repair	Description of Repair Components
1	Red	Replace HTHW heating systems with gas-fired hot water boilers	• Remove HTHW to steam converters and associated mechanical room equipment (two steam to hot water heat exchangers, steam and condensate return piping, condensate pumps, controls, electric conduit/wiring) • Remove HTHW to low temperature hot water (LTHW) heat exchanger and associated HTHW piping, controls, electric conduit/wiring • Remove all HTHW piping from mechanical room and in tunnel • Remove HTHW to LTHW heat exchangers and all associated HTHW piping • Provide gas-fired hot water boilers in mechanical rooms • Provide required connections including natural gas, electric, water, combustion air intake, flue gas vent • Modify existing structural steel supports and piping to accommodate new boilers • Modify hot water piping system (includes piping modifications, automatic isolation valves in hot water mains, space humidity sensors, direct digital control [DDC] reprogramming) to provide summer reheat capability for the basement for humidity control • Provide primary boiler pump for each new boiler and piping to connect to existing hot water systems • Provide natural gas lines sized for the calculated heating load • Provide smart meter
2	Orange	Replace steam heat distribution with a heating hot water system utilizing new gas-fired hot water boilers	• Remove hot water heat exchangers and associated equipment (steam and condensate return piping, steam heating coils in air handling units [AHUs], duct humidifiers, condensate pumps, hot water heating pumps, controls, electric conduit/wiring) • Provide gas-fired hot water boilers • Provide connections including natural gas, electric, water, combustion air intake, flue gas vent • Modify existing piping in all affected facilities' mechanical rooms to accommodate new boilers • Provide primary/secondary hot water systems when connecting to existing hot water piping • Provide primary hot water boiler pump for each boiler and secondary variable speed hot water distribution pumps • Provide new hot water heating coils in AHUs where steam coils have been removed • Provide new 2-way hot water control valves throughout complex • Provide new DDC controls for new heating hot water systems • Provide natural gas line and smart meters to affected facilities • Provide new self-contained duct humidifiers where existing steam humidifiers are removed
3	Orange	Cut and cap existing steam and condensate return piping entering affected facility and provide gas-fired low pressure steam boilers	• Provide gas-fired low pressure steam boilers • Construct new mechanical room where existing steam enters • Provide connections including natural gas, electric, water, steam/condensate return, combustion air intake, flue gas vent • Modify existing piping inside mechanical room to accommodate new boilers • Provide natural gas line and smart meter
4	Green	Replace HTHW heating system with dual fuel steam boilers	• Remove three HTHW to low pressure steam converters, one HTHW to high pressure steam converter, and two high pressure steam boilers with dual fuel • Provide high pressure dual fuel high pressure steam boilers with natural gas to be primary fuel • Provide #2 oil back-up fuel system • Provide connections including natural gas, oil, electric, water, steam/condensate return, combustion air intake, flue gas vent

Project	Color-Coded Facilities	General Description of Repair	Description of Repair Components
			• Modify existing piping in mechanical room to accommodate new boilers • Provide new DDC controls for new steam heating system • Replace existing natural gas line with larger size if necessary to obtain sufficient size • Provide smart meter
5	Yellow	Replace HTHW heating system with gas-fired hot water boilers	• Remove HTHW to LTHW heat exchanger from basement mechanical room and associated HTHW piping and controls • Provide gas-fired hot water boilers • Replace hot water pumps • Provide new mechanical room on exterior of facility to house new boilers, pumps, and associated equipment • Provide primary/secondary hot water systems when connecting to the existing hot water piping • Provide hot water boiler pump and secondary variable speed hot water distribution pump • Replace existing 3-way with 2-way hot water control valve • Provide new DDC controls for new heating hot water systems • Replace existing 2-inch natural gas line with line sized for required load • Provide smart meter

Boiler installations would involve minor retrofit plans that would vary for each of the 20 buildings. General construction activity elements involved in retrofitting facilities designated as stand-alone units or expansion of existing boilers include:

- Modifying an existing utility room or constructing a new building attachment to house the new boiler and all associated boiler system equipment. The modification may include new concrete floors, reinforced support substructures, and surface coatings, as needed.

- Severing and capping piping connections to the existing HTHW/steam distribution system, and abandoning in-place the unused portion.

- Utilizing the existing building heating system to the fullest extent possible; modifications will be limited to connections required for the new system.

- Utilizing the existing water and sewage system to handle the additional loading required by the new condensate system of the new boiler.

- Limiting outdoor soil disturbances to the construction of any new building attachments and foundations, and installation of any new piping connections.

- Restoring any exposed outdoor surfaces by reseeding back to a green space, if applicable.

- Conducting environmental surveys for hazardous substances, including but not limited to: asbestos-containing material (ACM), lead-based paint (LBP), mercury-containing lamps, polychlorinated biphenyl (PCB)-containing light ballasts, and radioactive materials, prior to building modification. These materials would be handled in accordance with WPAFB guidelines.

2.4.2 No Action Alternative

Under the No Action Alternative, the HTHW Line C heating system would not be replaced. Without this project, additional leaks and failures of Line C would force buildings that house vital AF missions to operate without heat. The continued use of substandard, deteriorated steam and condensate lines would result in inefficient operation and high maintenance and utility costs.

Line C is expected to fail every heating season until this project is executed. Each failure is expected to result in the following: 3 to 14 calendar days to repair; 175 to 350 personnel hours (including overtime) to make emergency repairs to the distribution line and facility repairs from freezing temperatures; up to $500,000 for temporary boilers and temporary aboveground surface pipes procured.

In addition, the Line C HTHW distribution system in Area A would continue to operate inefficiently due to the failing infrastructure resulting in costing the Base nearly $1.4 million annually in energy costs.

The No Action Alternative does not satisfy the purpose and need to provide a reliable, efficient, and economical heating system for 20 Area A facilities; however, it is included in the environmental analysis to provide a baseline for comparison with the Proposed Action and is analyzed in accordance with CEQ regulations for implementing NEPA. Although the No Action Alternative would eliminate unavoidable adverse, short- and long-term impacts associated with the Proposed Action, the No Action Alternative would not satisfy selection standards established for this project, resulting in:

- Continued central heating distribution system O&M costs
- Higher future maintenance expenditures and utility costs
- Continued energy inefficiencies
- Impacts to the 20 facilities due to disruption in service

2.5 Alternatives Eliminated from Further Consideration

Through the review of repairing Line C with natural gas-fired boilers options, WPAFB determined that the Proposed Action is the only reasonable alternative that meets the selection standards. Specifically, no alternative options were identified that could meet the selection standards. Other alternatives that were considered but eliminated from consideration early in the planning process included the following:

- Privatization of the WPAFB heating system to reduce O&M expenditures
- Construction of a central heating plant to service the 20 Area A facilities
- Installation of a geothermal heating system
- Repair of Line C HTHW Distribution Line

Privatization of Heating System. Under this alternative, the Line C heating system would be managed by a private organization. This organization would be responsible for operation and maintenance of the Line

C heating system. However, this alternative was eliminated from further analysis because it did not meet the standard of operational feasibility and efficiency. Continued failure of Line C would likely continue to occur followed by disruption to current AF missions.

Construction of a Central Heating Plan. Under this alternative, facilities relying on the HTHW Line C heating distribution system would be serviced by a central heating plant. This alternative was eliminated from further analysis because it did not meet the standard for compatibility with missions (i.e., one of the facilities requires specialized dual fuel [natural gas and number 2 fuel oil] high pressure boilers).

Installation of a Geothermal Heating System. Under this alternative, geothermal heat pumps would be installed at an individual facility or group of facilities. Geothermal heat pumps use the constant below-ground temperature of soil or water to heat and cool a facility. A closed-loop ground-source geothermal system (GSGS) would operate at each location with a geothermal water pump circulating water through chillers and a geothermal well field. For heating, no gas-fired boilers are required since refrigeration equipment is used to pull heat from a well field and boost the temperature through heat of compression. A geothermal water pump is used to circulate water through the heating chillers. Geothermal water pumps are used for both heating and cooling in a closed-loop GSGS. Most closed-loop geothermal heat pumps circulate an antifreeze solution through a closed-loop, (usually made of plastic tubing) that is buried in the ground or submerged in water.

The Line C facilities are located over a sole-source aquifer. Numerous geothermal wells would need to be installed in the aquifer. This alternative was eliminated because it did not meet the standard for operational feasibility.

Repair of Line C HTHW Distribution Line. Under this alternative, the Line C HTHW distribution system would be repaired and not replaced. The HTHW being distributed to Line C facilities would continue to operate inefficiently due to the failing infrastructure and would cost the Base nearly $1.4 million annually in energy costs. The cost to repair the Line C pipe distribution network in its entirety would be $25 to $30 million. Therefore, due to continued inefficiency and cost, this alternative was eliminated from full evaluation.

As a result, none of the Line C repair alternatives listed above appropriately satisfied the selection standards identified in **Section 2.2**.

2.6 Comparison of Environmental Consequences

The Proposed Action is the only reasonable alternative that meets the minimum requirements identified in **Section 2.2**. The CEQ regulations, however, require an analysis of the No Action alternative for all actions. **Table 2-2** presents a comparison of the potential environmental consequences resulting from

implementation of the Proposed Action (Preferred Alternative) and the No Action Alternative.

1 **Table 2-2. Comparison of Environmental Consequences**

Affected Environment	Proposed Action	No Action
Noise	Short-Term: Minor impacts on ambient noise from construction-related activities. Impacts would be minor because these activities would be carried out during normal working hours, would be short in duration, located in different locations throughout Area A at WPAFB, and not all construction activities would occur simultaneously.	Short-Term: No impact.
	Long-Term: No adverse impact.	Long-Term: No impact.
Air Quality	Short-Term: Construction-related air emissions generated on Base as a result of particulate matter and engine exhaust emissions would be minor because emissions would be short in duration and are negligible with respect to overall emissions expected for the region.	Short-Term: No impact.
	Long-Term: No impact.	Long-Term: No impact.
Water Resources		
Groundwater	Short-Term: No adverse impact.	Short-Term: No impact.
	Long-Term: No adverse impact.	Long-Term: No impact.
Surface Water	Short-Term: No adverse impact as construction activities for possible build-outs would implement best management practices (BMPs) for erosion and sedimentation controls.	Short-Term: No impact.
	Long-Term: No impact.	Long-Term: No impact.
Floodplains	Short-Term: No adverse impact. None of the facilities are located in the 100-year floodplain. In addition, the storage capacity of the retarding basin would not be affected.	Short-Term: No impact.
	Long-Term: Same as short-term.	Long-Term: No impact.
Water Supply	Short-Term: Temporary, minor impacts due to disruption during construction.	Short-Term: No impact.
	Long-Term: Positive impacts due to potential decrease in water consumption due to energy efficiency.	Long-Term: No impact.
Biological Resources		
Vegetation	Short-Term: Minor impact to existing vegetation if retrofitting includes build-outs versus interior renovation, or minor trenching in conjunction with gas line replacement. Construction activities would take place on previously disturbed areas with no naturally-occurring vegetation. However, if trees are identified for cutting within the project areas, each individual tree would be surveyed to determine and ensure the tree(s) are not considered Indiana bat roosting habitat. In addition, no tree clearing would occur outside of the open cutting season of October 1 through March 31.	Short-Term: No impact.
	Long-Term: No adverse impact.	Long-Term: No impact.
Wildlife	Short-Term: Negligible impact on wildlife as the buildings proposed for decentralization are not located in areas that provide suitable habitat and the current land use would not change. The proposed retrofitting activities would primarily be interior, and would not be in close enough proximity to any threatened or endangered species to generate noise-related effects from proposed construction activities.	Short-Term: No impact.
	Long-Term: No adverse impact.	Long-Term: No impact.

Affected Environment	Proposed Action	No Action
Threatened and Endangered Species	Short-Term: Negligible impact on threatened and endangered species as the buildings are in areas of previous development and current land use would not change. However, if trees are identified for cutting within the project areas, each individual tree would be surveyed to determine and ensure the tree(s) are not considered Indiana bat roosting habitat. In addition, no tree clearing would occur outside of the open cutting season of October 1 through March 31.	Short-Term: No impact.
	Long-Term: No adverse impact.	Long-Term: No impact.
Wetlands	Short-Term: No impact as the decentralization project would only involve interior retrofitting and/or minor exterior build-outs adjacent to existing buildings/parking lots. There are no wetlands in the vicinity of the project buildings.	Short-Term: No impact.
	Long-Term: No impact.	Long-Term: No impact.
Earth Resources	Short-Term: Minor impact to existing soils during retrofitting of buildings if retrofitting includes build-outs versus interior renovation, or minor trenching in conjunction with gas line replacement. Impacts would be minimized by implementing BMPs for erosion and sedimentation controls.	Short-Term: No impact.
	Long-Term: No impact.	Long-Term: No impact.
Hazardous Materials/Waste	Short-Term: Negligible impact as environmental surveys would be performed prior to construction activities and hazardous materials/wastes would be removed in accordance with WPAFB procedures. Hazardous materials/wastes used during construction activities would not be expected to increase over existing conditions.	Short-Term: No impact.
	Long-Term: No adverse impact.	Long-Term: No impact.
ACM and LBP	Short-Term: No adverse impact as ACM and/or LBP surveys would be documented for the buildings or piping systems prior to construction activities.	Short-Term: No impact.
	Long-Term: No adverse impact.	Long-Term: No impact.
Environmental Restoration Program (ERP)	Short-term: No adverse impacts were identified for ERP sites located in proximity (i.e., within 300 ft) of the buildings because no construction would occur beyond the existing footprint of the buildings.	Short-Term: No impact.
	Long-term: No adverse impact.	Long-Term: No impact.
Cultural Resources	Short-Term: No adverse impact as five National Register of Historic Places (NRHP) eligible buildings would not be demolished.	Short-Term: No impact.
	Long-Term: Same as short-term.	Long-Term: No impact.
Infrastructure / Utilities	Short-Term: Negligible adverse impact from increased traffic during construction activities of the buildings retrofitting and/or build-outs. Negligible adverse impacts to underground utilities because these assets would be located and marked prior to digging. Positive and beneficial impact to utilities would result as inefficient usage would cease upon decentralization of the heating system.	Short-Term: Minor adverse impact as O&M costs would continue to incur with the current Line C central heating system.
	Long-Term: Positive impact due to savings in utility costs.	Long-Term: Same as short-term.
Safety and Occupational Health	Short-Term: Potential minor impact to workers during construction activities. Impacts would be minimized by adherence to health and safety regulations and standards.	Short-Term: No impact.
	Long-Term: No adverse impact.	Long-Term: No impact.

Affected Environment	Proposed Action	No Action
Socioeconomics	Short-Term: Negligible impact on local workforce. Beneficial impact on local economy from revenue generated by construction activities. Long-Term: Beneficial impact due to savings in O&M costs.	Short-Term: No impact. Long-Term: No impact.
Cumulative Impacts	When added to past, present, and reasonably foreseeable actions, the activities under the Proposed Action would have no significant adverse cumulative impacts on any resource.	When added to past, present, and reasonably foreseeable actions, the activities under the No Action Alternative would have no significant adverse cumulative impacts on any resource.

1

3.0 Affected Environment and Environmental Consequences

3.1 Scope of the Analysis

This section describes the current environmental and socioeconomic conditions most likely to be affected by the Proposed Action and provides a baseline from which to identify and evaluate environmental and socioeconomic changes likely to result from implementation of the Proposed Action.

In compliance with NEPA, CEQ regulations, and 32 CFR 989, the description of the affected environment focuses on resources and conditions potentially subject to impacts. These resources and conditions include air quality, noise, water resources, biological resources, earth resources, hazardous materials/waste, cultural resources, infrastructure/utilities, safety and occupational health, and socioeconomics.

This section also describes the potential environmental consequences associated with implementing the Proposed Action (Preferred Alternative) or the No Action Alternative. Each alternative is evaluated for its potential to affect physical, biological, and socioeconomic resources in accordance with 40 CFR §1508.8. Potential impacts for each resource area are described in terms of their significance. Significant impacts are those that would result in substantial changes to the environment or socioeconomic resources (as defined by 40 CFR §1508.27) and should receive the greatest attention in the decision-making process.

Thresholds of change for the intensity of impacts are defined as follows:

- *Negligible*, the impact is localized and not measureable or at the lowest level of detection;
- *Minor*, the impact is localized and slight but detectable;
- *Moderate*, the impact is readily apparent and appreciable;
- *Major*, the impact is severely adverse or highly noticeable and considered to be significant; or
- *Beneficial,* the impact is considered positive for the resource area.

3.1.1 Resources Analyzed

Analysis of potential environmental effects focuses on resource areas that are appropriate for consideration in light of a proposed action. All resource areas were initially considered, but some were eliminated from detailed examination because they were determined to have no impact as a result of implementation of the Proposed Action.

3.1.2 Resources Eliminated from Detailed Analysis

The following issues and concerns were determined to have limited potential for environmental impacts as a result of implementation of the Proposed Action and, therefore, were eliminated from further evaluation:

- *Airspace.* Proposed project activities would not result in any obstructions to airspace or hazards to airspace management at WPAFB. Therefore, there would be no impacts to airspace.

- *Land Use*. Proposed project activities would not result in any changes to existing land use designations at WPAFB. Therefore, there would be no impacts to land use.

- *Transportation.* Proposed project activities would not result in any changes to or overburden the existing transportation system at WPAFB.

- *Environmental Justice*. The EO 12898, *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that all federal agencies address the effects of policies on minorities and low-income populations and communities, and to ensure that there would be no disproportionately high and adverse human health or environmental effects to minority or low-income populations or communities in the area. The Proposed Action would not adversely change or impact any minority or low-income communities associated with the Base as the action would occur on Base and would have no impact to off-Base property or minority or low-income populations. Therefore, there would be no impacts to environmental justice.

- *Visual Resources*. Implementation of the Proposed Action would not adversely change the views of or from WPAFB.

- *Public Services*. The Proposed Action would not result in changes in the use of or demand from public services (e.g., schools, police, fire department, emergency medical services) on or adjacent to WPAFB.

3.2 Noise

3.2.1 Definition of the Resource

Noise is defined an undesirable sound that interferes with communication, is intense enough to damage hearing, or is annoying. Human response to noise varies according to the source type, characteristics of the source, distance between source and receptor, receptor sensitivity, and time of day. Sound is measured with instruments that record instantaneous sound levels in decibels (dB); decibels characterize sound levels sensed by the human ear. "A-weighted" decibels (dBA) incorporate an adjustment of the frequency content of a noise event to represent the way in which the average human ear responds to a noise event. Sound levels analyzed in this EA are A-weighted.

Noise Criteria and Regulations

Federal and local governments have established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. Guidelines and regulations that are relevant to the project are described below.

According to AF, FAA, and HUD criteria, residential units and other noise-sensitive land uses are "clearly unacceptable" in areas where the noise exposure exceeds DNL of 75 dBA, "normally unacceptable" in regions exposed to noise between the DNL of 65 to 75 dBA, and "normally acceptable"

in areas exposed to noise where the DNL is 65 dBA or less. The Federal Interagency Committee on Noise developed land-use compatibility guidelines for noise in terms of DNL (USDOT 1980). The DNL is the metric used by the AF in determining noise impacts of military airfield operations for land use planning.

The AF land use compatibility guidelines (relative to DNL values) are documented in the *Air Installation Compatible Use Zone (AICUZ) Program Handbook* (U.S. Air Force [USAF] 1999). Four noise zones are used in AICUZ studies to identify noise impacts from aircraft operations. These noise zones range from DNL of 65 to 80 dBA and above. For example, it is recommended that no residential uses, such as homes, multifamily dwellings, dormitories, hotels, and mobile home parks, be located where the noise is expected to exceed a DNL of 65 dBA. Since the Proposed Action does not involve changes to existing aircraft noise or changes to noise contours and only involves construction-related noise, the AICUZ will not discussed in further detail with regard to aircraft operations.

3.2.2 Affected Environment

Because the Maximum Mission Scenario noise contours have been, and are currently, used for noise compatibility planning at WPAFB, these contours are used as the baseline for the noise analysis in this EA. **Figure 3-1** depicts the baseline noise contours presented in the 1995 AICUZ Study (WPAFB 1995a). These ranges represent existing conditions to which potential noise levels from construction activities associated with the Proposed Action can be compared.

3.2.3 Environmental Consequences

Noise impact analyses typically evaluate potential changes to existing noise environments that would result from implementation of a proposed action. Potential changes in the noise environment can be beneficial (if changes reduce the number of sensitive receptors exposed to unacceptable noise levels), negligible (if the total area exposed to unacceptable noise levels is essentially unchanged), or adverse (if changes result in increased noise exposure to unacceptable noise levels).

3.2.3.1 Proposed Action

Implementation of the Proposed Action would have minor, temporary effects on the noise environment near the buildings scheduled for retrofitting. Noise impacts would result from the use of construction equipment and trucks. Occupants of buildings scheduled for retrofitting would experience muffled construction noise during the workday that would last only for the duration of retrofitting activities, and could be reduced through restriction of activities to normal working hours (between 7:00 a.m. and 5:00 p.m.).

Because the noise environment on Base and in the vicinity of WPAFB is dominated by military aircraft overflights, additional noise produced by retrofitting activities would not affect sensitive receptors on or off the Base. Noise associated with construction equipment would be comparatively minor.

MSN - Path: G:\WPAFB\GIS_Documents\Project_Maps\500026.0204\Nov2016\WPAFB_HTHWLineC_03-1_Ex_LandUse_MaxMission_NoiseContours.mxd - Date: 11/14/2016 Time: 11:06:18 AM

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75
70
65

Legend

- Project 1
- Projects 2 and 3
- Project 4
- Project 5
- Clear Zones
- APZ I
- APZ II
- Residential
- Commercial
- Industrial
- Institutional
- Open Space
- Vacant and Agricultural
- Extractive (Mining/Quarry)
- Airports
- Runways
- Maximum Mission DNL Noise Contours

Source: 1995 AICUZ Study Maximum Mission

Source: Land Use - Ohio Department of Natural Resources Montgomery County Land Use data; Miami County Land Use Data; Clark County Land Use data; Greene County Land Use data.

N

0 3,500 7,000 14,000

Feet

WRIGHT-PATTERSON
AIR FORCE BASE,
OHIO

Decentralization of Line C - Area A Heating System

FIGURE NUMBER 3-1

Existing Land Use and Maximum Mission Noise Contours at WPAFB

The buildings proposed for retrofitting are located in noise zones ranging from less than 65 dB along the southern perimeter of Area A to 80 dB in the area of the runways located in Area A (**Figure 3-1**) (WPAFB 1995a). Impacts on ambient noise levels from the building site areas would result from activities involving construction equipment such as trucks. Noise levels associated with common construction equipment are trucks, 83-93 dB at 50 ft; heavy machinery, 120 dB; and jackhammer, 130 dB (Center 2012).

Workers involved in construction activities would likely be affected by noise from retrofitting of the buildings. Based on the estimated noise measurements for equipment discussed in this section and the sound level increases described in Section 3.2, persons at a distance of approximately 50 ft from the work area could experience sound levels greater than 25 dB over the background level used in land use compatibility planning and environmental assessments (i.e., 65 dB). The nearest buildings to the project sites would be those immediately adjacent to the buildings being retrofitted. There would be minor short-term adverse impacts from noise in the construction work area for workers and WPAFB personnel in the vicinity of the buildings proposed for retrofitting. These short-term impacts from construction noise would be intermittent, be conducted in different locations on Base, and construction activities would not occur simultaneously. No long-term adverse impacts would result from the proposed project.

Workers involved in retrofitting could experience short-term adverse effects during work in the construction area. Noise levels would be expected to be more intense in the immediate construction work area; however, effects would be minimized because workers would be responsible for adhering to health and safety regulations.

3.2.3.2 No Action

The No Action alternative would have no adverse impact on noise quality.

3.3 Air Quality

3.3.1 Definition of the Resource

In accordance with federal Clean Air Act (CAA) requirements, the air quality in a given region is measured by the concentration of various pollutants in the atmosphere. The measured levels of these "criteria pollutants" found in ambient air are expressed in units of parts per million (ppm) or in micrograms per cubic meter ($\mu g/m^3$). Air quality in a region is affected not only by the types and quantities of atmospheric pollutants emitted by pollutant sources in an area, but also the surface topography, the size of the "air basin," and the prevailing meteorological conditions.

The CAA directed the USEPA to develop, implement, and enforce strong environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, the USEPA developed numerical concentration-based standards, known as National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to impact human health and the environment. The

USEPA established both primary and secondary NAAQS under the provisions of the CAA. The NAAQS are currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (including coarse particulates equal to or less than 10 microns in diameter [PM_{10}] and fine particulates equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb).

The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources along with maintaining visibility standards for public welfare. **Table 3-1** presents the primary and secondary NAAQS.

Table 3-1. National Ambient Air Quality Standards

Pollutant	Standard Value [6]		Standard Type
Carbon Monoxide (CO)			
8-hour average	9 ppm	(10 mg/m^3)	Primary
1-hour average	35 ppm	(40 mg/m^3)	Primary
Nitrogen Dioxide (NO_2)			
Annual arithmetic mean	0.053 ppm	(100 µg/m^3)	Primary and Secondary
1-hour average[1]	0.100 ppm	(188 µg/m^3)	Primary
Ozone (O_3)			
8-hour average[2]	0.070 ppm	(137 µg/m^3)	Primary and Secondary
Lead (Pb)			
3-month average[3]		0.15 µg/m^3	Primary and Secondary
Particulate < 10 micrometers (PM_{10})			
24-hour average[4]		150 µg/m^3	Primary and Secondary
Particulate < 2.5 micrometers ($PM_{2.5}$)			
Annual arithmetic mean[4]		12 µg/m^3	Primary
Annual arithmetic mean[4]		15 µg/m^3	Secondary
24-hour average[4]		35 µg/m^3	Primary and Secondary
Sulfur Dioxide (SO_2)			
1-hour average[5]	0.075 ppm	(196 µg/m^3)	Primary
3-hour average[5]	0.50 ppm	(1,307 µg/m^3)	Secondary

Notes:

1 In February 2010, USEPA established a new 1-hr standard at a level of 0.100 ppm, based on the 3-year average of the 98th percentile of the yearly distribution concentration, to supplement the existing annual standard.

2 Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards. In March 2008, the USEPA revised the level of the 8-hour standard to 0.075 ppm based on the 3-year average of the annual fourth-highest daily maximum 8-hour concentration.

3 In November 2008, USEPA revised the primary lead standard to 0.15 µg/m^3. USEPA revised the averaging time to a rolling 3-month average, not to be exceeded.

4 In December 2012, USEPA revised the level of the annual $PM_{2.5}$ primary standards to 12 µg/m^3 and retained the secondary level of the annual $PM_{2.5}$ standard at 15 µg/m^3 and retained the level of the existing 24-hour $PM_{2.5}$ standard. With regard to primary standards for particle generally less than or equal to 10 µm in diameter (PM_{10}), USEPA retained the 24-hour standard and revoked the annual PM_{10} standard.

5 In June 2010, USEPA established a new 1-hr SO_2 standard at a level of 75 parts per billion (ppb), based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The USEPA also revoked both the existing 24-hour and annual primary SO_2 standards.

6 Parenthetical value is an approximately equivalent concentration for CO, NO_2, O_3 and SO_2.

ppb = parts per billion ; µg/m^3 (micrograms per cubic meter)

ppm = parts per million; mg/m^3 (milligrams per cubic meter)

The criteria pollutant O_3 is not usually emitted directly into the air, but is formed in the atmosphere by photochemical reactions involving sunlight and previously emitted pollutants or "O_3 precursors." These O_3 precursors consist primarily of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that are directly emitted from a wide range of emissions sources. For this reason, regulatory agencies attempt to limit atmospheric O_3 concentrations by controlling NO_x and VOC pollutants (also identified as reactive organic gases).

The USEPA has recognized that particulate matter emissions can have different health affects depending on particle size and, therefore, developed separate NAAQS for coarse particulate matter PM_{10} and fine particulate matter $PM_{2.5}$. The pollutant $PM_{2.5}$ can be emitted from emission sources directly as very fine dust and/or liquid mist or formed secondarily in the atmosphere as condensable particulate matter typically forming nitrate and sulfate compounds. Precursors of condensable $PM_{2.5}$ can include SO_2, NO_x, VOC, and ammonia (NH_3). Secondary (indirect) emissions vary by region depending upon the predominant emission sources located within the area. The state air agency considers these sources when determining which precursors are considered significant for $PM_{2.5}$ formation and identified for ultimate control.

The CAA and USEPA delegated responsibility for ensuring compliance with NAAQS to the states and local agencies. As such, each state must develop air pollutant control programs and promulgate regulations that focus on meeting NAAQS and maintaining healthy ambient air quality levels. These programs are detailed in State Implementation Plans (SIPs) that must be approved by USEPA. A SIP is a compilation of regulations, strategies, schedules, and enforcement actions designed for a state to achieve and maintain compliance with all NAAQS. Any changes to the compliance schedule or plan (e.g., new regulations, emissions budgets, controls) must be incorporated into the SIP and approved by the USEPA.

The CAA required that the USEPA draft general conformity regulations. These regulations are designed to ensure that federal actions do not impede local efforts to achieve or maintain attainment with the NAAQS. The General Conformity Rule found in 40 CFR 93, exempts certain federal actions from conformity determinations (e.g., contaminated site cleanup and natural disaster response activities). Other federal actions are assumed to conform if total indirect and direct project emissions are below *de minimis* levels presented in 40 CFR 93.153. The threshold levels (in tons of pollutant per year) depend upon the nonattainment status that USEPA has assigned to a region for each NAAQS. Once the net change in nonattainment pollutants is calculated, the federal agency must compare them to the *de minimis* thresholds if a conformity determination is required.

Title V of the CAA Amendments of 1990 requires states and local agencies to implement permitting programs for major stationary sources. A major stationary source is a facility (e.g., plant, base, or activity) that has the potential to emit more than 100 tons annually of any one criteria air pollutant, 10 tons per year (tpy) of a hazardous air pollutant, or 25 tpy of any combination of hazardous air

pollutants. However, lower pollutant-specific "major source" permitting thresholds may apply in certain nonattainment areas. For example, the Title V permitting threshold for an "extreme" O_3 nonattainment area is 10 tpy of potential VOC or NO_x emissions. The USEPA modified the definition of major stationary sources beginning in 2011 to include sources with the potential to emit greenhouse gases (GHG) in excess of 100,000 tpy carbon dioxide equivalents (CO_2e); however, the U.S. Supreme Court vacated GHG applicability under the Title V program on June 23, 2014. The overall purpose of the Title V permitting rule is to establish regulatory control over large, industrial-type activities and monitor their impact on air quality.

Federal New Source Review (NSR), including Prevention of Significant Deterioration (PSD), is a preconstruction permitting program that requires stringent pollution controls when air emissions increases are "significant" from proposed new major stationary sources or major modifications at existing sources. To be "significant", a proposed project's net emission increase must meet or exceed the rate of emissions listed in 40 CFR 52.21(b)(23)(i) for criteria pollutants; or (1) a proposed project is within 10 kilometers of any Class I area, and (2) regulated pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 $\mu g/m^3$ or more [40 CFR 52.21(b)(23)(iii)]. The PSD regulations also define ambient air increments, limiting the allowable increases to any area's baseline air contaminant concentrations, based on the area's designation as Class I, II, or III [40 CFR 52.21(c)].

Greenhouse Gases

The GHGs are gases that have been determined by science to trap heat in the atmosphere. These emissions are generated by both natural processed and human activities. The accumulation of GHGs in the atmosphere helps regulate the earth's temperature and is believed to contribute to global climate change as defined by USEPA. The GHGs can include water vapor, CO_2, methane, nitrous oxide, O_3, and several hydrocarbons and chlorofluorocarbons. Each GHG has an estimated global warming potential (GWP) value, which is a function of its atmospheric lifetime and its ability to absorb and radiate infrared energy emitted from the earth's surface. The GWP of a particular gas provides a relative basis for calculating its CO_2e or the amount of CO_2 equivalent to the emissions of that gas. The CO_2 has a GWP of 1, and is, therefore, the standard by which all other GHGs are measured and compared.

Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* provides strategic guidance to federal agencies in the management of GHG emissions. On February 18, 2010, the CEQ released *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*. This guidance advises federal agencies to consider, in scoping their NEPA analysis, whether analysis of the direct and indirect GHG emissions from their proposed actions may provide meaningful information to decision makers and the public. If a proposed action would be reasonably anticipated to cause direct emissions of 25,000 metric tons or more of CO_2e GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative

assessment may be meaningful to decision makers and the public. The CEQ does not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emission that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHGs. The CEQ also notes this indicator serves as a minimum standard for reporting emissions under the CAA. Specific sources are required to report certain GHG annual emission levels to the USEPA under 40 CFR Part 98 mandatory GHG reporting regulations.

3.3.2 Affected Environment

Regional Climate

The climate of this region of Ohio is humid and temperate with warm summers and cold winters. Average minimum and maximum temperatures are between 21 and 36 °F in January and 45 and 85 °F in July. The average annual precipitation is 38.43 inches, with June typically being the wettest month and October the driest month. The prevailing winds are from the southwest, with average monthly wind speeds between 3 and 7 knots.

Regional Air Quality

Under the authority of the CAA and subsequent regulations, the USEPA has divided the country into geographical regions known as Air Quality Control Regions (AQCRs) to evaluate compliance with the NAAQS. Through the CAA, Congress has stated that the prevention and control of air pollution belongs at the state and local level, thus the USEPA has delegated enforcement of the PSD and Title V programs to the Ohio Environmental Protection Agency (OEPA). The OEPA has adopted the NAAQS by reference, thereby requiring the use of the standards within the State of Ohio.

Wright-Patterson AFB

The Base is located in Greene and Montgomery counties, which are located in the Metropolitan Dayton Intrastate AQCR (40 CFR 81.34). Each AQCR is classified as an attainment area or nonattainment area for each of the criteria pollutants depending on whether it meets or fails to meet the NAAQS for the pollutant. Ambient air quality for the Metropolitan Dayton Intrastate AQCR was formerly classified as an attainment/maintenance area for the 8-hour O_3 (USEPA 2012a) and is proposed to be attainment/maintenance for the 2015 8-hour O_3 (OEPA 2016); attainment for the NO_2 annual standard and unclassifiable/attainment for the new 1-hour standard NO_2 (USEPA 2012b); attainment for the SO_2 3-hour standard and unclassifiable/attainment for the new 1-hour standard (USEPA 2013); and attainment for the Pb and CO standards.

The ambient air quality for $PM_{2.5}$ is classified as attainment for the 24-hour standard and re-designated to attainment/maintenance for the annual standard. For the new annual $PM_{2.5}$ NAAQS, the OEPA submitted a report in December 2013 recommending that Montgomery and Greene counties be designated as "unclassified/attainment" (OEPA 2013). This designation was approved by the USEPA effective April 15, 2015 (USEPA 2015).

Air quality is typically good in the vicinity of WPAFB, and is generally affected only locally by military and civilian vehicle emissions, particulate pollution from vehicle traffic, emissions from wastewater treatment plants, industrial sources, and construction activities. Mobile sources, such as vehicle and aircraft emissions, are generally not regulated at the local level and are not covered under existing stationary source permitting requirements. Stationary emissions sources at WPAFB include natural gas-fired boilers; research and development sources, such as laboratory fume hoods and test cells; paint spray booths; refueling operations; and emergency power generators.

The Base is under the jurisdiction of USEPA Region 5 and the OEPA. The Regional Air Pollution Control Agency (RAPCA), under the jurisdiction of the OEPA, conducts annual compliance inspections at WPAFB. The Base has long had an aggressive program of internal audits and inspections to ensure continual compliance with all applicable air permit terms and conditions. Detailed records are maintained to demonstrate compliance with emission limits, and reports are submitted in a timely manner to the local regulatory agency.

The WPAFB air emissions inventory includes over 1,400 emissions sources. Of these, approximately 1,050 are included in the Base's Title V permit application, which was originally submitted to the OEPA in February 1996 in accordance with CAA requirements. Many of the Title V sources are categorized as insignificant, including emergency generators, small boilers, and laboratory fume hoods. There were 29 permitted significant emissions units identified in the original application, most of which were boilers and paint spray booths. The OEPA finalized the Title V Operating Permit for WPAFB in January 2004 with an effective date of February 17, 2004 (OEPA 2004). A Title V renewal permit application was submitted to the OEPA in May 2008 and is currently under review. The Title V renewal application notified OEPA that the number of permitted significant emission units was reduced from 29 to 26. A revision to the Title V renewal application was submitted to OEPA on September 11, 2013 to include the coal-to-gas fuel conversion project at the Base central heating plants and again in 2015 to remove GHG emission operational requirements.

Decentralization of Line C - Area A Heating System

Approximately 107 Area A buildings are served by the central heating plant. The HTHW distribution Line C serves four main campuses which includes the 20 facilities as part of the Proposed Action. A number of insignificant emissions units and a few significant sources are located within the facilities identified for potential renovation are listed in the WPAFB Title V permit, identified on the Title V renewal application, or listed in the OEPA Air Services profile. These sources include the following:

- Medium-sized Gas-Fired Boilers
- Small Boilers/Gas Water Heaters
- Emergency Generators
- Surface Coating/Painting Operation
- Exhaust Hoods

- Miscellaneous Storage Tanks and Miscellaneous Sources

The medium-sized gas-fired boilers have specific air permit conditions established by a Permit-to-Install (PTI) and are listed in the Title V operating permit as significant sources. Modification or replacement of these sources may require a PTI application depending upon the size of the replacement boilers and the total scope of the project. Insignificant sources listed in the Title V permit may or may not have permit conditions or reporting requirements depending on the regulatory qualifications that categorizes a source as significant. Insignificant sources that were specifically issued a PTI must be evaluated individually prior to commencing work to assure that the terms and conditions of the issued PTI are maintained for any sources that are added or modified by this project. Insignificant sources that were permitted-by-rule (PBR) may be modified or relocated without notification provided the terms and conditions of the PBR are maintained. Insignificant sources that are *de minimis* or to which only generally applicable requirements apply may undergo additions, removals, and relocations and do not require a modification of the Title V permit provided the changes do not exceed insignificant emission levels.

Insignificant emission levels are defined in Ohio Administrative Code (OAC) rule 3745-77-01(V)(3) to be less than or equal to 5 tpy of any regulated air pollutant other than a Hazardous Air Pollutant and not more than 20 percent of an applicable major source threshold. Changes to insignificant sources are handled as routine administrational changes to the Title V permit through air profile updates submitted through Air Services to the OEPA, Division of Air Pollution Control. All air sources are identified by the Base with a four-digit number on a yellow sticker affixed to the source. The Air Program Manager at WPAFB requires notification prior to installation, removal, or relocation of any air source.

3.3.3 Environmental Consequences

The environmental consequences to local and regional air quality conditions near a proposed federal action are determined based upon the increases in regulated pollutant emissions relative to existing conditions and ambient air quality. For the purposes of this EA, the impact in NAAQS "attainment" areas would be considered significant if the net increases in pollutant emissions from the federal action would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Exceed any Evaluation Criteria established by a SIP

As mentioned in Section 3.3, the area including WPAFB is classified as an attainment/maintenance area for O_3 and $PM_{2.5}$, and is designated as an unclassified/attainment area for all other criteria pollutants.

Impacts on air quality in NAAQS "nonattainment" areas are considered significant if the net changes in project-related pollutant emissions result in any of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard

- Increase the frequency or severity of a violation of any ambient air quality standard
- Delay the attainment of any standard or other milestone contained in the SIP

The primary tool used to evaluate air impacts from federal actions is the application of the Air Conformity Rule. Because WPAFB is located in an area designated as attainment/maintenance for O_3 and $PM_{2.5}$, a conformity applicability analysis is required to determine whether the Proposed Action (Preferred Alternative) is subject to the Air Conformity Rule. The USAF has developed an Air Conformity Applicability Model (ACAM) to assist with this determination. The results from the ACAM for the Proposed Action can be found in **Appendix B**.

With respect to the General Conformity Rule, effects on air quality would be considered significant and, therefore, subject to an evaluation to determine compliance with the General Conformity Rule, if:

- The proposed federal action does not relate to transportation plans, programs, and projects developed, funded, or approved under Title 23 U.S.C. or the Federal Transit Act, and
- The Proposed Action-related direct and indirect emissions exceed *de minimis* threshold levels established in 40 CFR 93.153(b) for individual nonattainment pollutants or for pollutants for which the area has been re-designated as a maintenance area.

The *de minimis* threshold emission rates were established by the USEPA in the General Conformity Rule to focus analysis requirements on those federal actions with the potential to have "significant" air quality impacts. **Table 3-2** presents these thresholds, by regulated pollutant. These *de minimis* thresholds are similar, in most cases, to the definitions for major stationary sources of criteria and precursors to criteria pollutants under the CAA's NSR Program (CAA Title I). As shown in **Table 3-2**, *de minimis* thresholds vary depending on the severity of the nonattainment area classification.

In addition to the *de minimis* emission thresholds, federal PSD regulations define air pollutant emissions to be significant if the source is within 10 kilometers of any federal Class I area (e.g., wilderness area greater than 5,000 acres or national park greater than 6,000 acres) and emissions would cause an increase in the concentration of any regulated pollutant in the Class I area of 1 $\mu g/m^3$ or more [40 CFR 52.21(b)(23)(iii)]. Although PSD rules apply only to stationary sources of emissions, for the purposes of this EA, such an impact to a Class I area would be considered adverse.

Air Quality Regulations Applicable to the Proposed Action

Stationary Sources and New Source Review. Local and regional pollutant impacts resulting from direct and indirect emissions from stationary emission sources under the Proposed Action are addressed through federal and state permitting program requirements under NSR regulations (40 CFR 51 and 52). Local stationary source permits are issued by OEPA and enforced by RAPCA. As noted previously, WPAFB has appropriate permits in place and has met all applicable permitting requirements and conditions for existing stationary devices. The central heating plant coal-to-gas conversion project air permit application included potential future emissions from possible modifications to existing boilers in the buildings color-

coded green. This permit application also included an analysis to determine if any new boilers associated with the Line C decentralization were required to be included. Due to the number of boilers associated with the Proposed Action, the original permit application may require an additional review and evaluation to ensure the boiler emissions do not impact any NAAQS.

Table 3-2. Conformity *de minimis* Emission Thresholds

Pollutant	Status	Classification	*de minimis* Limit (tpy)
Ozone (measured as NO_x or VOCs)	Nonattainment	Extreme	10
		Severe	25
		Serious	50
		Moderate/marginal (inside ozone transport region)	50 (VOCs)/100 (NO_x)
		All others	100
	Maintenance	Inside ozone transport region	50 (VOCs)/100 (NO_x)
		Outside ozone transport region	100
Carbon Monoxide (CO)	Nonattainment/ maintenance	All	100
Particulate Matter (PM_{10})	Nonattainment/ maintenance	Serious	70
		Moderate	100
		Not applicable	100
Particulate Matter ($PM_{2.5}$)	Nonattainment/ maintenance	Direct Emissions	100
		SO_2 precursors	100
		NO_x precursors	100
Sulfur Dioxide (SO_2)	Nonattainment/ maintenance	Not applicable	100
Nitrogen Oxides (NO_x)	Nonattainment/ maintenance	Not applicable	100

Source: 40 CFR 93.153 (b)
tpy: tons per year

National Emissions Standards for Hazardous Air Pollutants. Because WPAFB has the potential to emit more than 25 tpy of hazardous air pollutants, certain hazardous air pollutant-emitting activities on Base are subject to regulation under federal National Emissions Standards for Hazardous Air Pollutants (NESHAP), which are promulgated in 40 CFR Parts 61 and 63. These NESHAP require emissions control measures and detailed recordkeeping to show compliance with NESHAP restrictions on the types of materials, such as paints, adhesives, and solvents, which can be used in specific operations. Specific NESHAP to which activities at WPAFB are subject include:

- 40 CFR 63 Subpart GG, Aerospace NESHAP
- 40 CFR 63 Subpart ZZZZ, Reciprocating Internal Combustion Engines (RICE) Maximum Achievable Control Technology (MACT)
- 40 CFR 63 Subpart DDDDD, Industrial, Commercial, and Institutional Boilers (Boiler MACT)
- 40 CFR 61 Subpart M, Asbestos Remediation

In addition, WPAFB would also be subject to the Defense Land Systems and Miscellaneous Equipment (DLSME) NESHAP when that rule is promulgated. This rule would cover military surface coating operations other than those subject to the Aerospace and Shipbuilding NESHAP. The intent is to simplify compliance for DoD facilities that are currently forced to comply with multiple overlapping, and sometimes conflicting, NESHAP, including the Miscellaneous Metal Parts and Products Coating NESHAP, Plastic Parts and Products Coating NESHAP, Metal Furniture Coating NESHAP, Large Appliance Coating NESHAP, and Fabric and Other Textiles Coating NESHAP. The USEPA currently has no date set for publication of a draft DLSME NESHAP.

The new boilers proposed for installation with the Proposed Action would be subject to the Boiler MACT depending upon the size of the individual boilers. The Base must ensure that all required notifications are submitted to USEPA and all required work practice standards and emission standards are in place prior to boiler startup to ensure all air quality standards are met.

Fugitive Dust Regulations. The OAC rule 3745-15-07 declares dust escaped from any source that causes damage to property to be a public nuisance. Pursuant to OAC rule 3745-17-08(A)(2), the OEPA Director may require any source that causes or contributes to such a nuisance to submit and implement a control plan that employs reasonably available control measures to prevent fugitive dust from becoming airborne. Because the Proposed Action may include trenching activities that have the potential to generate noticeable amounts of dust particles larger in size than PM_{10}, reasonably available control measures (RACM) should be employed by the general contractor to minimize the impact to the neighboring community. The RACM can include, but are not limited to:

- Maintain a written Dust Control Plan onsite
- Apply water or other dust control chemicals to roads and surfaces as applicable
- Cover open bodied trucks during the transport of material
- Promptly remove debris from paved surfaces to minimize and prevent re-suspension
- Plan material and equipment delivery routes to minimize contact of dust with nearby occupants

Architectural and Industrial Maintenance Coating Regulations. The OAC rule 3745-113, Architectural and Industrial Maintenance (AIM) Coatings, applies to any person who supplies, sells, offers for sale, or manufactures any AIM coating for use within the state of Ohio, as well as any person who applies or solicits the application of any AIM coating within the state of Ohio. At a minimum, the coating specifications for any renovation activities with the Proposed Action must conform to the VOC content standards identified in the OAC rule 3745-113-03 for each specific AIM coating type anticipated for application. The localized environmental impacts of the coating applications may be reduced by specifying the use of no-VOC or low-VOC content coatings used for renovation.

Greenhouse Gases. The GHG emissions from the Proposed Action have been quantified to the extent feasible for informational and comparison purposes. As previously indicated, the CEQ guidance indicates

the reference point of 25,000 metric tons of direct CO_2e GHG emissions provides agencies with a useful indicator. The GHG emissions were estimated using CO_2e off-road equipment and on-road vehicle emission factors provided in the ACAM. Under the Proposed Action (Preferred Alternative), the temporary CO_2e emission levels were estimated and reported in **Appendix B** at approximately 5,146 metric tons (5,673 long tons) for the Proposed Action. These GHG emission levels fall below the CEQ guidance reference point for warranting further consideration. The specific GHG emissions for the boilers were not quantified in this analysis due to being stationary sources that are subject to the permit review process. Because GHG emissions increases resulting from the new decentralized boilers fuel combustion would be met with corresponding fuel reduction at the central heating plant, the Proposed Action would result in a net reduction of GHG emissions. This reduction can be attributed to higher boiler efficiencies and less distribution line losses that have the potential to lower GHG emissions from approximately 10 to 30 percent.

General Conformity. Because a maintenance area for two criteria pollutants are affected by the Proposed Action, the AF must comply with the federal General Conformity Rule 40 CFR Part 93. An analysis has been completed to ensure that, given the changes in direct and indirect emissions of the O_3 precursors (NO_x and VOCs), direct $PM_{2.5}$, and $PM_{2.5}$ precursors (SO_2 and NO_x in Ohio), the Proposed Action would be in conformity with CAA requirements. The Conformity Determination requirements specified in this rule can be avoided if the project nonattainment pollutant rate increase resulting from the Proposed Action is below *de minimis* threshold levels for each nonattainment pollutant. For purposes of determining conformity in these attainment/maintenance areas, projected regulated pollutant emissions associated with the Proposed Action were estimated using the ACAM provided by the AF. The emissions calculations and *de minimis* threshold comparisons are presented in the ACAM reports provided in **Appendix B**.

Based on a review of the proposed Line C heating system replacement at WPAFB, it has been determined that the potential sources of $PM_{2.5}$, SO_2, NO_x and VOC pollutant emissions associated with the Proposed Action include (1) heating system demolition/renovation/installation activities and (2) vehicular traffic emissions from worker commuter motor vehicles and truck material deliveries and refuse removal. Worst case emissions were based on very conservative demolition/renovation/installation activity estimates derived from engineering judgment. In order to prepare the most conservative emission estimates, these calculations assume that all project activities would be completed within one year. The scope of the analysis was limited to those operations or activities that result in emissions that would be directly or indirectly attributable to the implementation of the Proposed Action. The General Conformity Rule 40 CFR 93.153(d)(1) does not require a conformity determination for the portion of an action that includes major or minor new or modified stationary sources that require a permit. Because the boilers are required to undergo the permit review process, those emissions were excluded from this analysis.

3.3.3.1 Proposed Action

Direct and Indirect Emissions

Demolition/Resurface/Renovation Activities. Under the Proposed Action, five main projects have been identified for replacing the Line C distribution system with new heating systems for each group of buildings. To a varying degree, each project has activities that can be categorized into old heating system demolition and equipment removal; building renovations to install the new heating system boilers and distribution equipment; painting of interior walls; and outdoor trenching for a new gas supply line. Assumptions used for each activity as inputs to the ACAM emission estimation modules are identified in **Appendix B**.

Demolition/renovation/installation activities would result in emissions of criteria pollutants from the equipment engine exhaust and particulate matter emitted as fugitive duct from demolition/trenching activities and the movement of refuse material and equipment. Additionally, vehicle emissions from the delivery and refuse removal trucks are included along with worker commuter emissions. Because each module in the ACAM only includes the number of workers operating the equipment, a separate category for transient worker commuting was included to account for those contractors performing specific equipment installation, testing, and project supervision. Additionally, VOC emissions may result from any painting or surface coating needed for the project. All of these criteria pollutant emissions from the construction activities would be temporary. The emissions for the Proposed Action are summarized for each project in **Table 3-3**.

Table 3-3. Annual Criteria Pollutant Emissions at WPAFB Associated with the Proposed Action

Air Pollutant Emissions Source	VOC Emissions (tpy)	NO_x Emissions (tpy)	CO Emissions (tpy)	PM_{10} Emissions (tpy)	$PM_{2.5}$ Emissions (tpy)	SO_2 Emissions (tpy)
Proposed Action						
Project 1 (Red)	1.87	8.84	7.13	1.90	0.47	0.016
Project 2 (Orange)	1.37	6.13	5.29	1.82	0.34	0.011
Project 3 (Orange)	0.85	4.91	3.98	0.40	0.26	0.009
Project 4 (Green)	1.10	4.27	3.26	0.31	0.22	0.007
Project 5 (Yellow)	1.25	7.18	5.49	1.28	0.36	0.013
Transient Workers Commuting	0.19	0.19	2.02	0.005	0.004	0.001
Total 2017 Emissions	6.63	31.52	27.17	5.72	1.65	0.057
General Conformity *de minimis* Levels	100	100	N/A	N/A	100	100
Exceeds *de minimis* Level	No	No	N/A	N/A	No	No

Note: Tpy = tons per year

Analysis. The information presented in **Table 3-3** shows that NO_x, VOC, SO_2, and $PM_{2.5}$ and other criteria pollutant emissions are projected to increase temporarily for project installation activities of the

Proposed Action. Comparing **Table 3-3** to the *de minimis* levels in **Table 3-2**, the Proposed Action would not result in a net emission increase above conformity *de minimis* limits listed in 40 CFR 93.153 (b) when evaluating the project on an annual basis. Because the annual emissions expected from the Proposed Action would not exceed *de minimis* levels, the General Conformity Rule does not apply and can be deemed to be in conformity with the Ohio SIP. **Appendix B** details the emissions factors, calculations, and estimates used in the ACAM to estimate emissions for the Proposed Action.

According to 40 CFR 81 Subpart D, no Class I visibility areas are located within 10 kilometers of WPAFB. The closest federal Class I area is Mammoth Cave National Park in Kentucky, 320 kilometers to the south. Therefore, air emissions from Proposed Action would not affect any Class I area. As a result of the Proposed Action, air quality impacts would be minimal compared to current conditions and may actually improve air quality over time through increased fuel efficiencies of the new heating system. The result of this general conformity applicability determination is contingent upon the accuracy of assumptions made in deriving the emission calculations. If the actual project plans were to change substantially, then a General Conformity Analysis may be required.

3.3.3.2 No Action

The No Action alternative would have no adverse impact on air quality because there would be no increase in emissions from baseline conditions. However, because the new heating system and boilers proposed for installation would achieve higher efficiencies and result in less overall fuel consumption, the opportunity to emit lower emission levels compared to the existing heating system would be lost for future years.

3.4 Water Resources

3.4.1 Definition of the Resource

Water resources include groundwater, surface water, and floodplains. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes.

Groundwater

Groundwater consists of the subsurface hydrologic resources and is an essential resource often used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater can be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate.

Surface Water

Surface water resources consist of lakes, rivers, and streams. Storm water is an important component of surface water systems because of its potential to introduce sediments and other contaminants that could degrade lakes, rivers, and streams. Storm water flows, which may be exacerbated by high proportions of impervious surfaces associated with buildings, roads, parking lots, and airfields are important to the

management of surface water. Storm water systems convey precipitation away from developed sites to appropriate receiving surface waters. Higher densities of development, such as those found in Area B, require greater degrees of storm water management because of the higher proportions of impervious surfaces that occur from buildings, parking lots, and roadways.

Floodplains

Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters and might be subject to periodic or infrequent inundation due to rain or melting snow. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which defines the 100-year floodplain for this section of the Mad River as 813.4 ft, above mean sea level (MSL). The 100-year floodplain is the area that has a one percent chance of inundation by a flood event in a given year.

Executive Order 11988, *Floodplain Management*, requires federal agencies to determine whether a proposed action would occur within a floodplain and typically involves consultation of appropriate FEMA Flood Insurance Rate Maps. Executive Order 11988 directs federal agencies to avoid floodplains unless the agency determines that there is no practicable alternative. Where the only practicable alternative is to site in a floodplain, a specific step-by-step process must be followed to comply with EO 11988 outlined in the FEMA document *Further Advice on EO 11988 Floodplain Management*.

Executive Order 13690 (January 2015), *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Input*, amends EO 11988 and provides three approaches that federal agencies can use to establish flood elevation and hazard area for consideration in their decision-making: climate-informed science approach, adding 2-3 ft of elevation to the 100-year floodplain, and using the 500-year floodplain.

All floodplain-related construction activities must be coordinated with the MCD for approval. The MCD through the *Land Use Agreement* (dated January 7, 2000) and the MCD *Policy and Procedure for Permits in Retarding Basins* regulates all construction on land within the Huffman Dam Retardation Basin and more than 5 ft below the spillway elevation of 835 ft, above MSL.

3.4.2 Affected Environment

Groundwater

The Base is located in the Great Miami River Valley, which is filled with glacial deposits of sand and gravel. The glacial outwash deposits are very permeable and exhibit high transmissivity and hydraulic conductivity. The aquifer system, called the Miami Valley Buried Aquifer, is a highly productive source of water for the millions of people in southwest Ohio. The USEPA designated the Miami Valley Buried Aquifer system as a sole-source aquifer in 1988, requiring USEPA Region 5 approval on all new projects to ensure continued use as a drinking water supply (53 Federal Register 15876). The buried aquifer system provides drinking water for more than 1.6 million people in southwest Ohio (Debrewer 2000).

Groundwater can also be found in large volumes in the Silurian-age (415 to 465 million years ago) limestone and dolomite bedrock underneath the buried valley aquifer system. Private wells and smaller public systems typically use this bedrock aquifer because, though not as productive as the buried aquifer, it is adequate for such uses (MCD 2002). Underneath the limestone and dolomite bedrock is Ordovician-age (465 to 510 million year ago) bedrock shales and limestones of the Richmond Group. The lower bedrock aquifer system generally produces less than 5 gallons per minute (gpm) and is only productive enough for livestock use.

The buried valley aquifers coincide with the present Great Miami River and its tributaries. Water underground generally follows the same flows as surface waters with upland areas serving as recharge areas and groundwater divides (MCD 2002). At WPAFB, the Mad River follows the course of the Mad River Buried Aquifer, part of the Miami Valley Buried Aquifer system. South of Huffman Dam (a flood control dam that is managed by the MCD), a till zone divides the Mad River Buried Aquifer into an upper water table unit and a lower confined unit. However, north of the dam and in other parts of the buried valley aquifer, till zones occur less frequently as discontinuous, less-permeable zones within the more permeable outwash deposits (WPAFB 1995b). Groundwater in the project area flows in a westerly direction as shown on **Figure 3-2**.

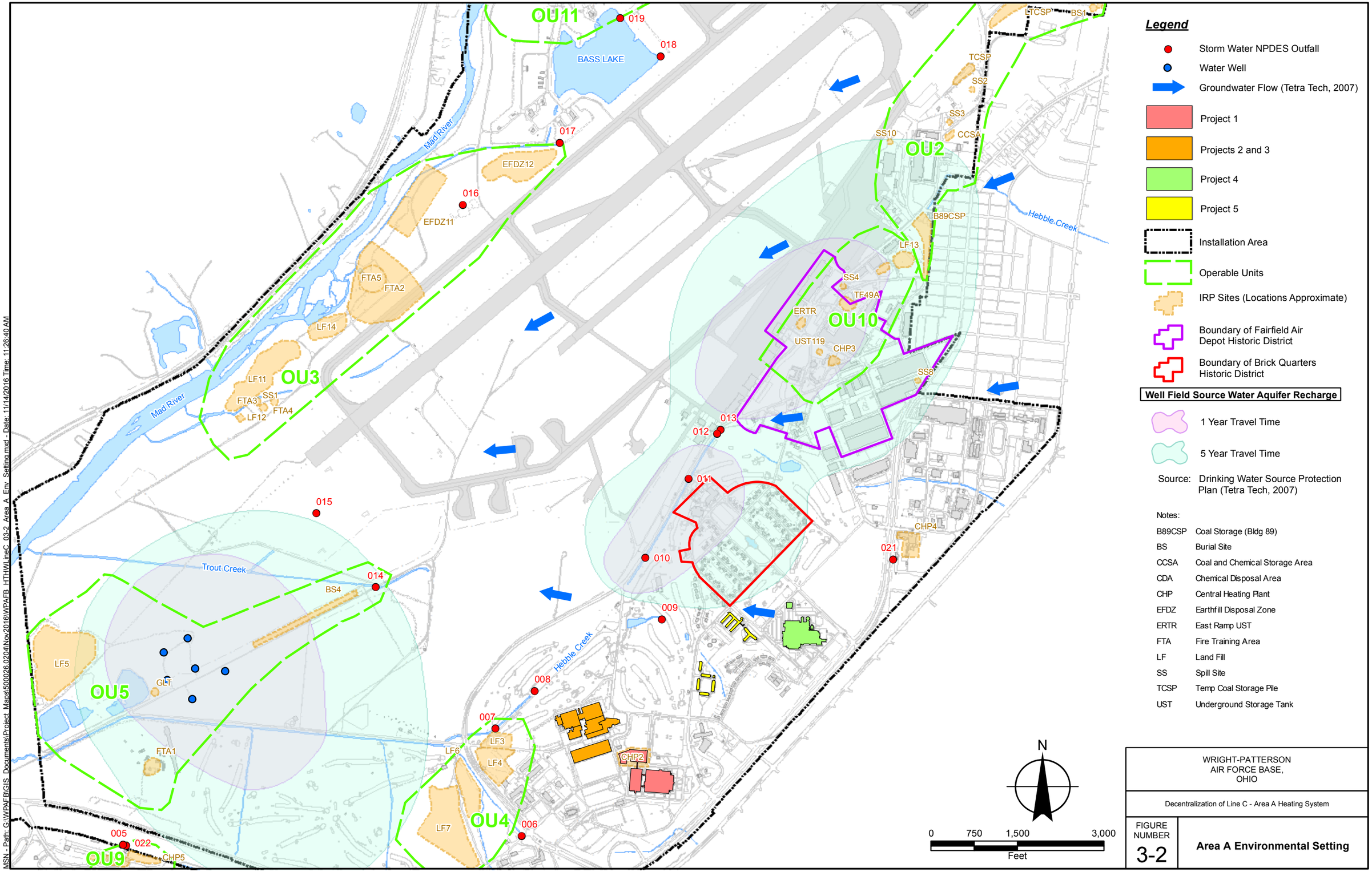
Most of the wells in the outwash deposits yield between 750 and 1,500 gpm, but can vary from less than 200 to more than 4,000 gpm (WPAFB 1995b). The City of Dayton groundwater production wells at Huffman Dam are screened at depths of over 100 ft below ground surface.

Surface Water

The Base is in the Mad River Valley. The Mad River originates approximately 40 miles north of Springfield, Ohio, flows south and southwest past WPAFB to its confluence with the Great Miami River in Dayton, Ohio, and flows into the Ohio River. Sustained flow of the Mad River originates from groundwater discharge of glacial deposits upstream of Huffman Dam. The Mad River approaches WPAFB from the north and flows along the western border of Area A. The OEPA has divided the Mad River watershed into five areas: headwaters; Mad River between Kings and Chapman Creeks; Buck Creek; Mad River from Chapman to Mud Creeks; and the lower Mad River (Mud Creek to the Great Miami River). Mud Creek enters the Mad River 2,000 ft north of the SR 235 bridge, near the northwest corner of Area A. The Base lies adjacent to the northernmost portion of the lower Mad River segment.

The OEPA has identified the lower segment of the Mad River, which flows through WPAFB, as an impaired water under Section 303(d) of the Clean Water Act (CWA) for not meeting aquatic life and recreation use standards (OEPA 2010).

The USEPA has established the total maximum daily load of effluent (TMDL) for the Mad River in the *Mad River Total Maximum Daily Loads for Sediment and Turbidity* (USEPA 2007). A TMDL specifies


OU11
OU2
OU10
OU3
OU5
OU4
OU9
BASS LAKE
Mad River
Trout Creek
Hebble Creek
019
018
017
016
015
014
013
012
011
010
009
008
007
006
005
021
022
EFDZ12
EFDZ11
FTA5
FTA2
LF14
LF11
FTA3
SS1
FTA4
LF12
LF5
GLT
FTA1
LF6
LF3
LF4
LF7
CHP5
CHP2
CHP4
BS4
TCSP
SS2
SS3
SS10
CCSA
B89CSP
LF13
SS4
TF49A
ERTR
UST119
CHP3
SS8
LTCSP
BS1
Legend
Storm Water NPDES Outfall
Water Well
Groundwater Flow (Tetra Tech, 2007)
Project 1
Projects 2 and 3
Project 4
Project 5
Installation Area
Operable Units
IRP Sites (Locations Approximate)
Boundary of Fairfield Air Depot Historic District
Boundary of Brick Quarters Historic District
Well Field Source Water Aquifer Recharge
1 Year Travel Time
5 Year Travel Time
Source: Drinking Water Source Protection Plan (Tetra Tech, 2007)
Notes:
B89CSP Coal Storage (Bldg 89)
BS Burial Site
CCSA Coal and Chemical Storage Area
CDA Chemical Disposal Area
CHP Central Heating Plant
EFDZ Earthfill Disposal Zone
ERTR East Ramp UST
FTA Fire Training Area
LF Land Fill
SS Spill Site
TCSP Temp Coal Storage Pile
UST Underground Storage Tank
N
0 750 1,500 3,000
Feet
WRIGHT-PATTERSON AIR FORCE BASE, OHIO
Decentralization of Line C - Area A Heating System
FIGURE NUMBER 3-2
Area A Environmental Setting
MSN - Path: G:\WPAFB\GIS_Documents\Project_Maps\500026.0204\Nov2016\WPAFB_HTHWLineC_03-2_Area_A_Env_Setting.mxd - Date: 11/14/2016 Time: 11:26:40 AM

the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and allocates pollutant loadings among point and nonpoint pollutant sources. The TMDL for the Mad River watershed has been set at 120 percent of natural sediment loading. According to the report, the natural sediment loading in the basin is approximately 894 tons/square mile/year based on an annual average.

The WPAFB Storm Water Management Plan (SWMP) and the Storm Water Pollution Prevention Plan (SWPPP) (prepared to comply with the CWA and the Ohio Water Pollution Control Act) provides descriptions of storm drainage areas and their associated outfalls, potential storm water pollution sources, and material management approaches to reduce potential storm water contamination (WPAFB 2011b). The SWPPP was last updated in September 2011 while the SWMP was last updated in April 2011. An OEPA industrial permit (National Pollutant Discharge Elimination System [NPDES] 1IO00001) and a municipal NPDES General permit (OHQ000002) cover the WPAFB storm water program (WPAFB 2011c).

The SWPPP and SWMP provide specific BMPs to prevent surface water contamination from activities such as construction, storing and transferring of fuels, storage of coal, use of deicing fluids, storage and use of lubrication oils and maintenance fluids, solid and hazardous waste management, and use of deicing chemicals.

There are 20 defined drainage or "Outfall Areas" on Base (WPAFB 2011b). There are 24 NPDES discharge monitoring points on Base that are addressed under the NPDES permit. All storm water from WPAFB flows into the Mad River. Regionally, the Mad River is located adjacent to the northwestern boundary of Area A and flows northeast to southwest. Surface water in the WPAFB area includes the Mad River, Trout Creek, Hebble Creek, Twin Lakes, Gravel Lake, and wetland areas. These surface water features are recharged by both precipitation and groundwater. Trout Creek and Hebble Creek provide drainage of surface water runoff at WPAFB.

Trout Creek is located in the western portion of Area A and discharges to the Mad River north of Huffman Dam. Hebble Creek passes through the southwestern portion of Area A and discharges to the Mad River several hundred feet north of Huffman Dam. Gravel Lake, Twin Lake East and Twin Lake West are located in the southwest portion of Area A in Operable Unit 5 (OU5). These lakes were created as a result of gravel quarrying activities at WPAFB. Currently, the lakes are maintained as recreational areas for Base personnel and their families.

Floodplains

A large portion of WPAFB and most of Area A lies within the Mad River floodplain. The 10-year floodplain is at 804.7 ft above MSL, and the 100-year floodplain is at 813.4 ft above MSL (North

American Vertical Datum [NAVD] 1988). These portions of Area A are classified as Zone A; Zone A is defined by the FEMA as an area with a 1 percent annual chance of having a flood.

The HTHW Line C boiler replacement project facilities are located within a 500-year flood hazard (Zone X) as established by FEMA (FEMA 2016a) (**Figure 3-3**). Zone X is defined as an area with a moderate flood hazard having a 0.2 percent annual chance (or 500-year) flood (FEMA 2016b). Therefore, the HTHW Line C facilities are not located within the 100-year floodplain.

3.4.3 Environmental Consequences

Evaluation criteria for impacts on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. Impacts would be adverse if proposed activities result in one or more of the following:

- Reduces water availability or supply to existing users
- Overdrafts groundwater basins
- Exceeds safe annual yield of water supply sources
- Affects water quality adversely
- Endangers public health by creating or worsening health hazard conditions
- Threatens or damages unique hydrologic characteristics
- Violates established laws or regulations adopted to protect water resources

3.4.3.1 Proposed Action

Groundwater and Surface Water

The groundwater and surface water systems that surround WPAFB are closely interconnected. Potential runoff contaminants from construction activities that could impact surface water quality could also impact groundwater quality. Therefore, they are analyzed together.

Typical building retrofitting activities at the proposed buildings would have minimal to no impact on groundwater at the sites. During construction activities involving build-outs, the overlying impermeable material (concrete, asphalt, roofing) would be removed thus exposing the underlying soil zone. Area A soils consist of coarse-grained materials (sands and gravels) that are hydraulically conductive. To control erosion during construction activities, BMPs would be implemented. In addition, a spill containment plan should be implemented to remediate any potential leaks or spills from heavy equipment operation and malfunctions.

Based on the relatively brief amount of time the soil would be exposed from construction to re-vegetation of the site, infiltration or precipitation may increase slightly and the impact of the release of construction-related materials (i.e., in the event of a minor spill) would be minimal to the upper water bearing zone below the surficial layer.

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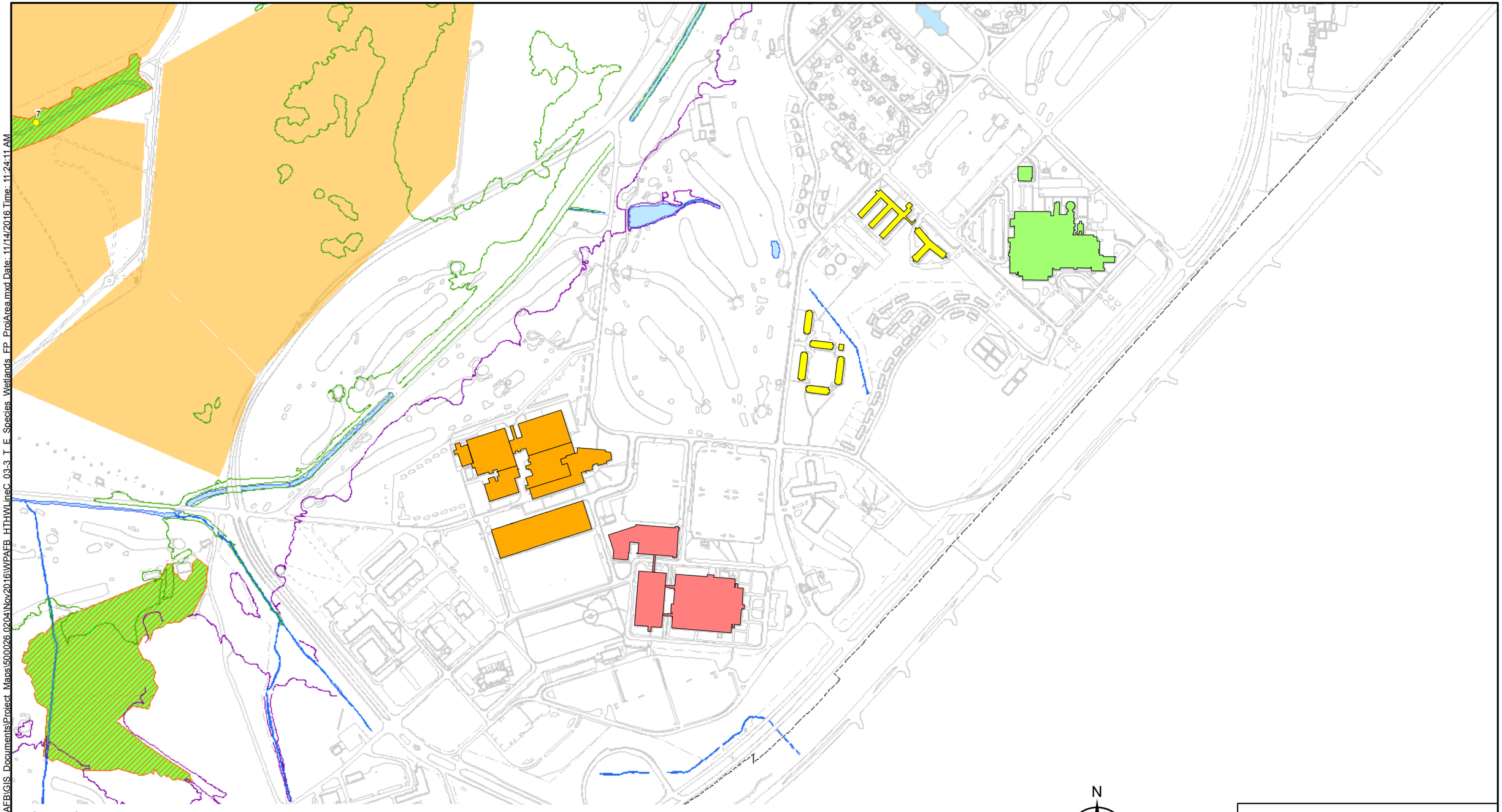

Legend

- Project 1
- Projects 2 and 3
- Project 4
- Project 5
- Streams
- 10 Year Floodplain
- 100-Year Floodplain
- Indiana Bat Potential Habitat
- Bald Eagle Potential Habitat
- Blazing Star Stem Borer Potential Habitat
- Installation Area

Source: Integrated Natural Resources Management Plan (2015)

N

600 300 0 600

Feet

WRIGHT-PATTERSON
AIR FORCE BASE,
OHIO

Decentralization of Line C - Area A Heating System

FIGURE NUMBER 3-3

Threatened and Endangered Species, Wetlands, and Floodplains in the Project Area

Exterior construction activities would also have minimal impact on surface water quality in the vicinity of the selected buildings with the exception of potential soil erosion and runoff after the removal of the impermeable materials covering the build-out sites. During construction activities, BMPs would be implemented to prevent excessive soil erosion, runoff, and minor spills from the sites.

Floodplains

According to EO 11988, *Floodplain Management*, any new construction in the regulatory floodplain must apply accepted flood protection to reduce the risk of flood-associated damages; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains.

None of the facilities are located within the Mad River 100-year floodplain elevation of 813.4 ft above MSL (**Figure 3-3**). Exterior build-outs would not be expected to significantly increase the flood control capacity of the Huffman Dam Retarding Basin that consists of the area upstream and Huffman Dam and within the spillway elevation of 835 ft above MSL.

As part of the Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) process for this EA, WPAFB requested input from MCD on the Proposed Action. The MCD responded indicating as the project is located within the Huffman Retarding Basin, it is subject to those restrictions as set forth by the MCD in Greene County Deed Book 129, Page 146 in December 16, 1922. In addition, the MCD indicated that based on their review, it appears the project would not adversely affect the retarding basin (**Appendix A**).

3.4.3.2 No Action

The No Action alternative would have no adverse impact on water resources.

3.5 Biological Resources

3.5.1 Definition of the Resource

Biological resources include native or naturalized plants and animals, and the habitats, such as wetlands, forests, and grasslands, in which they exist. Sensitive and protected biological resources include plant and animal species listed as threatened or endangered by the USFWS or a state.

Wetlands are an important natural system and habitat because of the diverse biologic and hydrologic functions they perform. These functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, wildlife habitat detention, and erosion protection. Wetlands are protected as a subset of the "the waters of the United States" under Section 404 of the CWA.

The term "waters of the United States" has a broad meaning under the CWA and besides navigable water, incorporates deepwater aquatic habitats and wetlands. The U.S. Army Corps of Engineers defines wetlands as "those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR Part 328).

Under the Endangered Species Act (ESA) (16 USC 1536), an "endangered species" is defined as any species in danger of extinction throughout all or a large portion of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future.

The USFWS also maintains a list of species considered to be candidates for possible listing under the ESA. Although candidate species receive no statutory protection under the ESA, the USFWS has attempted to advise government agencies, industry, and the public that these species are at risk and might warrant protection under the Act.

The ODNR, Division of Wildlife may restrict the taking or possession of native wildlife threatened with statewide extirpation and maintains a list of endangered species (Ohio Revised Code [ORC] 1531.25). Additionally, ODNR maintains a list of plant species native to the state and in danger of extirpation or are threatened with becoming endangered. These plants are protected pursuant to ORC Chapter 1518.

3.5.2 Affected Environment

Vegetation

The Base contains four general types of natural vegetative communities including forest, old fields, prairie, and wetlands. Areas that may be impacted by the Proposed Action are primarily disturbed areas. These include maintained areas that are frequently mowed such as right-of-ways, lawns, and recreational areas, and have been designated by the Base as turf and landscaped areas.

The Base was awarded the Arbor Day Foundation's Tree City USA designation for 14 years (WPAFB 2012a). The Tree City USA award originated from the National Arbor Day Foundation, an organization founded in 1976 dedicated to tree plantings, conservation, and promotion of community forestry. Benefits of being a Tree City designee include creating a framework for action, education, a positive public image, and citizen pride.

Wildlife

The Base is home to a variety of wildlife. Previously conducted surveys documented the presence of 23 mammals, 118 birds, 8 reptiles, and 6 amphibians on the Base (3D International [3D] 1998, BHE Environmental [BHE] 2005). Buildings associated with the Proposed Action are located within

previously disturbed areas and species occurring in such areas are common species to the Base and surrounding area.

Because birds as well as mammals pose a hazard to airfield and aircraft operations, the Air Force has established bird air strike hazard and wildlife management plans. The Base implements a comprehensive Bird/Wildlife Aircraft Strike Hazard (BASH) plan that involves prevention, monitoring, and reduction of bird/wildlife hazards (WPAFB 2015).

Threatened and Endangered Species

Endangered and threatened species on the Base are protected under the ESA. In addition, AFPD 32-70 and AFI 32-7064 require all Air Force installations to protect species classified as federally or state endangered or threatened. The Endangered Species Management Plan (BHE 2001), which has been incorporated into the Integrated Natural Resources Management Plan (INRMP), provides species-specific protection and conservation measures to protect known special status species occurring on the Base (WPAFB 2015). Protected wildlife species by the ODNR and the USFWS known to occur or known to have occurred on WPAFB are included in **Table 3-4** and shown on **Figure 3-3**.

Table 3-4. State and Federal Listed Species Occurring at WPAFB

Common Name	Scientific Name	Status	
		Federal	State
Indiana Bat	*Myotis sodalis*	Endangered	Endangered
Clubshell	*Pleurobema clava*	Endangered	Endangered
Eastern Massasauga Rattlesnake	*Sistrurus catenatus*	Candidate	Endangered
Rayed Bean	*Villosa fabalis*	Endangered	Endangered
Snuffbox	*Epioblasma triquetra*	Endangered	Endangered

Source: WPAFB 2015, ODNR 2016a, USFWS 2016

The federal candidate species, eastern massasauga rattlesnake is usually found in wet areas including wet prairies, marshes, and low-lying areas adjacent to higher foraging ground. Neither the historic nor current population size nor status of massasauga snakes at WPAFB has been determined. Reports of massasauga sightings have been limited to the Prime Base Engineer Emergency Force Training Area and Twin Base Golf Course in Area A. There is no requirement to survey the proposed project areas for potential habitat because the eastern massasauga is a federal candidate species.

As part of this EA, consultation with the ODNR was conducted to request Ohio Natural Heritage Program information for state- and federally-listed threatened and endangered plants and animals in the vicinity of the project area. The ODNR responded indicating the Natural Heritage Database has the following records at or within a one mile radius of the project area (**Appendix A**):

- Midland sedge, state threatened
- Upland sandpiper, state endangered
- Sedge wren, state species of concern
- Beer's noctuid, state endangered
- Dayton Aviation Heritage Park, National Park Service

The ODNR also responded indicating that the Division of Wildlife (DOW) had the following comments:

- *Streams, Wetlands, Other Water Resources* – impacts should be avoided/minimized to the fullest possible and BMPs should be utilized to minimize erosion/sedimentation
- *Indiana Bat* – one or more records for the presence of this species has been established in the vicinity of the project area; if suitable habitat occurs within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31; if no tree removal is proposed, this project is not likely to impact this species
- *Clubshell, Rayed Bean, Snuffbox, Black Sandshell, Fawnsfoot (mussels)* – due to location and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact these species
- *Tonguetied Minnow* –the DOW recommends no in-water work in perennial streams from April 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat; if no in-water work is proposed in a perennial stream, this project is not likely to impact this species
- *Spotted Turtle* – due to the location, type of habitat at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species
- *Kirtland's Snake* – due to the location , the type of habitat at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species
- *Eastern Massasauga* – due to the location, the type of habitat at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species
- *Upland Sandpiper* – if dry grasslands will be impacted, construction should be avoided during this species' nesting period of April 15 to July 31; if this type of habitat will not be impacted, this project is not likely to impact this species
- *Northern Harrier* – if suitable habitat (marshes, grassland) will be impacted, construction should be avoided in this habitat during the species' nesting period of May 15 to August 1; if this habitat will not be impacted, this project is not likely to impact this species

The USFWS was also contacted as part of this EA to request known presence or absence of federal- and state-listed species that may be located within the project vicinity. The USFWS responded indicating that due to the project, type, size, and location, they do not anticipate adverse effects to federally endangered, threatened, proposed, or candidate species (**Appendix A**).

Wetlands/Jurisdictional Waters

Executive Order 11990, *Protection of Wetlands*, May 24, 1977, directs federal agencies to consider alternatives to avoid adverse effects on and incompatible development in wetlands. Federal agencies are directed to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland, and the proposed construction incorporates all possible measures to limit harm to the wetland.

The CWA sets the basic structure for regulating discharges of pollutants to U.S. waters. Section 404 of the CWA establishes a federal program to regulate the discharge of dredge and fill material into waters of the United States, including wetlands. The National Wetlands Inventory, a department within USWFS, USEPA, and the Natural Resource Conservation Service (NRCS) assist in identifying wetlands.

Forty wetlands covering approximately 19.8 acres were identified within the limits of WPAFB in 2009, with 23 wetlands located in Area A (WPAFB 2015); however, none are located in the vicinity of the project area.

3.5.3 Environmental Consequences

Biological resources that could be impacted by the proposed project include vegetation, wildlife, threatened and endangered species, and wetlands; water availability, quality and use; existence of floodplains; and associated regulations. Evaluation criteria for impacts on biological resources are based on:

- Importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource;
- Proportion of the resource that would be affected relative to its occurrence in the region;
- Sensitivity of the resource to the proposed activities; and
- Duration of ecological ramifications.

The impacts on biological resources would be adverse if species or habitats of high concern are negatively affected over relatively large areas. Impacts are also considered adverse if disturbances cause reductions in population size or distribution of a species of high concern.

As a requirement under the ESA, federal agencies must provide documentation that ensures that agency actions do not adversely affect the existence of any threatened or endangered species. The ESA requires that all federal agencies avoid "taking" threatened or endangered species (which includes jeopardizing threatened or endangered species habitat). Section 7 of the ESA establishes a consultation process with USFWS that ends with USFWS concurrence or a determination of the risk of jeopardy from a federal agency project.

3.5.3.1 Proposed Action

Vegetation

Proposed construction activities would occur within areas previously disturbed and/or in grassy lawn areas that are routinely mowed. Land disturbing activities associated with retrofitting and/or build-outs, or trenching under the Proposed Action would be limited to Base property. Short-term localized effects on vegetation would be expected; however, due to the frequency of the vegetation types on Base, negligible long-term or adverse effects on vegetation would be expected as a result of the implementation of the Proposed Action.

Wetlands

No impact to wetlands would occur as the project would only involve interior retrofitting and/or minor exterior build-outs adjacent to existing buildings/parking lots and there are no wetlands in the vicinity of the buildings. Therefore, no effects on wetlands are expected as a result of the Proposed Action.

Wildlife

Wildlife habitat within the improved areas of the Base is limited due to fragmentation by the existing facilities, roads, and impervious surfaces at WPAFB. The Proposed Action would have a negligible impact on wildlife as the 20 buildings included in the Proposed Action are not located in areas that provide suitable habitat. The current land use would not change and the proposed retrofitting activities would not be in close proximity to any threatened or endangered species to generate noise-related effects from proposed construction activities. Additionally, this assessment is based on the limited extent of areas that would be affected by the Proposed Action and the frequency of occurrence of the terrestrial species known to occur at WPAFB. Therefore, no long-term or adverse effects on wildlife would be expected to result from the Proposed Action.

Threatened and Endangered Species

No construction activities would occur within areas where threatened or endangered species have been documented or within their potential habitat. Therefore, there would be a negligible impact on threatened and endangered species or species of concern, candidate species, and potentially threatened species as a result of retrofitting activities associated with the Proposed Action.

3.5.3.2 No Action

The No Action alternative would have no adverse impact on biological resources.

3.6 Earth Resources

3.6.1 Definition of the Resource

Geological resources consist of the earth's surface and subsurface materials. Topography pertains to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features.

Geology is the study of the earth's composition and provides information on the structure and configuration of surface and subsurface features. Hydrogeology extends the study of the subsurface to water-bearing structures. Hydrogeological information helps in the assessment of groundwater quality and quantity and its movement.

Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, and physical characteristics. Differences among soil

types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses.

3.6.2 Affected Environment

Topography and Geology

The highest elevations on Base are in Area B and occur along a bedrock ridge that extends from the southeast corner of Area B to the Wright Memorial. The majority of the base is on the broad alluvial plain of the Mad River Valley, which overlies Ordovician-age Richmond shale and limestone bedrock (WPAFB 2001). The land surface elevation on Base ranges from approximately 760 to 980 ft above MSL (WPAFB 2001).

The Base is within the glaciated till plain region of southwestern Ohio, an area within the Central Lowlands Physiographic Province. The Central Lowlands province is characterized by low rolling hills, level plains, and flat alluvial valleys (WPAFB 2015).

Natural Hazards

The state of Ohio is characterized by a low level of seismic activity (ODNR 2016b). The Dayton, Ohio, area does not typically experience earthquakes because of its location in relation to fault zones (Hansen 2002). Auglaize and Shelby counties located in northwest Ohio (approximately 45 miles from Greene County) had a series of historic earthquakes in the late 1800s to mid-1900s (Hansen 2002), with the greatest instrumented magnitude recorded between 5.0 and 5.4 (U.S. Geological Survey [USGS] 1993). On July 23, 2010, a 5.0 magnitude earthquake originating along the Quebec-Ontario border was felt in Dayton and surrounding areas.

Soils

Surface soil at WPAFB formed on unconsolidated deposits, primarily alluvium, glacial outwash, glacial till, and loess (WPAFB 2015). Development and substantial earthmoving activities have altered the natural soil characteristics at WPAFB, making precise classifications difficult. The U.S. Department of Agriculture (USDA) NRCS mapped most of WPAFB as urban land complexes.

Forty soil mapping units occur on WPAFB. Warsaw-Fill land complex is the most common soil unit on Base and occurs on 1,326 acres. This soil is found in the northeast portions of the Base. The second most common soil occurring on the Base is the Sloan-Fill land complex. This soil is found in the northern portions of the Base and covers approximately 1,232 acres. Approximately one-half of the soils on Base have a moderate to high potential for erosions. The potential for erosion varies with topographic conditions and includes both disturbed urban land complex soils and natural loams. Bare soil leads to erosion, creation of gullies and rills, and increased sediment load in streams. Erosion can render land unsuitable for training and impassable by vehicles. Sediment in streams may affect water flow and the survival of aquatic organisms. Sixteen of the soil types on WPAFB are designated as prime farmland

soils. Most of these soils are loams located in the northeastern and southwestern portions of the Base, and in areas near SR 444.

Specific soil type in the project areas consists of the Miamian-Urban Land Complex (USDA 1978). Miamian-Urban Land Complex soils are described as well drained, nearly level to steeply sloped (six to twelve percent) soils originally formed in glacial till that have been disturbed by earthmoving and grading operations. The steep slope and moderately low permeability result in rapid runoff. The hazard of erosion is severe in areas of bare vegetation.

3.6.3 Environmental Consequences

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating potential impacts of a proposed action on geological resources. Impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering design are incorporated into project development. Effects on geology and soils would be adverse if they would alter the lithology, stratigraphy, and geological structure that control groundwater quality, distribution of aquifers and confining beds, and groundwater availability; or change the soil composition, structure or function within the environment.

3.6.3.1 Proposed Action

The land surfaces at the proposed building sites are relatively flat. Construction activities would involve minor retrofitting of existing building interiors and exterior leveling of the ground surfaces back to grade upon completion of any build-outs. Trenching activities may also occur where gas lines are to be replaced. Soil erosion would be minimized during construction activities using BMPs in accordance with the Phase I NPDES stormwater discharge permit.

Any spills of hazardous chemicals, materials entering sewers or drains, and/or releases of materials that have the potential to damage or pollute the environment would be reported to the Base Fire Department by calling 911 or calling the WPAFB Fire Dispatch.

In the short term, vehicles would disturb the surface and compaction could be altered. Impacts would be minimized because erosion controls would be implemented. There would be no long-term adverse effects because disturbed vegetation would be re-established upon completion of construction activities.

3.6.3.2 No Action

The No Action alternative would have no impact on surface and subsurface soils.

3.7 Hazardous Materials / Waste

3.7.1 Definition of the Resource

The AFPD 32-70, *Environmental Quality*, establishes the policy that the AF is committed to

- Cleaning up environmental damage resulting from its past activities
- Meeting all environmental standards applicable to its present operations
- Planning its future activities to minimize environmental impacts
- Managing responsibly the irreplaceable natural and cultural resources it holds in public trust
- Eliminating pollution from its activities wherever possible

Hazardous material is defined as any substance with physical properties of ignitability, corrosivity, reactivity, or toxicity that might cause an increase in mortality, serious irreversible illness, and incapacitating reversible illness, or that might pose a substantial threat to human health or the environment. Hazardous waste is defined as any solid, liquid, contained gaseous, or semi-solid waste; or any combination of wastes that pose a substantial present or potential hazard to human health or the environment.

Evaluation of hazardous materials and wastes focuses on underground storage tanks (USTs) and aboveground storage tanks (ASTs) and the storage, transport, and use of pesticides and herbicides, fuels, and petroleum, oils, and lubricants. Evaluation might also extend to generation, storage, transportation, and disposal of hazardous wastes when such activity occurs at or near the project site of a proposed action. In addition to being a threat to humans, the improper release of hazardous materials and wastes can threaten the health and well-being of wildlife species, botanical habitats, soil systems, and water resources. In the event of release of hazardous materials or wastes, the extent of contamination varies based on type of soil, topography, and water resources.

Special hazards are those substances that might pose a risk to human health, but are not regulated as contaminants under the hazardous waste statutes. Included in this category are ACM, radon, LBP, PCBs, and unexploded ordnance. The presence of special hazards or controls over them might affect, or be affected by, a proposed action. Information on special hazards describing their locations, quantities, and condition assists in determining the significance of a proposed action.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA) and the Toxic Substances Control Act (TSCA), defines hazardous materials. The Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act, which was further amended by the Hazardous and Solid Waste Amendments, defines hazardous wastes. In general, both hazardous materials and wastes include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, might present substantial danger to public health or welfare or the environment when released or otherwise improperly managed.

Through its ERP, the DoD evaluates and cleans up sites where hazardous wastes have been spilled or released to the environment. The ERP provides a uniform, thorough methodology to evaluate past disposal sites, to control the migration of contaminants, to minimize potential hazards to human health

and the environment, and to clean up contamination. Knowledge of past ERP activities provides a useful gauge of the condition of soils, water resources, and other resources that might be affected by contaminants. It also aids in identification of properties and their usefulness for given purposes (e.g., activities dependent on groundwater usage might be foreclosed where a groundwater contaminant plume remains to complete remediation).

3.7.2 Affected Environment

Hazardous Materials

Air Force Instruction 32-7086, *Hazardous Materials Management*, establishes procedures and standards that govern management of hazardous materials throughout the AF. It applies to all AF personnel who authorize, procure, issue, use, or dispose of hazardous materials, and to those who manage, monitor, or track any of those activities. The Base utilizes a hazardous material management program through which hazardous materials are controlled from procurement through storage and issue to disposal.

Hazardous and toxic material procurements at WPAFB are approved and tracked by the Bio-environmental Engineering Office. The Installation Management Division supports and monitors environmental permits, hazardous material and hazardous waste storage, spill prevention and response, and participation on the Base Environmental Protection Committee. The Hazardous Substance Steering Committee is a network of safety, environmental and logistics experts who work with hazardous material Issue Point Managers, Unit Environmental Coordinators (UECs), and other hazardous material users to ensure safe and compliant hazardous material management throughout the Base (WPAFB 2006).

Hazardous Waste

The 88 CEG maintains a Hazardous Waste Management Plan (WPAFB 2009) as directed by AFI 32-7042, *Solid and Hazardous Waste Compliance*. This plan prescribes the roles and responsibilities of all members of WPAFB with respect to the waste stream inventory, waste analysis plan, hazardous waste management procedures, training, emergency response, and pollution prevention. The plan establishes the procedures to comply with applicable federal, state, and local standards for solid waste and hazardous waste management.

Wastes generated at WPAFB include waste flammable solvents, contaminated fuels and lubricants, paint/coating, stripping chemicals, waste oils, waste paint-related materials, mixed-solid waste (MSW), and other miscellaneous wastes. Management of hazardous waste is the responsibility of each waste-generating organization and the Compliance Section (88 CEG/CEIEC). The Base produces more than 1,000 kilograms of hazardous waste per month and is considered a large quantity hazardous waste generator.

Stored Fuels

Stored fuels present a potential threat to the environment, which is mitigated at WPAFB through the spill prevention, control, and countermeasures (SPCC) program. The WPAFB SPCC Plan (WPAFB 2008) describes practices used to minimize the potential for stored fuel spills, prevent spilled materials from migrating off the base, and ensure that the cause of any spill is corrected. The WPAFB Oil and Hazardous Substance Integrated Contingency Plan (WPAFB 2005) describes emergency planning, notification and spill response practices. Collectively, the SPCC Plan, with a focus on spill prevention, and the Integrated Contingency Plan, with a focus on spill response, provides a comprehensive strategy for preventing stored fuel releases to the environment.

The Spill Prevention Coordinator (SPC) is the primary point of contact for the SPCC Program. The SPC works closely with Tank Managers, UECs, and WPAFB emergency response personnel to implement the SPCC Plan. Required SPCC training, standard operating procedures (SOPs), inspections, and record keeping are coordinated by the SPC.

Asbestos-Containing Materials

Air Force Instruction 32-1052, *Facilities Asbestos Management,* provides the direction for asbestos management at AF installations. This instruction incorporates by reference applicable requirements of 29 CFR 669 et seq. 29 CFR 1910.1025, 29 CFR 1926.58, 40 CFR 61.3.80, Section 112 of the CAA, and other applicable AFIs and DoD Directives. Air Force Instruction 32-1052 requires bases to develop an Asbestos Management Plan to maintain a permanent record of the status and condition of ACM in installation facilities, as well as documenting asbestos-management efforts. In addition, the instruction requires installations to develop an asbestos operating plan detailing how the installation accomplishes asbestos-related projects. Asbestos is regulated by the USEPA with the authority promulgated under the Occupational Safety and Health Administration (OSHA), 29 U.S.C. 669, et seq. Section 112 of the CAA regulates emissions of asbestos fibers to ambient air. The USEPA policy is to leave asbestos in place if disturbance or removal could pose a health threat.

The 88 CEG/CEIEC has developed standard contract specifications for the removal and disposal of ACM. These specifications incorporate all applicable USEPA, OSHA, and USDOT requirements. The Ohio Department of Health (ODH) must license contractors, and all asbestos-abatement work must be done under the onsite supervision of an ODH-designated "competent person." Work area monitoring for airborne asbestos fibers is accomplished by an industrial hygienist certified by the American Board of Industrial Hygiene. Industrial hygienists must also be certified by the ODH. Laboratory analyses of air samples and of bulk samples must be accomplished in a certified and accredited laboratory.

Non-friable Category I ACM can be disposed of in a sanitary landfill. All Category II or any friable Category I asbestos must be disposed of in a USEPA-approved landfill. ACM-abatement contractors are responsible for obtaining all required permits from regulatory agencies and for OEPA and ODH

notification requirements (WPAFB 2001). The Base has implemented an Asbestos Management Plan to minimize risk from friable ACM in buildings where the material remains. Additional sampling is usually required in buildings scheduled for renovation or demolition. As part of the Proposed Action, some facilities would require retrofitting that would include modification/removal of piping systems in existing mechanical rooms. Therefore, additional sampling would be conducted prior to any demolition/removal of existing building materials.

Lead-Based Paint

The Residential Lead-Based Paint Hazard Reduction Act of 1992, Subtitle B, Section 408 (commonly called Title X), passed by Congress on October 28, 1992, regulates the use and disposal of LBP on federal facilities. Federal agencies are required to comply with applicable federal, state, and local laws relating to LBP activities and hazards.

The AF policy and guidance establishes LBP management at AF facilities. The policy incorporates, by reference, the requirements of 29 CFR 1910.120, 29 CFR 1926, 40 CFR 50.12, 40 CFR 240 through 280, the CAA, and other applicable federal regulations. Additionally, the policy requires each installation to develop and implement a facility management plan for identifying, evaluating, managing, and abating LBP hazards.

More than 95 percent of WPAFB facilities were constructed prior to 1980 and contain LBP. Lead concentrations are generally low with the exception of paints used on outdoor structures such as water towers. The HUD action level is 5,000 ppm. However, even when concentrations are below this, OSHA Lead Construction Standard (29 CFR 1926.62) must be followed. All workers performing lead abatement or removal or any other lead disturbance are required to have a lead workers license issued by the ODH. Licensing is not required if the contract involves mechanical demolition. Contractors containerize LBP wastes which are disposed of under contract. Bioenvironmental engineering samples and monitors all in-house projects involving LBP. As part of the Proposed Action, some facilities would require retrofitting that would include modification/removal of piping systems in existing mechanical rooms. Therefore, additional sampling would be conducted prior to any demolition/removal of existing building materials.

Environmental Restoration Program

The ERP is a subcomponent of the Defense Environmental Restoration Program that became law under SARA (formerly the Installation Restoration Program [IRP]). The ERP requires each DoD installation to identify, investigate, and clean up hazardous waste disposal or release sites. The Base began its IRP in 1981 with the investigation of possible locations of hazardous waste contamination. In 1988, WPAFB entered into an Ohio Consent Order with the OEPA. In October 1989, WPAFB was placed on the USEPA's National Priorities List, a list of sites that are considered to be of special interest and require immediate attention (WPAFB 2001).

The Base currently has identified 67 ERP sites, two regional groundwater sites, and several areas of concern per the Air Force Restoration Information Management System. The Base has grouped the majority of confirmed or suspected sites requiring investigation and characterization in 11 geographically-based OUs, designated as OUs 1 through 11 (IT 1999). In addition to the 11 OUs, WPAFB addressed base-wide issues of groundwater and surface water contamination by creating the GWOU under the Basewide Monitoring Program (BMP). The GWOU is monitored by agreement with the OEPA and USEPA under the LTM Program. Principal groundwater contaminants beneath WPAFB include benzene, toluene, ethylbenzene, xylene, trichloroethene, and tetrachloroethene (WPAFB 2007).

The nearest OU to the Line C facilities is OU4 (**Figure 3-2**). In addition to OU4, the Central Heating Plant 2 (CHP2) site is located in proximity to the red-colored facilities. General groundwater flow through OU4 is to the west and toward the Mad River. Groundwater at OU4 is monitored under the Groundwater Operable Unit (GWOU) and the Long-Term Monitoring (LTM) Program. None of the facilities are within the 1- or 5-year travel time well-head protection area for the Area A water supply wells.

Table 3-5 presents ERP sites associated with OU4 and provides a description of the Record of Decision (ROD) for soil at each site. Groundwater throughout WPAFB is managed under the ROD for the GWOU (WPAFB 1999).

Table 3-5. ERP Sites in the Vicinity of the Project Area

OU	ERP Site(s)	ERP Description
OU4	Landfills (LFs) 4, 6, and 7; Central Heating Plant 2 (CHP2)	Soils at LFs 4, 6, and 7 and CHP2 have been addressed in the ROD for 41 No Action Sites at WPAFB when it was determined that NA was the selected remedy (WPAFB 1998).

Coal storage at CHP2 operated from the 1940s until 1980 when the plant was shut down as part of a heating plant consolidation project. While in operation, the CHP2 coal pile was stored in a concrete barrier adjacent to the heating plant. In 1988, the majority of the area was covered by construction of a newer facility, while the remainder of the site was covered with grass.

In January 1996, elemental mercury was observed in a sewer pipe that was accidentally broken while excavation work was being done near the CHP2 site (WPAFB 1998). Following the discovery of the elemental mercury release, a field investigation was performed in 1997 to determine the nature and magnitude of soil, sediment, and surface water contamination related to the mercury spill. Results of the investigation indicated elevated mercury concentrations in samples collected from within the former CHP2 floor and roof drain system, within a 6-inch cast iron pipe and vitreous clay pipe storm sewer piping immediately adjacent to CHP2 and from a 15-inch storm sewer pipe downstream of CHP2. Free elemental mercury was also observed in a 6-inch cast iron pipe sewer during sampling (WPAFB 1998).

A risk assessment was conducted for the CHP2 mercury spill with conclusions indicating no action were necessary to ensure protection of human health and the environment under current and future land use (WPAFB 1998).

3.7.3 Environmental Consequences

Impacts to hazardous material management would be considered adverse if the federal action resulted in noncompliance with applicable federal and state regulations, or increased the amounts generated or procured beyond current WPAFB waste management procedures and capacities.

Impacts on pollution prevention would be considered adverse if the federal action resulted in worker, resident, or visitor exposure to these materials, or if the action generated quantities of these materials beyond the capability of current management procedures. Impacts on the ERP would be considered adverse if the federal action disturbed (or created) contaminated sites resulting in negative effects on human health or the environment.

3.7.3.1 Proposed Action

Hazardous Materials

Products containing hazardous materials would be procured and used during the proposed construction activities. It is anticipated that the quantity of products containing hazardous materials used during these activities would be minimal and their use would be of short duration. Contractors would be responsible for the management of hazardous materials, which would be handled in accordance with federal and state regulations. Therefore, hazardous materials management at WPAFB would not be impacted by retrofitting the 20 buildings.

Contractors would be responsible for identification and abatement of any hazardous materials and wastes encountered in any of the buildings proposed for retrofitting. All original hazardous, toxic, recyclable, and otherwise regulated waste streams generated and identified by the Contractor would be managed through the Environmental Branch of Civil Engineering in accordance with the Hazardous Waste Management Plan.

Hazardous Wastes

It is anticipated that the quantity of hazardous wastes generated from proposed construction activities would be negligible. Retrofitting of the 20 buildings would not impact the Base's hazardous waste management program. As mentioned above, the known hazardous wastes identified and encountered in any of the buildings proposed for retrofitting and/or build-outs would be managed through the Environmental Branch of Civil Engineering in accordance with the Hazardous Waste Management Plan.

It is anticipated that the volume, type, classifications, and sources of hazardous wastes associated with the Proposed Action would be similar in nature with the baseline condition waste streams. Hazardous waste

would be handled, stored, transported, disposed of, or recycled in accordance with the WPAFB Hazardous Waste Management Plan. Therefore, it is anticipated that the Proposed Action would result in negligible adverse impacts to hazardous materials at WPAFB.

Asbestos-Containing Material and Lead-Based Paint

Twenty buildings would require retrofitting and/or build-outs under the Proposed Action. The buildings are presumed to contain ACM unless prior sampling indicates ACM is not present. The 88 Air Base Wing (ABW)/CEA has developed standard contract specifications for the removal and disposal of ACM. Non-friable ACM can be disposed of in a sanitary landfill. Friable asbestos must be disposed of in a USEPA-approved landfill. An ACM-abatement contractor is responsible for obtaining all required permits from regulatory agencies and for OEPA and ODH notification requirements. The Base has implemented an Asbestos Management Plan to minimize risk from friable ACM in buildings where the material remains. Additional sampling would be required in the buildings scheduled for retrofitting and/or build-outs that require demolition of existing building materials and/or modification or removal of existing piping systems. The potential for adverse impacts would be negligible as ACM surveys would be documented for all disturbed building materials and piping systems.

The majority of buildings included in the Proposed Action were constructed prior to 1980 and are presumed to contain LBP. Federal agencies are required to comply with applicable federal, state, and local laws relating to LBP activities and hazards. Contractors performing lead abatement or removal or any other lead disturbance are required to have a lead workers license issued by the ODH. The potential for adverse impacts would be negligible as LBP surveys would be documented for all disturbed building materials and piping systems.

Environmental Restoration Program

There would be minimal ground disturbance associated with construction activities. Additionally, the building construction activities under the Proposed Action would not impact any ERP sites. Therefore, the Proposed Action would result in negligible adverse impacts to ERP sites.

As indicated in Section 3.7.2, conclusions of a risk assessment involving the CHP2 site indicated no action was necessary to ensure protection of human health and the environment under current and future land use (WPAFB 1998). The remaining buildings proposed for retrofitting are not associated with an ERP site. However, historic and current building uses may have released contamination to the environment. In addition, the abandoned storm sewer lines associated with the CHP2 site potentially contain elemental mercury. If indications of contamination such as staining of soils or unusual odors are encountered during construction activities or if abandoned storm sewer lines are encountered, work should cease and the WPAFB Environmental Branch should be contacted to evaluate how to proceed.

3.7.3.2 No Action

The No Action alternative would have no adverse impact on hazardous materials storage and waste generation.

3.8 Cultural Resources

3.8.1 Definition of the Resource

As defined by 36 CFR 800.16, historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion, the NRHP maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to a Native American tribe or Native Hawaiian organization and that meet the NRHP criteria. Several federal laws and regulations govern protection of cultural resources, including the National Historic Preservation Act (NHPA) (1966), the Archaeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (1990).

Native American tribes define cultural resources very broadly as the resources necessary for the survival and maintenance of their way of life. Ethnographic resources include plants and animals, ceremonial sites, tribal historic sites, and areas of sacred geography possessing mythic/spiritual significance.

Typically, cultural resources are subdivided into archeological resources (prehistoric or historic sites where human activity has left physical evidence of that activity but no structures remain standing) or architectural resources (buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance). Archaeological resources comprise areas where human activity has measurably altered the earth or deposits of physical remains are found (e.g., arrowheads and bottles). Architectural resources include standing buildings, bridges, dams, and other structures of historic or aesthetic significance. Generally, architectural resources must be more than 50 years old to be considered for the NRHP. More recent structures might warrant protection if they have potential as Cold War-era resources. Structures less than 50 years in age, and particularly DoD structures in the category of Cold War-era, are evaluated under explicit guidance of the National Park Service Bulletin 22.

The Base is obliged to consider the effects of construction for alteration of any historic property. In doing so, WPAFB must first define the Area of Potential Effect (APE). According to 36 CFR § 800.16(d), the APE is defined as:

> *The geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking.*

In accordance with Section 106 of the NHPA, determinations regarding potential effects of an undertaking on historic properties are presented to the SHPO.

3.8.2 Affected Environment

The AF proposed an undertaking to repair the HTHW in 20 facilities along the Line C heating system with natural gas boilers. The Base owns over 250 historic buildings, several that are individually eligible for inclusion on the NRHP and most of which are located in one of three NRHP-eligible historic districts. The Integrated Cultural Resources Management Plan (ICRMP) for WPAFB, prepared in consultation with the SHPO, indicates 5 of the 20 facilities are individually eligible for the NRHP (WPAFB 2011d) (**Table 3-6**).

Table 3-6. List of NRHP-Eligible Facilities Proposed for Repair

Project	Square Feet	NRHP Eligible	Within Historic District
1 (Red)	553,635	Yes – Individually-Eligible	No
2 (Orange)	137,785	Yes – Individually-Eligible	No
2 (Orange)	48,781	Yes – Individually-Eligible	No
2 (Orange)	154,699	Yes – Individually-Eligible	No
3 (Orange)	124,406	Yes – Individually-Eligible	No

Any modifications to the historic facilities as part of the repair project would follow the Secretary of the Interior's Standards for Treatment of Historic Properties, which would avoid potential adverse effects. In addition, the SHPO was contacted regarding the undertaking's effects on historic properties (**Appendix A**). The SHPO responded indicating that none of the alterations to the facilities would negatively affect any significant features that contribute to the facilities' eligibility and that there should be no effects to any potential archaeological resources since the project areas have been previously disturbed by grading and construction activities.

According to the WPAFB Cultural Resources Manager, the Native American Tribes typically notified/consulted for EA's (Cherokee Nation, Keweenaw Bay Indian Community, Sac and Fox of the Mississippi in Iowa, Saginaw Chippewa Indian Tribe, Oklahoma Seneca Cayuga Nation, and Seneca Nation of Indians) request notification/consultation when an action involves ground disturbance or construction in an area previously undisturbed. Consultation with the Native American Tribes was conducted, however. A response from the Seneca Nation was received indicating this tribe has no issues with the proposed heating system project (**Appendix A**). There were no responses received from the remaining tribes.

3.8.3 Environmental Consequences

Adverse impacts on cultural resources might include physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's

significance; introducing visual or audible elements that are out of character with the property or alter its setting; neglecting the resource to the extent that it deteriorates or is destroyed; or the sell, transfer, or lease of the property out of agency ownership (or control) without adequate legally enforceable restrictions or conditions to ensure preservation of the property's historic significance.

3.8.3.1 Proposed Action

The most relevant impacts to cultural resources at WPAFB would be related to any potential alteration activities as a result of the Proposed Action. Activities under the Proposed Action involve retrofitting and/or build-outs of the NRHP facilities listed in **Table 3-6** in addition to the construction of a new mechanical room on one of the orange-colored facilities. As none of the NRHP-eligible buildings would be demolished, no adverse impact is anticipated for any of the four NRHP-eligible buildings as a result of the Proposed Action.

3.8.3.2 No Action

The No Action alternative would have no effect on cultural resources.

3.9 Infrastructure / Utilities

3.9.1 Definition of the Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as "urban" or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to economic growth of an area.

The infrastructure components to be discussed in this section include utilities (electrical power, natural gas, liquid fuel, and water supply), pollution prevention, solid waste, sanitary and wastewater systems, heating and cooling, and communications. Transportation systems are excluded from discussion in this section as impacts to transportation systems from any of the alternatives are considered minor and will not be discussed further in this EA.

Solid waste management primarily concerns itself with the availability of landfills to support a population's residential, commercial, and industrial needs. Alternative means of waste disposal might involve waste-to-energy programs or incineration. In some localities, landfills are designed specifically for, and are limited to, disposal of construction and demolition debris. Recycling programs for various waste categories (e.g., glass, metals, and papers) reduce reliance on landfills for disposal.

3.9.2 Affected Environment

The information contained in this section was obtained from the WPAFB General Plan (WPAFB 2001) and provides a brief overview of each infrastructure/utilities component and comments on its existing general condition.

Electrical Power. Dayton Power & Light provides WPAFB with electrical power. The Base receives power via two substations, which is delivered by electrical lines on Base. The electrical distribution system on Base is designed to meet the needs of a much larger base population so the demands of service are within the system's capacity. The overall condition of the system is adequate in providing the power to the current Base population.

***Natural Gas*.** Natural gas at WPAFB is supplied by Vectren. The on-Base natural gas system is the principal heating option for housing areas and outlying areas of the Base. It feeds individual buildings and satellite heating plants.

***Liquid Fuel*.** The liquid fuel system at WPAFB is delivered by trucks with an alternate capability for pipeline delivery. The Base operates USTs and ASTs which store a variety of fuels.

***Water Supply*.** The primary water supply and distribution system at WPAFB consists of water collection, treatment, storage, and distribution systems. The water supply distribution systems provide water to both Areas A and B.

***Pollution Prevention*.** Air Force Instruction 32-7080, *Pollution Prevention Program*, implements the regulatory mandates in the Emergency Planning and Community Right-to-Know Act, Pollution Prevention Act of 1990; EO 12856, *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements*; EO 12873, *Federal Acquisition, Recycling, and Waste Prevention*; and EO 12902, *Energy Efficiency and Water Conservation at Federal Facilities.* Air Force Instruction 32-7080 prescribes the establishment of Pollution Prevention Management Plans. The 88 CEG fulfills this requirement with the following plans:

- Integrated Solid Waste Management Plan
- Storm Water Pollution Prevention Plan
- Hazardous Waste Management Plan
- Hazardous Material Emergency Planning and Response Plan
- The Spill Prevention Control and Countermeasure Plan

These plans ensure that WPAFB maintains a waste reduction program and meets the requirements of the CWA; NPDES permit program; and federal, state, and local requirements for spill prevention control and countermeasures.

Construction under the Proposed Action would involve required anti-terrorism/force protection measures and conform to applicable State of Ohio and WPAFB building codes and regulations. Because the Proposed Action would involve construction of a small mechanical room on one facility, construction would comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings* and implement other "high performance sustainable principles" as applicable under EO 13514(2)(g).

***Solid Waste*.** Municipal solid waste at WPAFB is managed in accordance with the guidelines specified in AFI 32-7042, *Solid and Hazardous Waste Compliance*. This AFI incorporates by reference the requirements of Subtitle D, 40 CFR 240 through 244, 257, and 258, and other applicable federal regulations, AFIs, and DoD Directives. In general, AFI 32-7042 establishes the requirement for installations to have a solid waste management program that incorporates the following: a solid waste management plan; procedures for handling, storage, collection, and disposal of solid waste; recordkeeping and reporting; and pollution prevention.

The Base operates a Qualified Recycling Program that is located on Patterson Field and is operated by 88 CEG/CEIEC. The recycling program includes aluminum, glass, paper, plastics, oil, and ferrous and nonferrous materials. A contract exists for solid waste pick-up and disposal of all refuse, which removes refuse from housing and industrial areas.

***Sanitary Sewer and Wastewater Systems*.** The sanitary sewer collection system at WPAFB is owned by the Base and consists of several miles of pipelines. Wastewater produced on Base is discharged either to the Fairborn treatment plant or the City of Dayton treatment system. The current wastewater system is designed to accommodate a 50 percent increase in the existing Base population.

***Heating and Cooling*.** The Base is heated with several natural gas-fired central heating plants that provide approximately 80 percent of the annual heating requirements for WPAFB. Several satellite heating plants serve smaller areas on Base (West Ramp, hospital). These smaller plants operate on natural gas and provide approximately four percent of the Base's overall heating needs. The remaining 16 percent of the Base's overall heating is met by natural gas furnaces in individual buildings.

***Communications*.** The communications system at WPAFB consists of telephone, local computer systems, long-haul communications, and land mobile radio systems. The Base's communications and information utility infrastructure is in good condition. There are improvements planned for the Base that would enable it to meet any known future communication requirements.

3.9.3 Environmental Consequences

Impacts on infrastructure are evaluated for their potential to disrupt or improve existing levels of service and additional needs for energy and water consumption, sanitary sewer systems, and transportation

patterns and circulation. Impacts might arise from physical changes to circulation, construction activities, introduction of construction-related traffic on local roads or changes in daily or peak-hour traffic volumes, and energy needs created by either direct or indirect workforce and population changes related to Base activities.

3.9.3.1 Proposed Action

There would be a temporary increase in use of roadways in and around the Line C project sites. Any construction equipment required for the retrofitting or build-out of facilities would be driven to the project locations and would be kept on site during the duration of the project. All damaged transportation infrastructure from construction activities would be repaired.

The Proposed Action would affect traffic generation in the areas of the building sites over the short-term. Increases in traffic volumes and adverse impacts to traffic flow on-site would be likely due to additional traffic entering, leaving, and cycling throughout the construction areas as a result of contractors performing construction activities.

No long-term adverse impacts to transportation systems are anticipated because the buildings proposed for retrofitting are located in groups in Area A. Therefore, negligible effects on transportation systems would be expected under the Proposed Action.

There would be short-term negligible impacts to underground utilities because they would be located and marked prior to digging in the area. In the long-term, the Proposed Action would result in a positive impact to utilities due to savings in utility costs as a result of upgrading the heating systems to 20 buildings requiring repairs. Liquid fuels, water supply, pollution prevention, solid waste, sanitary sewer and wastewater systems, and communications resources would be unchanged as a result of the Proposed Action.

3.9.3.2 No Action

Under the No Action Alternative, operation and maintenance costs would continue to incur with the utilization of the current heating system in the 20 facilities. Therefore, minor adverse impacts to WPAFB's infrastructure would occur as operation and maintenance costs would continue to increase with the increasing future maintenance and energy costs of sustaining the current Line C heating system.

3.10 Safety and Occupational Health

3.10.1 Definition of the Resource

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Safety and accident hazards can often be identified and reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself together with the exposed (and possibly susceptible) population. The degree

of exposure depends primarily on the proximity of the hazard to the population. Activities that can be hazardous include transportation, maintenance and repair activities, and the creation of highly noisy environs. The proper operation, maintenance, and repair of vehicles and equipment carry important safety implications. Any facility or human-use area with potential explosive or other rapid oxidation processes creates unsafe environments for nearby populations. Extremely noisy environments can also mask verbal or mechanical warning signals such as sirens, bells, or horns. The public would have no access to the construction activities associated with the Proposed Action or Alternatives.

Munitions and Explosive Safety

Explosives are classified based on their reactions to specific influences. The explosives hazard class is further subdivided into "division", based on the character and predominance of the associated hazards and their potential for causing personnel casualties or property damage. Explosives Hazard Class/Division 1.4 designates a moderate fire with no significant blast or fragment hazard (Sandia 2010). Explosive Safety Zones (ESZs) are required for areas where ordinance are stored or handled. The ESZs are typically determined based upon the net explosive weight of the ordinance to be stored or handled and the blast resistance properties of the magazine. Explosive Safety Quantity Distance (ESQD) arcs that delineate the extents of each ESZ are constructed. The ESZ and ESQD requirements are specified in Air Force Manual (AFMAN) 91-201, *Explosive Safety Standards*.

Construction Safety

Construction site safety consists primarily of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by DoD and AF regulations designed to comply with standards issued by OSHA and USEPA. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors.

3.10.2 Affected Environment

Munitions and Explosives Safety

There are several areas that are constrained by ESQD CZ in the Patterson Field area. These areas would be identified prior to performing construction activities related to the decentralization of Line C.

Construction Safety

All contractors performing construction activities are responsible for following ground safety regulations and worker compensation programs, and are required to conduct construction activities in a manner that does not pose any risk to workers or personnel. Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and availability of Safety Data Sheets. Industrial hygiene is the responsibility of contractors, as applicable. Contractor responsibilities are to review potentially hazardous workplace operations; to monitor exposure to workplace chemical (e.g.,

asbestos, lead, hazardous materials), physical (e.g., noise propagation), and biological (e.g., infectious waste) agents; to recommend and evaluate controls (e.g., ventilation, respirators) to ensure personnel are properly protected or unexposed; and to ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures.

Anti-Terrorism/Force Protection

The DoD seeks effective ways to minimize the likelihood of mass casualties from terrorist attacks against DoD personnel in the buildings in which they work and live. The intent of the Unified Facilities Criteria (UFC) 4-010-01 standard is to minimize the possibility of mass casualties in buildings or portions of buildings owned, leased, privatized, or otherwise occupied, managed, or controlled by or for DoD. The UFC standards provide appropriate, implementable, and enforceable measures to establish a level of protection against terrorist attacks for all inhabited DoD buildings where no known threat of terrorist activity currently exists.

The UFC mandates minimum standoff distances for new and existing buildings and for those buildings to exist within or outside of a controlled perimeter. Standoff distances are distances maintained between a building or portion thereof and the potential location for an explosive detonation, primarily an adjacent roadway, parking area, and/or trash cans. A controlled perimeter is a physical boundary at which vehicle access is controlled with sufficient means to channel vehicles to the access control points. At a minimum, access control at a controlled perimeter requires the demonstrated capability to search for and detect explosives.

3.10.3 Environmental Consequences

Impacts on health and safety are evaluated for their potential to jeopardize the health and safety of Base personnel as well as the surrounding public. Impacts might arise from physical changes in the work environment, demolition and construction activities, introduction of demolition and construction-related risks, and risks created by either direct or indirect workforce and population changes related to proposed Base activities.

The AF regulations and procedures promote a safe work environment and guard against hazards to the public. The WPAFB programs and day-to-day operations are accomplished according to applicable AF federal and state health and safety standards.

3.10.3.1 Proposed Action

Fire Hazards and Public Safety

No adverse effects regarding fire hazards or public safety would be expected to occur from repair of the Line C heating system planned as part of the Proposed Action. The SOPs for construction projects would be in place to protect the public.

Munitions and Explosives Safety

No adverse effects due to munitions or explosives safety would be expected to occur from repair of the Line C heating system planned as part of the Proposed Action as the 20 facilities are located at safe distances required in the ESZ and ESQD requirements specified in AFMAN 91-201, *Explosive Safety Standards*.

Construction and Demolition Safety

Short-term minor adverse effects would be expected from construction activities. Implementation of the Proposed Action would slightly increase the short-term risk associated with contractors performing construction activities at WPAFB during the normal work day.

Contractors would be required to establish and maintain safety programs, and adhere to SOPs. Any potential adverse impacts to the health and safety of nearby personnel would be minimized by clearly identifying the work zone and prohibiting access to unauthorized individuals. Use of high-profile equipment would require a "spotter" when operating near any overhead hazards. To minimize vehicle accidents, contractors would direct heavy vehicles entering and exiting the demolition sites. The Base has also incorporated stringent safety standards and procedures into day-to-day operations. Therefore, no adverse effects are anticipated as a result of the Proposed Action due to safeguards existing to protect personnel.

As a result of the Proposed Action, potential minor short-term impact to the safety of construction contractors would be expected but would be minimized by adherence to safety regulations and standards. No long-term impacts are expected to the health and safety of WPAFB personnel as a result of the Proposed Action.

Anti-Terrorism/Force Protection

No adverse effects to anti-terrorism/force protection (ATFP) would be expected to occur as a result of repairing the Line C heating system. Construction projects under the Proposed Action would include required ATFP measures and conform to applicable State of Ohio and WPAFB building codes and regulations.

3.10.3.2 No Action

The No Action Alternative would have no impact to the health and safety of WPAFB personnel because no construction activities would occur.

3.11 Socioeconomics

3.11.1 Definition of the Resource

Socioeconomics is the relationship between economics and social elements such as population levels and economic activity. Factors that describe the socioeconomic environment represent a composite of several

interrelated and nonrelated attributes. There are several factors that can be used as indicators of economic conditions for a geographic area, such as demographics, median household income, unemployment rates, percentage of families living below the poverty level, employment, and housing data. Data on employment identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on industrial, commercial, and other sectors of the economy provide baseline information about the economic health of a region.

3.11.2 Affected Environment

Demographics. Metropolitan statistical areas are geographic entities defined by the Office of Management and Budget for use by federal statistical agencies in collecting, tabulating, and publishing federal statistics. A metro area contains a core urban area of 50,000 or more population. Each metro area consists of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core (Census 2016).

The Base is located 10 miles outside of Dayton, Ohio. According to the 2010 Census data, the city of Fairborn had a population of 32,352; the city of Dayton had a population of 141,527; and the Dayton Metropolitan Area (MA) (consisting of Clarke, Greene, Miami, Montgomery, and Preble counties) had a population of 979,835 residents. Based on the 2010 Census data, the Dayton MA was the fourth largest metropolitan area in Ohio.

Employment Characteristics. The Base provides a major source of employment in the five-county area. In addition, WPAFB awards numerous contracts every year to local businesses. For FY 14 (October 1, 2013 through September 30, 2014), the total number of jobs provided by WPAFB was over 27,000. This number includes military active duty, trainees and reservists, DoD civilians, and other civilians, such as contractors. This number of indirect jobs supported by the Base, such as restaurants, dry cleaners, and others is estimated at 34,560. The total economic impact to the local Dayton MA was $4.3 billion (WPAFB 2016). A large portion of residents in the Dayton MA are employed in education, health and social services; a lower percentage of residents are employed in retail trade, finance, insurance, real estate, and rental and leasing.

The 2010 unemployment rate for the Dayton MA was 10.7 percent, almost double than the statewide average of 5.6 percent (Bureau of Labor Statistics [BLS] 2011). The 2010 unemployment rate in the city of Riverside, the city of Fairborn, around WPAFB and within Greene County was 8.0, 8.8, and 6.2 percent, respectively, which was slightly higher than the state average of 5.6 percent. Recent unemployment rates indicate the unemployment rate for the Dayton MA was 5.0 percent in March 2016, which was reported to be the same as the U.S. average in March and April 2016 (BLS 2016a, BLS 2016b).

3.11.3 Environmental Consequences

This section identifies potential economic and social impacts that might result from the proposed project. The methodology for the economic impact assessment is based on the Economic Impact Forecast System (EIFS) developed by the DoD in the 1970s to efficiently identify and address the regional economic effects of proposed military actions (EIFS 2001). The EIFS provides a standardized system to quantify the impact of military actions, and to compare various options or alternatives in a standard, non-arbitrary approach.

The EIFS assesses potential impacts on four principal indicators of regional economic impact: business volume, employment, personal income, and population. As a "first tier" approximation of effects and their significance, these four indicators have proven very effective. The methodology for social impacts is based on the Guidelines and Principles for Social Impact Assessment, developed by an inter-organizational committee of experts in their field (National Oceanic and Atmospheric Administration [NOAA] 1994).

The proposed project at WPAFB would have an adverse impact with respect to the socioeconomic conditions in the surrounding MA if it would:

- Change the local business volume, employment, personal income, or population that exceeds the MA's historical annual change; and/or
- Negatively affect social services or social conditions, including property values, school enrollment, county or municipal expenditures, or crime rates.

3.11.3.1 Proposed Action

A beneficial short-term negligible impact would be expected on the local economy from revenue generated by construction activities. A beneficial long-term impact would be expected due to savings in operations and maintenance costs for the Line C repaired facilities. The Proposed Action does not involve changes in off-Base land use or new development; therefore, no impacts on social conditions are expected.

3.11.3.2 No Action

The No Action alternative would have no impact on socioeconomics.

4.0 Cumulative Effects

Increasing evidence suggests the most adverse environmental effects may result not from the direct effects of a particular action, but from the combination of individually minor effects of multiple actions over time (CEQ 1997). The CEQ regulations implementing NEPA require cumulative impacts of a proposed action be assessed. A cumulative impact is defined 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 action (40 CFR § 1508.7).*

The CEQ guidance for considering cumulative effects states NEPA documents should compare cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant. The first step in assessing cumulative effects involves identifying and defining the scope of other actions and determining their interrelationship with the proposed action. Identifying and defining scope must consider whether other projects coincide with the location and timing of the proposed action. Past, present, and reasonably foreseeable future actions are examined, including military actions in the region as well as other federal and non-federal actions to determine if there is an interaction with the proposed action or alternative.

Cumulative effects result from special (geographic) and temporal (time) crowding of environmental perturbation. The effects of human activities will accumulate when a second perturbation occurs at a site before the ecosystem can fully rebound from the effect of the first perturbation (CEQ 1997). Cumulative effects may arise from single or multiple actions and may result in additive or interactive effects. Analyzing cumulative effects differs from the traditional approach to environmental impact assessment because it requires the analyst to expand the geographic boundaries and extend the timeframe to encompass additional effects on the resources, ecosystems, and human communities of concern.

As WPAFB is an active military installation that undergoes changes in missions and training requirements in response to defense policies, current threats, and tactical and technological advances, it requires new construction, facility improvements, infrastructure upgrades, and maintenance and repairs on an on-going basis. In addition, tenant organizations occupy portions of the Base, conduct aircraft operations, and maintain select facilities. All these on-Base actions would continue to occur before, during, and after the Proposed Action (preferred alternative) would be implemented.

For purposes of the cumulative effects analysis, the timeframe spans from 2018 when the Line C natural replacement project would begin and ends in 2019 with completion of the project.

4.1 Past and Present Actions Relevant to the Proposed Action

The AF has identified actions in the vicinity of the project area that are under consideration and in the planning or implementation stage. These actions are included in the cumulative effects analysis to the extent that details regarding such actions exist and the actions have a potential to interact with the Proposed Action outlined in this EA. **Table 4-1** lists projects that have been identified in the immediate vicinity of the proposed decentralization of Line C project area.

Table 4-1. DoD Past, Present, and Reasonably Foreseeable Actions

Project Name	Description	Planned Year of Implementation	Resources Potentially Affected	Magnitude of Impact
Entry Control Reconfiguration and Base Perimeter Fence Relocation, EIS	Reconfigure/relocate several Area A entry control facilities (gates) (WPAFB 2012b).	2012 to 2020	Air Quality, Noise, Earth Resources, Water Resources, Biological Resources, Occupational Health and Safety, Infrastructure, Traffic/Transportation	Not Significant
Primary Runway Pavement Replacement, EA	Replace pavement to enable continued aircraft operations in a safe manner and to provide long-term replacement for the existing primary runway and taxiways.	2018-2020	Air Quality, Noise, Water Resources, Occupational Health and Safety, ERP	Not Significant
Demolish Multiple Buildings, EA	Demolish 53 buildings as part of an AF initiative to reduce the amount of physical plant that WPAFB spends money on by 20 percent by the year 2020 (WPAFB 2014).	2014 to 2020	Air Quality, Noise, Earth Resources, Water Resources, Cultural Resources, Occupational Health and Safety	Not Significant
Fire Structural / Rescue Station, EA	Demolish an existing building and re-use the concrete foundation slab for new construction of a 13,524 sf fire structural / rescue station in Area A.	2018	Air Quality, Noise, Earth Resources, Cultural Resources, Occupational Health and Safety	Not Significant
Implement the Integrated Natural Resources Management Plan (INRMP), EA	Implement the 2015 INRMP; Proposed Action would implement updated natural resources management plans and practices described in the 2015 INRMP. Proposed Action also includes planting native tree species for Indiana bat habitat in a wooded area near the airfield.	2016 to 2020	Air Quality, Earth Resources, Water Resources, Biological Resources, Occupational Health and Safety, ERP	Not Significant
Area A Drinking Water Treatment Facility	Install a treatment system for removal of perfluorooctanoic acid (PFOA) and perfluorooctyl sulfonate (PFOS) from the Area A water supply.	Future	Water Resources	Not Significant

4.2 Analysis of Cumulative Effects

The following analysis first considered whether the actions could affect, or be affected by those resulting from the Proposed Action or alternatives. Second, an evaluation was made to determine whether such a relationship would result in potentially additive impacts not identified when the Proposed Action or alternatives is considered alone.

The additive or interactive cumulative effects of the Proposed Action or alternatives, when considered together with the effects of other past, present, and reasonably foreseeable future actions in the WPAFB region, are presented below by resource category. Please note that only those resources that were identified in **Table 4-1** were carried forward for cumulative analysis. Other resource categories analyzed for the Proposed Action would not be cumulatively affected by these past, present, or reasonably foreseeable actions.

4.2.1 Cumulative Effects on Resources

The following examines cumulative effects on the environment that would result from incremental impacts of implementation of the Proposed Action, in addition to other past, present, and reasonably foreseeable future actions. This analysis assesses potential for an overlap of impacts with respect to project schedules or affected areas. This section presents a qualitative analysis of the cumulative effects.

Under the No Action Alternative, there would be no change to baseline conditions for any resource areas and existing conditions would continue as described in Sections 3.2 through 3.11 for resources analyzed. No new cumulative impacts would be expected as a result of the No Action Alternative.

Noise. Construction activities associated with the Proposed Action and other cumulative projects would cause short- and long-term, minor and adverse, cumulative, impacts on WPAFB. No noise-producing activity or project has been identified that, when combined with the Proposed Action, would have greater than minor adverse impacts on sensitive noise receptors at WPAFB due to the Line C replacement project.

Air Quality. The state of Ohio accounts for all significant stationary, area, and mobile emission sources under the CAA and USEPA in the development of a SIP. Because the SIP is a compilation of regulations, strategies, schedules, and enforcement actions designed for a state to achieve and maintain compliance with all NAAQS, no significant cumulative impacts on air quality are anticipated. Estimated emissions generated by the Proposed Action would be *de minimis* and it is understood that activities of this limited size and nature would not contribute appreciably to adverse cumulative impacts to air quality. In addition, the activities associated with these projects are not recurring.

Water Resources. Short-term, minor, cumulative adverse impacts on ground and surface water would be expected from implementation of the Proposed Action and other cumulative projects involving demolition

and construction. The cumulative increase in impervious surfaces from the proposed cumulative projects in the project area would be considered a minor contribution in the context of the whole watershed but could be noticeable on a more localized level. In accordance with federal and state stormwater regulations, the post-development hydrologic condition of the areas where the proposed natural gas conversion facilities and other cumulative project facilities would be developed must be maintained as it was pre-development. For these projects, preservation of pre-development hydrologic condition would be ensured through adherence to BMPs that would be expected to attenuate potentially long-term, adverse impacts on water resources.

Biological Resources. The Proposed Action is not expected to adversely affect biological resources. All of the past and planned projects are located within areas that have or would take place in previously-developed areas; therefore, impacts to biological resources would not be expected. Any potential impacts to threatened, endangered, or sensitive species would require consultation with the USFWS and the ODNR and any agreement for potential mitigation. Therefore, no significant cumulative impacts to biological resources would be anticipated.

Earth Resources. Past development in various locations of WPAFB have likely contributed to erosion and soil loss. However, the extent to which this has occurred is difficult to determine. The Proposed Action and other cumulative projects involving demolitions and construction such as build-outs to house boilers would result in temporary disturbed ground surfaces and short-term, minor, adverse impacts on earth resources. Although soils would be disturbed by earthmoving and other construction activities, any effects would not be expected to exceed individual project boundaries and would not result in significant impacts on earth resources since BMPs, erosion and sediment controls and other management measures would be implemented.

Hazardous Materials/Waste. The Proposed Action could have a negligible effect on hazardous materials and waste associated with the abatement of ACM or LBP. None of the projects listed above would generate hazardous materials and waste. Therefore, no significant cumulative impacts to hazardous materials and waste would be anticipated.

Cultural Resources. The Proposed Action is not expected to have an effect on cultural resources. In the event of an unanticipated discovery of archaeological resources during any project at WPAFB, actions detailed in the ICRMP and summarized in Section 3.8 would be initiated to minimize impacts. Therefore, no significant cumulative impacts to cultural resources would be anticipated.

Infrastructure/Utilities. While there is capacity for growth, the potential exists for cumulative impacts on utilities. However, as newly constructed infrastructure would replace older facilities, the newer, more energy-efficient construction methods would likely contribute to cumulative, long-term, minor, beneficial impacts on electrical consumption. Short- and long-term, negligible, cumulative impacts on the

communications, sewer and wastewater, stormwater drainage, transportation, and solid waste generation systems would be expected from accommodation of the operations and personnel associated with the facilities included in the repair of the Line C heating system when combined with other past, present, or reasonably foreseeable future actions.

Safety and Occupational Health. Short-term negligible cumulative adverse impacts on health and safety (e.g., slips, falls, heat exposure, exposure to mechanical, electrical, vision, or chemical hazards) would be expected as a result of construction activities associated with the Proposed Action and other cumulative projects. Implementation of appropriate safety methods during these activities would be expected to minimize the potential for such impacts. Workers at construction sites would be required to adhere to site specific health and safety plans; construction areas would be secured to prevent unauthorized personnel from entering the work sites; and in accordance with OSHA, all workers would be provided with appropriate personal protective equipment. Therefore, no significant cumulative impacts to safety and occupational health would be anticipated.

4.2.2 Irreversible and Irretrievable Commitment of Resources

The NEPA requires that EAs include identification of any irreversible and irretrievable commitment of resources that would be involved in the implementation of the Proposed Action. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources could have on future generations. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that use of these resources will have on future generations. Irreversible effects primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable time frame (e.g., energy and minerals).

Environmental consequences as a result of the Proposed Action are considered short-term and temporary. Construction would require consumption of materials typically associated with exterior and interior construction (e.g., concrete, wiring, piping, insulation, and windows). The AF does not expect the amount of these materials used to significantly decrease the availability of the resources. Small amounts of nonrenewable resources would be used; however, these amounts would not be appreciable and are not expected to affect the availability of these resources.

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Appendix A

Interagency and Intergovernmental Coordination for Environmental Planning Correspondence and Notice of Availability

Miami Conservancy District Consultation Letters:

1. WPAFB Request – 11Oct16
2. **MCD Response – 10Nov16**

Consultation Letters may be available upon request, please contact:

88 ABW / Public Affairs
5135 Pearson Road
Building 10, Room 252
Wright-Patterson AFB, OH 45433
88abw.pa@us.af.mil

MCD
MIAMI CONSERVANCY DISTRICT

38 E. Monument Ave.
Dayton, OH 45402
(937) 223-1271

November 10, 2016

Mr. Darryn Warner
88 ABW/CEIEA
1450 Littrell Road, Building 22
Wright-Patterson AFB, OH 45433-5209

Re: Huffman Retarding Basin, WPAFB, Repair of distribution system

Dear Mr. Warner:

We have reviewed the proposed action involving repairing the high temperature hot water (HTHW) heating distribution system in Area A of WPAFB.

As the project is located within the Huffman Retarding Basin, it is subject to those restrictions as set forth by the Miami Conservancy District (MCD) in Greene County Deed Book 129, Page 146 on December 16, 1922.

Based on our review it appears the proposed project will not adversely affect the retarding basin.

Thank you for the opportunity to review your project and if you have any further questions please contact me at (937) 223-1278, ext. 3230 or by email at rfarrier@mcdwater.org.

Sincerely,

Roxanne H. Farrier
Property Administrator

cc: Kurt Rinehart

U.S. Fish and Wildlife Service Consultation Letters:

1. **WPAFB Request – 11Oct16**
2. USFWS Response – 3Nov16

Consultation Letters may be available upon request, please contact:

88 ABW / Public Affairs
5135 Pearson Road
Building 10, Room 252
Wright-Patterson AFB, OH 45433
88abw.pa@us.af.mil

From: susan_zimmermann@fws.gov [mailto:susan_zimmermann@fws.gov] **On Behalf Of** Ohio, FW3
Sent: Thursday, November 03, 2016 10:03 AM
To: WARNER, DARRYN M NH-03 USAF AFMC 88 CEG/CEIEA <darryn.warner@us.af.mil>
Subject: Area 'A' HTHW (High Temp. Hot Water Heating System), Greene Co.

UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. Fish and Wildlife Service
Ecological Services Office
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / Fax (614) 416-8994

TAILS: 03E15000-2017-TA-0130

Dear Mr. Warner,

We have received your recent correspondence requesting information about the subject proposal. There are no Federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area.

FEDERALLY LISTED, PROPOSED, AND CANDIDATE SPECIES COMMENTS: Due to the project, type, size, and location, we do not anticipate adverse effects to federally endangered, threatened, proposed, or candidate species. Should the project design change, or during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the Service should be initiated to assess any potential impacts.

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,

Dan Everson

Field Supervisor

Ohio Department of Natural Resources Consultation Letters:

1. **WPAFB Request – 11Oct16**
2. **ODNR Response – 16Nov16**

Consultation Letters may be available upon request, please contact:

88 ABW / Public Affairs
5135 Pearson Road
Building 10, Room 252
Wright-Patterson AFB, OH 45433
88abw.pa@us.af.mil

Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR JAMES ZEHRINGER, DIRECTOR

Office of Real Estate
Paul R. Baldridge, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6649
Fax: (614) 267-4764

November 16, 2016

Darryn M. Warner
Department of the Air Force
88 CEG/CEIEA
1450 Littrell Rd. Bldg. 22
WPAFB, OH 45433

Re: 16-755; Decentralization of Line C - Area A Heating System EA

Project: The Proposed Action involves repairing the High Temperature Hot Water Line C heating distribution system by replacing it with local heating systems of natural gas-fired decentralized boilers.

Location: The proposed project is located in Bath Township, Greene County, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Natural Heritage Database: The Natural Heritage Database has the following records at or within a one mile radius of the project area:

Midland sedge (*Carex mesochorea*), T
Upland sandpiper (*Bartramia longicauda*), E
Sedge wren (*Cistothorus platensis*), SC
Beer's noctuid (*Papaipema beeriana*), E
Dayton Aviation Heritage Park – National Park Service

The review was performed on the project area you specified in your request as well as an additional one mile radius. Records searched date from 1980. This information is provided to inform you of features present within your project area and vicinity.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that rare species or unique

features are absent from that area. Although all types of plant communities have been surveyed, we only maintain records on the highest quality areas.

Statuses are defined as: E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; SI = state special interest; A = species recently added to state inventory, status not yet determined; X = presumed extirpated in Ohio; FE = federal endangered, FT = federal threatened, FSC = federal species of concern, FC = federal candidate species.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation.

The project is within the vicinity of one or more records for the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species. Presence of the Indiana bat has been established in the area, and therefore additional summer surveys would not constitute presence/absence in the area. The following species of trees have relatively high value as potential Indiana bat roost trees to include: shagbark hickory (*Carya ovata*), shellbark hickory (*Carya laciniosa*), bitternut hickory (*Carya cordiformis*), black ash (*Fraxinus nigra*), green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americana*), shingle oak (*Quercus imbricaria*), northern red oak (*Quercus rubra*), slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), sassafras (*Sassafras albidum*), post oak (*Quercus stellata*), and white oak (*Quercus alba*). Indiana bat roost trees consists of trees that include dead and dying trees with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. However, Indiana bats are also dependent on the forest structure surrounding roost trees. If suitable habitat occurs within the project area, the DOW recommends trees be conserved. If suitable habitat occurs within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31. If no tree removal is proposed, this project is not likely to impact this species.

The project is within the range of the clubshell (*Pleurobema clava*), a state endangered and federally endangered mussel, the rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel, and the snuffbox (*Epioblasma triquetra*), a state endangered and federally endangered mussel, the black sandshell (*Ligumia recta*), a state threatened mussel, and the fawnsfoot (*Truncilla donaciformis*), a state threatened mussel. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact these species.

The project is within the range of the tonguetied minnow (*Exoglossum laurae*), a state threatened fish. The DOW recommends no in-water work in perennial streams from April 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact this species.

The project is within the range of the spotted turtle (*Clemmys guttata*), a state threatened species. This species prefers fens, bogs and marshes, but also is known to inhabit wet prairies, meadows, pond edges, wet woods, and the shallow sluggish waters of small streams and ditches. Due to the location, the type of habitat at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the Kirtland's snake (*Clonophis kirtlandii*), a state threatened species. This secretive species prefers wet fields and meadows. Due to the location, the type of habitat at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the eastern massasauga (*Sistrurus catenatus*), a state endangered and a federally threatened snake species. The eastern massasauga uses a range of habitats including wet prairies, fens, and other wetlands, as well as adjacent drier upland habitat. Due to the location, the type of habitat at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the upland sandpiper (*Bartramia longicauda*), a state endangered bird. Nesting upland sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program (CRP). If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 to July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

The project is within the range of the northern harrier (*Circus cyaneus*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 15 to August 1. If this habitat will not be impacted, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the U.S. Fish & Wildlife Service.

Water Resources: The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project. Your local floodplain administrator contact information can be found at the website below.

http://water.ohiodnr.gov/water-use-planning/floodplain-management#PUB

ODNR appreciates the opportunity to provide these comments. Please contact John Kessler at (614) 265-6621 if you have questions about these comments or need additional information.

John Kessler
ODNR Office of Real Estate
2045 Morse Road, Building E-2
Columbus, Ohio 43229-6693
John.Kessler@dnr.state.oh.us

State Historic Preservation Office Consultation Letters:

1. **WPAFB Request – 7Oct16**
2. **SHPO Response – 9Nov16**

Consultation Letters may be available upon request, please contact:

88 ABW / Public Affairs
5135 Pearson Road
Building 10, Room 252
Wright-Patterson AFB, OH 45433
88abw.pa@us.af.mil

Native American Tribal Consultation Letters:

1. **WPAFB Request – 7Oct16**
   a. **Sac and Fox of the Mississippi in Iowa**
      i. **Response – No response received**
   b. **Keweenaw Bay Indian Community**
      i. **Response – No response received**
   c. **The Saginaw Chippewa Indian Tribe**
      i. **Response – No response received**
   d. **Cherokee Nation**
      i. **Response – No response received**
   e. **Seneca Nation of Indians**
      i. **Response – 11Oct16**
   f. **Seneca Cayuga Tribe of Oklahoma**
      i. **Response – No response received**

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 88TH AIR BASE WING (AFMC)
WRIGHT-PATTERSON AIR FORCE BASE OHIO

7 October 2016

Mr. Paul F. Woodruff, CRM
88 CEG/CEIEA
1450 Littrell Road
Wright-Patterson AFB OH 45433-5209

Mr. Johnathan L. Buffalo
Historical Preservation
Director/NAGPRA Rep
Sac and Fox of the Mississippi in Iowa
349 Meskwaki Road
Tama IA 52339-9634

Dear Mr. Buffalo

Wright-Patterson Air Force Base (WPAFB) is proposing a project that may potentially impact properties eligible for listing on the National Register of Historic Places. The attached letter of consultation was sent to the Ohio State Historic Preservation Office for this undertaking. It is our opinion that this proposed action will have no adverse effects on historic properties. In accordance with 36 CFR 800.11(e), we are submitting the attached documentation:

Please review the information and inform us of your concurrence with our determination that there would be no adverse effect to historic properties. Should you have questions, I can be reached at 937-257-1374 or via email at paul.woodruff@us.af.mil.

Sincerely

Paul F. Woodruff
Cultural Resources Manager
Environmental Branch

Attachments:
Letter to Ohio State Historic Preservation Office

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 88TH AIR BASE WING (AFMC)
WRIGHT-PATTERSON AIR FORCE BASE OHIO

7 October 2016

Mr. Paul F. Woodruff, CRM
88 CEG/CEIEA
1450 Littrell Road
Wright-Patterson AFB OH 45433-5209

Mr. Gary Loosfoot
Tribal Historic Preservation Office
Keweenaw Bay Indian Community
16429 Beartown Road
Baraga MI 49908

Dear Mr. Loonsfoot

Wright-Patterson Air Force Base (WPAFB) is proposing a project that may potentially impact properties eligible for listing on the National Register of Historic Places. The attached letter of consultation was sent to the Ohio State Historic Preservation Office for this undertaking. It is our opinion that this proposed action will have no adverse effects on historic properties. In accordance with 36 CFR 800.11(e), we are submitting the attached documentation:

Please review the information and inform us of your concurrence with our determination that there would be no adverse effect to historic properties. Should you have questions, I can be reached at 937-257-1374 or via email at paul.woodruff@us.af.mil.

Sincerely

Paul F. Woodruff
Cultural Resources Manager
Environmental Branch

Attachments:
Letter to Ohio State Historic Preservation Office

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 88TH AIR BASE WING (AFMC)
WRIGHT-PATTERSON AIR FORCE BASE OHIO

7 October 2016

Mr. Paul F. Woodruff, CRM
88 CEG/CEIEA
1450 Littrell Road
Wright-Patterson AFB OH 45433-5209

Mr. William Johnson
The Saginaw Chippewa Indian Tribe
6650 East Broadway
Mt Pleasant MI 48858

Dear Mr. Johnson

Wright-Patterson Air Force Base (WPAFB) is proposing a project that may potentially impact properties eligible for listing on the National Register of Historic Places. The attached letter of consultation was sent to the Ohio State Historic Preservation Office for this undertaking. It is our opinion that this proposed action will have no adverse effects on historic properties. In accordance with 36 CFR 800.11(e), we are submitting the attached documentation:

Please review the information and inform us of your concurrence with our determination that there would be no adverse effect to historic properties. Should you have questions, I can be reached at 937-257-1374 or via email at paul.woodruff@us.af.mil.

Sincerely

Paul F. Woodruff
Cultural Resources Manager
Environmental Branch

Attachments:
Letter to Ohio State Historic Preservation Office

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 88TH AIR BASE WING (AFMC)
WRIGHT-PATTERSON AIR FORCE BASE OHIO

7 October 2016

Mr. Paul F. Woodruff, CRM
88 CEG/CEIEA
1450 Littrell Road
Wright-Patterson AFB OH 45433-5209

Sheila Bird
THPO
Special Projects
Cherokee Nation
P.O. Box 948
Tahlequah, OK 74465-0948

Dear Ms. Bird

Wright-Patterson Air Force Base (WPAFB) is proposing a project that may potentially impact properties eligible for listing on the National Register of Historic Places. The attached letter of consultation was sent to the Ohio State Historic Preservation Office for this undertaking. It is our opinion that this proposed action will have no adverse effects on historic properties. In accordance with 36 CFR 800.11(e), we are submitting the attached documentation:

Please review the information and inform us of your concurrence with our determination that there would be no adverse effect to historic properties. Should you have questions, I can be reached at 937-257-1374 or via email at paul.woodruff@us.af.mil.

Sincerely

Paul F. Woodruff
Cultural Resources Manager
Environmental Branch

Attachments:
Letter to Ohio State Historic Preservation Office

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 88TH AIR BASE WING (AFMC)
WRIGHT-PATTERSON AIR FORCE BASE OHIO

7 October 2016

Mr. Paul F. Woodruff, CRM
88 CEG/CEIEA
1450 Littrell Road
Wright-Patterson AFB OH 45433-5209

Jay Toth
Tribal Archaeologist
Seneca Nation of Indians
90 Ohi:yo' Way
Salamanca, NY 14779

Dear Mr. Abrams

Wright-Patterson Air Force Base (WPAFB) is proposing a project that may potentially impact properties eligible for listing on the National Register of Historic Places. The attached letter of consultation was sent to the Ohio State Historic Preservation Office for this undertaking. It is our opinion that this proposed action will have no adverse effects on historic properties. In accordance with 36 CFR 800.11(e), we are submitting the attached documentation:

Please review the information and inform us of your concurrence with our determination that there would be no adverse effect to historic properties. Should you have questions, I can be reached at 937-257-1374 or via email at paul.woodruff@us.af.mil.

Sincerely

Paul F. Woodruff
Cultural Resources Manager
Environmental Branch

Attachments:
Letter to Ohio State Historic Preservation Office

From: Jay Toth
To: WOODRUFF, PAUL F CIV USAF AFMC 88 CEG/CEIEA
Subject: RE: WPAFB - Ground Disturbance - Decentralization of Line C - Area A Heating System
Date: Tuesday, October 11, 2016 10:18:33 AM

SNI-THPO has no issue with the proposed heating system.

Note: Gina is no longer working in THPO office

Thanks

JAY toth, MA, MS

Seneca Nation
Tribal Archeologist
90 OHI:YO WAY
Salamanca,NY 14779

(716)-945-1790
Ext. 3582

https://sni.org/

-----Original Message-----
From: WOODRUFF, PAUL F CIV USAF AFMC 88 CEG/CEIEA [mailto:paul.woodruff@us.af.mil]
Sent: Tuesday, October 11, 2016 10:14 AM
To: Jay Toth; Gina Roselli
Subject: WPAFB - Ground Disturbance - Decentralization of Line C - Area A Heating System

Dear Mr. Toth,

Attached is the Section 106 letter sent to SHPO regarding decentralization of the heat system for part of Area A. This would require ground disturbances in areas of the base that have been previously disturbed. Language has been included for inadvertent discoveries. Let us know if you have any comments.

v/r,
Paul

Paul F. Woodruff, Architect
Cultural Resources Manager
88 CEG/CEIEA
1450 Littrell Road
WPAFB, Ohio 45433
937-257-1374

History is that certainty produced at the point where the imperfections of memory meet the inadequacies of documentation. — Julian Barnes

company. Finally, the recipient should check this email and any attachments for the presence of viruses. The company accepts no liability for any damage caused by any virus transmitted by this email.

www.sni.org

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 88TH AIR BASE WING (AFMC)
WRIGHT-PATTERSON AIR FORCE BASE OHIO

7 October 2016

Mr. Paul F. Woodruff, CRM
88 CEG/CEIEA
1450 Littrell Road
Wright-Patterson AFB OH 45433-5209

William Tarrant
THPO
Seneca Cayuga Tribe of Oklahoma
23701 S. 655 Road
Grove, OK 74344

Dear Mr. Tarrant

Wright-Patterson Air Force Base (WPAFB) is proposing a project that may potentially impact properties eligible for listing on the National Register of Historic Places. The attached letter of consultation was sent to the Ohio State Historic Preservation Office for this undertaking. It is our opinion that this proposed action will have no adverse effects on historic properties. In accordance with 36 CFR 800.11(e), we are submitting the attached documentation:

Please review the information and inform us of your concurrence with our determination that there would be no adverse effect to historic properties. Should you have questions, I can be reached at 937-257-1374 or via email at paul.woodruff@us.af.mil.

Sincerely

Paul F. Woodruff
Cultural Resources Manager
Environmental Branch

Attachments:
Letter to Ohio State Historic Preservation Office

Appendix B

Air Conformity Applicability Model Report

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: WRIGHT-PATTERSON AFB
County(s): Greene
Regulatory Area(s): Dayton-Springfield, OH

b. Action Title: Decentralization of Line C – Area A Heating System

c. Project Number/s (if applicable): Contract No. FA8601-11-D-0002, Task 0024

d. Projected Action Start Date: 3 / 2017

e. Action Description:

The WPAFB operates centralized steam heat and high temperature hot water (HTHW) systems that utilize natural gas-fired boilers and recently converted coal-to-natural gas-fired boilers that serve both areas (Area A and Area B) of the Base. The Area A central heating plant serves part of Area A through three distribution lines (A, C, and D). The existing Line C provides HTHW to the missions' facilities where it is transformed by local low pressure steam converters, high pressure steam converters, or low temperature hot water heat exchangers to make useful heat or hot water depending upon the system design. The Proposed Action involves replacing HTHW Line C with local heating systems of natural gas-fired decentralized boilers serving 20 facilities in Area A.

f. Point of Contact:

Name: Cindy Hassan
Title: Senior Risk Assessor
Organization: CB&I Federal Services
Email: cindy.hassan@cbifederalservices.com
Phone Number: (513) 782-4967

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: _____ applicable
__X__ not applicable

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

Conformity Analysis Summary:

2017

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Dayton-Springfield, OH			
VOC	6.636	100	No
NOx	31.527	100	No
CO	27.162	Not Applicable	Not Applicable
SOx	0.057	100	No
PM 10	5.721	Not Applicable	Not Applicable
PM 2.5	1.651	100	No
Pb	0.000	Not Applicable	Not Applicable
NH3	0.027	Not Applicable	Not Applicable
CO2e	5673.2	Not Applicable	Not Applicable

2018 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Dayton-Springfield, OH			
VOC	0.000	100	No
NOx	0.000	100	No
CO	0.000	Not Applicable	Not Applicable
SOx	0.000	100	No
PM 10	0.000	Not Applicable	Not Applicable
PM 2.5	0.000	100	No
Pb	0.000	Not Applicable	Not Applicable
NH3	0.000	Not Applicable	Not Applicable
CO2e	0.0	Not Applicable	Not Applicable

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.